UNIVERSITY OF GEORGIA

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University Council

March 19, 2021

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Dear Colleagues:

The attached proposal from the Franklin College of Arts and Sciences to offer a new major in Artificial Intelligence (Ph.D.) will be an agenda item for the March 26, 2021, Full University Curriculum Committee meeting.

Sincerely,

John Maerz, Chair
University Curriculum Committee

cc: Provost S. Jack Hu
Dr. Rahul Shrivastav

University of Georgia

Institute for Artificial Intelligence

September 16, 2020

Dr. Alan Dorsey
Dean, Franklin College of Arts and Sciences
The University of Georgia

Dear Dean Dorsey,

I am hereby transmitting to you a proposal for a Ph.D. degree in Artificial Intelligence in the Institute for Artificial Intelligence. On November 20, 2019, the Graduate Program Faculty of the Institute voted in favor of the proposal; the faculty vote was: 27 Yes, 0 No, 4 Abstentions.

The proposed Ph.D. program aims to develop expertise in various aspects of artificial intelligence, such as machine learning, data science, machine vision, robotics, logic, cognitive modeling, natural language processing, computational intelligence and applications of these concepts to real-world problems. The need for expertise in the broad field of artificial intelligence has grown tremendously in recent years. The job market for Bachelor's- and Masters-level jobs in AI has expanded in correspondingly rapid fashion, with no signs of slowing. The natural next step for the field is the Ph.D. degree in AI, to enhance research in the area; promote coordination between academia, business and government; contribute to supervisory functions in the workplace; and train the next generation of AI specialist workers. As the Executive Office of the President National Science and Technology Council Committee on Technology (EOP) concluded in 2016, "The rapid growth of AI has dramatically increased the need for people with relevant skills to support and advance the field."

More recently (February 11, 2019), the White House issued an "Executive Order on Maintaining American Leadership in Artificial Intelligence", directing relevant federal agencies to promote investment in AI research and development, as well as train the "next generation of American AI researchers and users". The agencies are also instructed to consider AI a priority for educational grants. The Executive Order has resulted in a joint effort of the NSF, USDA National Institute of Food and Agriculture, Department of Homeland Security, and others to fund several Artificial Intelligence Research Institutes. A current solicitation indicates total funding of up to $124,000,000.

Many other countries around the world have recently also developed strategic plans focused on artificial intelligence and allocated significant public funds for AI research, to the point that it is widely reported that the world is now witnessing an AI arms race.

On behalf of the Institute, I request your support of our proposal for this Ph.D. degree in Artificial Intelligence.

Best regards,

Khaled Rasheed

Khaled Rasheed/ Director

USG ACADEMIC PROGRAM PROPOSAL
(Effective 1/29/2019)

Institution: University of Georgia

Date Completed at the Institution: November 10, 2020

Name of Proposed Program/Inscription: Artificial Intelligence (Ph.D.)

Degree: Doctor of Philosophy

Major: Artificial Intelligence

CIP Code: 11010200

School/Division/College: Franklin College of Arts and Sciences

Department: Institute for Artificial Intelligence

Anticipated Implementation Date: Fall 2021

Requesting Differential Tuition Rate _____ Yes _X__ No

Delivery Mode (check the most appropriate delivery mode in the box below):

On-campus, face-to-face only	X
Off-campus location, face-to-face only (specify the location):	
Online Only	
Combination of on-campus and online (specify whether 50% or more is offered online for SACS-COC)	
Combination of off-campus and online (specify whether 50% or more is offered online for SACS-COC)	
Hybrid, combination delivery, but less than 50% of the total program is online based on SACS-COC	
Contractual Location (specify the location):	

1) **Forecast:** If this program was not listed on your one of the past two-year academic forecasts provide an explanation concerning why it was not forecasted, but is submitted at this time.

   This program was not included in the University of Georgia's Academic Forecast because it had not been submitted through the faculty governance process.

2) **Academic Framework:** Within the context of strategic planning of all resources and divisions within short-term and long-term perspectives, provide a narrative that explains campus leadership review and attention to newly institutionally approved programs within the last four years, low-producing programs, and post-approval enrollment analyses prior to approving the proposed program for submission to the system office.

   The Office of Instruction reviews newly institutionally approved programs, low-producing programs, and post-approval enrollment to monitor and assess future viability of all programs.

3) **Rationale:** Provide the rationale for proposing the new academic program. *(In other words, does the state need the program; should your institution offer the program; and can your institution develop and implement the program.)*

   This proposal is extraordinary in the sense that it is proposing to create the first Ph.D. program specifically in Artificial Intelligence (AI) anywhere in the United States. This is an opportunity for UGA and the University System of Georgia to be true pioneers in a booming field.

   The market for intelligent software, including Artificial Intelligence, is booming. The U.S. Bureau of Labor Statistics (BLS) predicts Software Developer jobs will increase 24%, and Computer and Information Research Scientists will increase 19%, in the years 2016-26. These both rank in the category "Much faster than average." Computer and Information Systems Managers are predicted to increase 12%, which is "Faster than average."

   The United States has made it to this point without granting a Ph.D. in Artificial Intelligence. However, in this rapidly growing field, it is anticipated that six domains where individuals with the Ph.D. degree in Artificial Intelligence will be valued: 1) to serve as relatively "pure" research specialists in industry, bridging between academia and more applied practitioners; 2) supervising Bachelor's- and Masters-level AI scientists in industry; 3) conducting inherently interdisciplinary research in academia, bridging disciplines such as Computer Science, Linguistics, Philosophy, and Psychology; 4) teaching within existing Bachelor's and Master's programs in Artificial Intelligence that are already active and thriving at many universities; 5) training the next generation of AI Ph.D.'s, as other universities follow UGA's lead and establish such programs; and 6) making expert technical contributions to AI-related public policy.

   The 2016 Economic Report of the President made the argument: "[the] majority of basic research in AI is conducted by academics and by commercial labs that regularly announce their findings and publish them in the research literature. If competition drives commercial labs towards increased secrecy, monitoring of progress may become more difficult, and public concern may increase." (p. 24)

To give an indication of the current and future importance of AI technologies, refer to a recent report summarizing national and regional AI strategies that have been announced in just the last two years.[1] To that list, add a joint effort of the NSF, USDA National Institute of Food and Agriculture, Department of Homeland Security, and other U.S. agencies to fund several Artificial Intelligence Research Institutes (a current solicitation indicates potential total funding of over $120,000,000).

Country or Region	Date	Strategy	Funding (July 2018 exchange rates)
Australia	May 2018	Australian Technology and Science Growth Plan	$21.6M
Canada	March 2017	Pan-Canadian Artificial Intelligence Strategy	$95M
Singapore	May 2017	AI Singapore	$91.5M over 5 years
Denmark	January 2018	Strategy for Denmark's	$19.5M annually until 2025
Taiwan	January 2018	Taiwan AI Action Plan	$1.18B over 4 years
France	March 2018	France's Strategy for AI	$1.75B over 5 years
EU Commission	April 2018	Communication Artificial Intelligence for Europe	Increase to $1.75B by 2021
United Kingdom	April 2018	Industrial Strategy: Artificial Intelligence Sector Deal	$1.24B
South Korea	May 2018	Artificial Intelligence R&D Strategy	$1.95B
USA	October 2019	Artificial Intelligence Institutes	$124M

4) **Mission Fit and Disciplinary Trends:** Description of the program's fit with the institutional mission and nationally accepted trends in the discipline (explain in narrative form). If the program is outside the scope of the institutional mission and sector, provide the compelling rationale for submission.

The Ph.D. in Artificial Intelligence will fit the mission of the University of Georgia as it provides the necessary expertise of graduates in the high demand area of AI. One of the missions of UGA is its commitment to excellence in public service, economic development, and technical assistance activities designed to address the strategic needs of the state of Georgia. This Ph.D. program will go along with this mission of UGA by providing a well-trained workforce in artificial intelligence.

This Ph.D. program will support the mission of the UGA Institute for Artificial Intelligence, which is housed in the Franklin College of Arts and Sciences, to advance research with implications for economic vitality. It also enhances the mission of the UGA Institute for Cyber Security and Privacy, Institute of Bioinformatics and the Georgia Informatics Institute (GII) for Research and Education that were designed to enhance the university's ability to prepare students for careers involving Artificial Intelligence that are of critical importance to the state and nation.

5) **Description and Objectives:** Program description and objectives (explain in narrative form).

The Institute for Artificial Intelligence (IAI) is proposing a new graduate Ph.D. program in Artificial Intelligence. The program aims to develop Ph.D.-level, research-based expertise in various aspects of artificial intelligence, such as machine learning, data science, machine vision, robotics, logic, cognitive modeling, natural language processing, AI ethics and policy, computational intelligence and applications of these concepts to real-world problems. The need for expertise in the broad field of artificial intelligence has grown tremendously in recent years. The job market for Bachelor's- and Masters-level jobs in AI has expanded rapidly in recent years, with no signs of slowing. The natural

[1] https://www.cifar.ca/docs/default-source/ai-society/buildinganaiworld_eng.pdf

next step for the field is the Ph.D. degree in Artificial Intelligence, to enhance research in the area; promote coordination between academia, business and government; contribute to supervisory functions; and train the next generation of AI workers. The proposed program is intended to help provide a well-trained workforce to meet the increasing demand for artificial intelligence experts in the modern economy.

6) Need: Description of the justification of need for the program. (Explain in narrative form why the program is required to expand academic offerings at the institution, the data to provide graduates for the workforce, and/or the data in response to specific agency and/or corporation requests in the local or regional area, and/or needs of regional employers.) (A list of resources, not exhaustive, is available on the public web link along with the proposal form at: http://www.usg.edu/academic_programs/new_programs)

It is widely acknowledged that artificial intelligence will become an increasingly important field, and skilled workers with training in artificial intelligence techniques will be needed (given investments by both public and private sector entities, there can be little debate of this). However, because the field is interdisciplinary and very rapidly evolving, it is difficult to precisely gauge its occupational outlook (there is not a specific category for artificial intelligence researcher, for instance). In Georgia, based upon a July 2020 data set provided by the Georgia Labor Bureau, computer and information research scientists are expected to see 12.3% growth over the years 2018 to 2028.[2] Applications software developers are expected to see 26.2% growth, and statisticians are expected to see 39.3% growth. Computer Occupations not listed under any more specific category are expected to see 14.4% growth. All of these are above the average of 11.1% growth for all occupations. These are all occupations related to artificial intelligence, and an individual with AI training could fill positions in each.[3] Using 2019 occupational wages for the state of Georgia, the current mean salaries for these positions range from approximately $86,000 to over $100,000.[4]

At the national level, these occupations are also expected to see growth. E.g., computer and information research scientists are expected to see 15% growth from 2019 to 2029. The 2019 median salary for computer and information research scientists was $122,840. Entry level positions typically required a master's degree.

Current, future, and potential students majoring in Computer Science, as well as related Mathematical and Engineering disciplines, would benefit from the proposed program as new courses will be designed and existing courses will be restructured to include material that will support the program. Faculty and students at UGA are enthusiastic about the possibility, and the exploding workforce in AI can surely benefit from having the first available US-trained Ph.D.-level workers in the field.

The design of this Ph.D. degree and its curriculum was informed by many factors including feedback from the M.S. in AI and Ph.D. in Computer Science alumni, many of which are employed in local and national companies, as well as prominent AI academics. A significant percentage of the M.S. in AI graduates find jobs in companies that employ alumni and some alumni regularly recruit UGA graduates, including for example ManChon U, Vice President of Engineering, Data & AI with American Express. ManChon has visited UGA recently and gave students considerable advice and perspective regarding the current industrial demands and curricular expectations.

[2] https://explorer.gdol.ga.gov/gsipub/index.asp?docid=389

[3] Recent MSAI graduates are given titles that seem to bridge these fields and AI: "AI Software Engineer", "Software Engineer, Site Reliability, Cloud AI", "Data Scientist", "Machine Learning Engineer".

[4] https://explorer.gdol.ga.gov/gsipub/index.asp?docid=390

7) **Demand:** Please describe the demand for the proposed program. Include in this description the supporting data from 1) existing and potential students and 2) requests from regional industries. How does the program of study meet student needs and employer requirements in terms of career readiness and employability, requirements to enter the profession, postgraduate study, and disciplinary rigor at the level required for professional success and advanced educational pursuits? (In other words, how does the program of study prepare students for the next step?)

All AI-related courses at UGA have recently experienced increasing enrollments. Over the past two semesters, a formal survey was conducted in upper-level undergraduate and graduate level AI-related courses to determine interest in a Ph.D. in an AI program. The students were asked "If a Ph.D. degree in Artificial Intelligence will be available in the Institute for Artificial Intelligence at UGA next year, please indicate your level of interest in pursuing such degree. Please circle only one choice."

0: No interest
1: Not sure
2: Would consider
3: Will probably pursue
4: Will definitely pursue

Any student who took the survey in another course was asked not to take it again to ensure uniqueness of responses. Of the 250 students responding, 170 indicated interest in pursuing the proposed Ph.D. in AI degree. More specifically, 19 students selected "4: Will definitely pursue", 46 selected "3: Will probably pursue" and 105 selected "2: Would consider". Therefore, a strong demand for the proposed degree is expected.

The proposed doctoral program has the support of the AI Institute's faculty fellows as well as the support of cognate departments and other Institutes at the University of Georgia. The Master of Science in Artificial Intelligence has successfully existed at UGA for over 30 years. However, the short span of the master's degree (2 years) places a limit on what can effectively be done during the graduate student's time in the program. One of the arguments put forth by faculty fellows in support of the doctoral program is that the presence of doctoral students would foster continuity and growth of research projects, ultimately increasing the research productivity of the Institute, its faculty, and its students. The doctoral program would be a good use of resources and allow the Institute to better fulfill its mission.

8) **Duplication:** Description of how the program does not present duplication of existing academic offerings in the geographic area, within the system as a whole, and within the proposing institution regardless of academic unit. If similar programs exist, indicate why these existing programs are not sufficient to address need and demand in the state/institution's service region and how the proposed program is demonstrably different or complementary to other USG degrees and majors.

There is no Ph.D. program in Artificial Intelligence within UGA, the USG, or anywhere in the United States. The proposed program will supplement the existing M.S. program in Artificial Intelligence at UGA, where students will now have two options for advanced study in the field.

The department has gathered information on degree programs related to artificial intelligence at several dozen universities taken from the following groups:

- UGA comparator institutions as specified by the Board of Regents;
- UGA aspirational institutions as specified by the Board of Regents;
- Universities of the Southern Universities Group;
- Universities of the University System of Georgia.

The websites of each institution were explored, as were databases and other sources providing information on each institution. In particular, an online database (https://apps.usg.edu/ords/f?p=118:1) of degree programs for USG institutions was searched, as was a database of degree programs provided by the US Department of Education (http://nces.ed.gov/collegenavigator/). The detailed survey is included in Appendix B. Below is a brief summary of findings.

Comparator Institutions

Based on the review of university websites and catalogs, it appears that none of UGA's 15 comparator institutions offer an undergraduate or graduate degree specifically in AI. Artificial Intelligence is part of many degree programs, however. Where AI is studied, it is primarily done in a computer science or similar department (e.g., computer engineering).

Cognitive science is an interdisciplinary discipline closely related to AI, and it is possible that an interdisciplinary Ph.D. program in Artificial Intelligence could be structured similarly to a Cognitive Science Ph.D. program, though with more emphasis on computing, formal systems, and engineering. Several comparator institutions offer certificates, minors, and bachelor's degrees in cognitive science, and the University of Maryland offers a graduate degree in cognitive science.

Aspirational Institutions

All of UGA's nine aspirational institutions engage in research related to AI, and the majority have cognitive science programs. None, however, appear to have a stand-alone graduate degree in Artificial Intelligence.

Southern Universities Group

Of the SUG institutions, only UGA and Georgia Tech appear to offer stand-alone degree in AI or a subfield of it. UGA offers a master's degree in Artificial Intelligence, and Georgia Tech offers a Ph.D. in Machine Learning, and another Ph.D. in Robotics. Like the UGA degree, both of the Georgia Tech degrees are interdisciplinary with multiple participating schools or colleges within the university.

Many other SUG institutions perform AI research and offer related degrees. Several institutions also offer certificates, minors, undergraduate, and graduate degrees in cognitive science.

USG and US Department of Education Databases

The USG database indicates that UGA is the only USG institution offering a stand-alone degree in either AI or cognitive science. In general, it is difficult to find interdisciplinary Artificial Intelligence M.S. or Ph.D. programs similar to either UGA's existing master's degree or the proposed doctoral program anywhere in the country. In fact, the only other master's degree in artificial intelligence appears to be Northeastern University's program, which was founded in 2018.[1] In supporting documentation for their program, faculty at Northeastern indicate that only UGA and Carnegie Mellon have programs roughly similar to theirs.[5] In that documentation, CMU's master's degree in machine learning is specifically mentioned.

The Department of Education database lists the following institutions as offering PhDs in artificial intelligence this is based on the CIP code for AI.

- Carnegie Mellon University
- University of Pittsburgh-Pittsburgh Campus
- Georgia Institute of Technology

https://faculty.northeastern.edu/app/uploads/sites/2/2018/04/MSAI_4_11.pdf

It is unclear which degree program at these universities the CIP code refers to, but CMU and Georgia Tech offer Ph.D.s in both Machine Learning and Robotics, while the University of Pittsburgh Intelligent Systems Program offers both a master's and Ph.D.. The Ph.D. offered by the Intelligent Systems Program is arguably the closest to the program proposed here, but it nevertheless appears more focused on computer science, statistics, and bioinformatics, while the program proposed here, is more interdisciplinary. The same is true when comparing the proposed program to the programs at Georgia Tech. These are dedicated to specific subdisciplines of AI (machine learning and robotics), with courses taken from computer science, mathematics, and engineering. The program proposed here instead would encompass artificial intelligence more broadly and would permit students to incorporate ethics, philosophy, linguistics, and psychology formally in their research and coursework. At the same time, courses essential to, e.g., robotics (such as mechanics) would not be required in the proposed program.

More information on these degree programs is presented in Appendix B.

This proposed major reflects the interdisciplinary nature of AI. Some content, indeed whole classes, will be the same as are required or optional in degree programs such as Computer Science, Philosophy, Psychology, and others. However, the burgeoning of AI nationally and globally demonstrates the added value of an interdisciplinary approach, to supplement the discipline-specific contributions made in these other programs.

9) Collaboration: Is the program in collaboration with another USG Institution, TCSG institution, private college or university, or other entity?

Yes ___ or No __X__ (place an X beside one)

If yes, list the institution below and include a letter of support from the collaborating institution's leadership (i.e., President or Vice President for Academic Affairs) for the proposed academic program in the appendix.

N/A

10) Admission Criteria: List the admission criteria for the academic program, including standardized test and grade point average requirements for admission into the program. Also, at what point (e.g., credit hours completed) are students admitted to the program.

Admissions requirements will align with the current admissions standards set by the Graduate School and the Franklin College of Arts and Sciences. Completed applications will include the UGA graduate application, Bachelor's degree from a regionally accredited institution in Computer Science or a related discipline, three letters of recommendation, statement of purpose, a minimum 3.0 GPA, and a GRE test score. Applicants will need to meet all Graduate School requirements.

Students with insufficient mathematical or programming background may need to take undergraduate courses to remedy any deficiencies in addition to their graduate program. The graduate admissions committee will make any such requirements/recommendations at the time of admission and the student will be informed at that time.

11) Curriculum (See the form below this series of questions and please complete.)

a) Specify whether the proposed program requires full-time study only, part-time study only, or can be completed either full time or part time.

The program can be completed with either full-time or part-time study.

b) If the proposed program will be offered online, describe measures taken by the academic unit to sufficiently deliver the program via distance education technologies and provide instructional and learning supports for both faculty and students in a virtual environment. Will the program be offered in an asynchronous or synchronous format?

The program will not be offered online.

c) List the entire course of study required to complete the academic program. Include the course prefixes, course numbers, course titles, and credit hour requirement for each course. Indicate the word "new" beside new courses. Include a program of study.

Artificial Intelligence (Ph.D.) Course and Dissertation Requirements:

Course Requirements

Students must complete a minimum of 40 hours of graduate course work and minimum of 6 hours of dissertation credit (ARTI 9300, Doctoral Dissertation*). Of the 40 hours of course work, at least 20 hours must be 8000-level or 9000-level courses.

The following courses must be completed unless specifically waived for students entering the program with a master's degree in Artificial Intelligence or a related field, or for students with substantially related graduate course work. All waived credits may be replaced by an equal number of doctoral research or doctoral dissertation credits (ARTI 9000, Doctoral Research* or ART 9300, Doctoral Dissertation*):

- ARTI(PHIL) 6340, Ethics and Artificial Intelligence (3 hours) (NEW)
- ARTI 6950, Faculty Research Seminar (1 hour)
- CSCI 6380, Data Mining (4 hours)
- CSCI(PHIL) 6550, Artificial Intelligence (3 hours)
- PHIL(LING) 6510, Deductive Systems (3 hours)

*New course

Elective Courses

In addition to the required courses above, at least two courses must be taken from Group A and two from Group B below. The courses in each group should come from at least two areas. The student must also decide on an area of emphasis and take at least three courses from that area. No course can satisfy more than one area.

GROUP A:

AREA 1: Artificial Intelligence Methodologies

- CSCI 6560, Evolutionary Computation and Its Applications (4 hours)
- CSCI 8050, Knowledge-Based Systems (4 hours)
- CSCI(PHIL) 8650, Logic and Logic Programming (4 hours)
- CSCI 8920, Decision Making Under Uncertainty (4 hours)

- CSCI(ENGR) 8940, Computational Intelligence (4 hours)
- CSCI(ARTI) 8950, Machine Learning (4 hours)

AREA 2: Machine Learning and Data Science

- CSCI 6360, Data Science II (4 hours)
- CSCI 8360, Data Science Practicum (4 hours)
- CSCI 8945, Advanced Representation Learning (4 hours)
- CSCI(ARTI) 8950, Machine Learning (4 hours)
- CSCI 8955, Advanced Data Analytics: Statistical Learning and Optimization (4 hours)
- CSCI 8960, Privacy-Preserving Data Analysis (4 hours)

AREA 3: Machine Vision and Robotics

- CSCI(ARTI) 6530, Introduction to Robotics (4 hours)
- CSCI 6800, Human-Computer Interaction (4 hours)
- CSCI 6850, Biomedical Image Analysis (4 hours)
- CSCI 8850, Advanced Biomedical Image Analysis (4 hours)
- CSCI 8820, Computer Vision and Pattern Recognition (4 hours)
- CSCI 8530, Advanced Topics in Robotics (4 hours)
- CSCI 8535, Multi-Robot Systems (4 hours)

GROUP B:

AREA 4: Cognitive Modeling and Logic

- LING 8150, Generative Syntax (3 hours)
- PHIL(LING) 6300, Philosophy of Language (3 hours)
- PHIL 6310, Philosophy of Mind (3 hours)
- PHIL(LING) 6520, Model Theory (3 hours)
- PHIL 8310, Seminar in Philosophy of Mind (max of 3 hours)
- PHIL 8500, Seminar in Problems of Logic (max of 3 hours)
- PHIL 8600, Seminar in Metaphysics (max of 3 hours)
- PHIL 8610, Seminar in Epistemology (max of 3 hours)
- PSYC 6100, Cognitive Psychology (3 hours)
- PSYC 8240, Judgment and Decision-Making (3 hours)

AREA 5: Linguistics and Natural Language Processing

- ENGL(LING) 6885, Introduction to Humanities Computing (3 hours)
- LING 6021, Phonetics and Phonology (3 hours)
- LING (ENGL) 6080, Language Variation and the Linguistics of Speech (3 hours)
  course name change in progress to Language and Complex Systems
- LING 6570, Applied Natural Language Processing (3 hours)
  course name change in progress to Natural Language Processing
- LING 8150, Generative Syntax (3 hours)
- LING 8580, Seminar in Computational Linguistics (3 hours)
- PHIL(LING) 6300, Philosophy of Language (3 hours)

AREA 6: Artificial Intelligence Applications

- ELEE 6280, Introduction to Robotics Engineering (3 hours)
- ENGL 6826, Style: Language, Genre, Cognition (3 hours)
- ENGL(LING) 6885, Introduction to Humanities Computing (3 hours)
- FORS 8450, Advanced Forest Planning (3 hours)
- INFO 8000, Foundations of Informatics for Research and Practice (3 hours)
- MIST 7770, Business Intelligence and Analytics (3 hours)

Note: Since not all courses have the same number of credit hours, Ph.D. students may need to take additional graduate courses to complete the 40 hours. Other courses may be substituted for those on the Electives lists, provided the subject matter of the course is sufficiently related to artificial intelligence and consistent with the educational objectives of the Ph.D. degree program. Substitutions can be made only with the permission of the student's Advisory Committee and the Graduate Coordinator.

Alternates

Students may, under certain very rare special circumstances, use up to 6 hours from the following list to apply towards the Electives group requirement. Permission of the Advisory Committee, Graduate Coordinator, and Course Instructor is required.

- ARTI 8000, Topics in Artificial Intelligence (3 hours; repeatable up to 17 hours)
- ARTI 8800, Directed Readings in Artificial Intelligence (1-5 hours; repeatable up to 17 hours)

Sample Program of Study

	Course Number	**Course Title**	**Hours**
First Year Fall	**PHIL(LING) 6510** **CSCI 6380** **CSCI(PHIL) 6550** **ARTI 6950**	Deductive Systems Data Mining Artificial Intelligence Faculty Research Seminar	3 4 3 1
First Year Spring	**CSCI(ARTI) 8950** **CSCI 8360** **CSCI 8960**	Machine Learning Data Science Practicum Privacy-Preserving Data Analysis	4 4 4
Second Year Fall	**CSCI(ARTI) 6530** **LING 6021**	Introduction to Robotics Phonetics and Phonology	4 3
Second Year Spring	**ARTI(PHIL) 6340**	Ethics and Artificial Intelligence	3
Third Year Fall	**FORS 8450**	Advanced Forest Planning	3
Third Year Spring	**CSCI 8530**	Advanced topics in Robotics	4
Fourth Year Fall	**ARTI 9300**	Doctoral Dissertation	3
Fourth Year Spring	**ARTI 9300**	Doctoral Dissertation	3

d) State the total number of credit hours required to complete the program, but do not include orientation, freshman year experience, physical education, or health and wellness courses that are institutional requirements as defined in the Academic and Student Affairs Handbook, Section 2.3.1 and the Board Policy Manual, 3.8.1.

This program requires a minimum of 46 credit hours.

e) Within the appendix, append the course catalog descriptions for new courses and their prerequisite courses. Include the course prefixes, course numbers, course titles, and credit hour requirements.

See Appendix A

f) If this is an undergraduate program, how does or would the department/institution use eCore, eMajor, or dual enrollment?

N/A

g) If this is a doctoral program, provide the names of four external reviewers of aspirational or comparative peer programs complete with name, title, institution, e-mail address, telephone number, and full mailing address. External reviewers must hold the rank of associate professor or higher in addition to other administrative titles. Within the appendix, append the course catalog descriptions for new courses. Include the course prefixes, course numbers, course titles, and credit hour requirements.

1- Eunice E. Santos (U Illinois)
Professor and Dean
School of Information Sciences
University of Illinois at Urbana-Champaign
Email: eesantos@illinois.edu
Phone: (217) 333-3280
U.S. Mail:
501 E. Daniel St. (MC-493)
Champaign, IL 61820-6211

2- Richard M. Voyles (Purdue)
Professor and Director of the Robotics Accelerator
Purdue University
Email: rvoyles@purdue.edu
Phone: (765) 494-3733
U.S. Mail:
Purdue Polytechnic, Room 145
401 N. Grant Street
West Lafayette, IN 47907-2021

3- Munindar Singh (NCSU)
Professor
Department of Computer Science
North Carolina State University
Email: singh@ncsu.edu
Phone: (919) 515-5677
U.S. Mail:
Engineering Building 2, Room 3320

890 Oval Drive
Raleigh, NC 27606

4- Edmund Durfee (U Michigan)
Professor
Computer Science and Engineering and School of Information
University of Michigan
Email: durfee@umich.edu
Phone: (734) 936-1563
U.S. Mail:
2260 Hayward Street
Ann Arbor MI 48109-2121

12) PROGRAM OF STUDY-UNDERGRADUATE ONLY

N/A

13) PROGRAM OF STUDY- GRADUATE ONLY

See Curriculum Section above.

14) Alternative Curricular Pathway: What alternative curricular pathways exist (for example for students who were not admitted to the major but are still in satisfactory standing at the institutional level)? Please describe them below and describe how these students are advised about the alternative(s).

N/A

15) Prior Learning Assessment: Does the program include credit for prior learning assessment? How will credit be assessed and for what specific courses in the curriculum inclusive of prerequisites? If this is not applicable, indicate "NA" in this section.

N/A

16) Open Educational Resources: Does the program include open educational resources that have been assessed for quality and permissions, can be connected with related curricular resources, and are mapped to learning outcomes? If this is not applicable, indicate "NA" in this section.

N/A

17) Waiver to Degree-Credit Hour (if applicable):

- All bachelor's degree programs require 120-semester credit hours.
- Master's level programs have a maximum of 36-semester hours. Semester credit-hours for the program of study that are above these requirements require a waiver to degree credit hour request with this proposal.
- State whether semester credit-hours exceed maximum limits for the academic program and provide a rationale.
- This is not applicable for specialist in education and doctoral programs.

N/A

18) Student Learning Outcomes: Student Learning outcomes and other associated outcomes of the proposed program (provide a narrative explanation).

Students in this program should acquire a deep understanding of the various sub-areas of Artificial Intelligence and their applications in contemporary domains of science and engineering. The students should also be able to address current and future challenges to the proliferation of AI technologies in daily life and their effect on society.

19) Assessment: Describe institutional programmatic assessments that will be completed to ensure academic quality, viability, and productivity.

Ensuring Academic Quality: For every related course offered, the learning outcome is evaluated based on both student performance in projects and exams as well as feedback collected from students through anonymous survey.

Quality review: All graduate programs are administered by the Graduate Coordinator of the Institute for Artificial Intelligence. The coordinator, in conjunction with the Institute Director, will be responsible for coordinating course offerings, maintaining student records, promoting activities, seeking student funding opportunities, and consulting with the Institute's graduate admissions and curriculum committees regarding courses in the degree program. All doctoral students in the program must enroll for at least 6 research credit hours under the direction of a major professor and have a dissertation committee consisting of at least three graduate faculty members with at least two of the members from the Artificial Intelligence Graduate Program faculty fellows.

All academic programs are reviewed annually to assess the program outcomes and student learning outcomes. Students completing the Ph.D. in AI are required to take the all the major courses that will encompass the student learning outcomes for the program.

In addition, the new degree will be assessed as part of the UGA comprehensive program review carried out every seven years.

20) Accreditation: Describe disciplinary accreditation requirements associated with the program (if applicable, otherwise indicate NA).

N/A

21) SACSCOC Institutional Accreditation: Is program implementation contingent upon SACSCOC action (e.g., substantive change, programmatic level change, etc.)? Please indicate Yes or No.

No

ENROLLMENT SECTION *(Consult with Enrollment Management)*

22) Recruitment and Marketing Plan: What is the institution's recruitment and marketing plan? What is the proposed program's start-up timeline.

The Institute for AI will utilize a number of venues for recruitment and marketing of the proposed program by including it on the department's website, mailing and emailing a brochure/newsletter to potential feeder programs nationwide, and organizing/participating in local recruitment events. This proposed program will begin in fall 2021 or as soon as USG approval is secured.

23) Enrollment Projections: Provide projected enrollments for the program specifically during the initial years of implementation.

a) Will enrollments be cohort-based? Yes____ or No___X__ (place an X beside one)
b) Explain the rationale used to determine enrollment projections.

Using data from Fall 2019, the number of undergraduate students in the Cognitive Science (B.S.) major at UGA is more than 195, and the number of students enrolled in the Artificial Intelligence (M.S.) program is more than 40. A significant number of students who matriculate into the MSAI program are students in either the BS Computer Science + MSAI or AB Cognitive Science + MSAI dual degree programs. Over, 2018-2020, approximately 15 students per year are admitted into the pathway for these dual degree programs. A smaller number are admitted into and begin the graduate degree component.

Our conservative enrollment projection assumes that in year 1, 5 of the existing M.S. in AI students will shift into the new program and 15 new students will enter the new program. We conservatively estimate new enrollments to increase in year 2 and beyond.

	First FY	Second FY	Third FY	Fourth FY
I. ENROLLMENT PROJECTIONS				
Student Majors				
Shifted from other programs	3	2	1	0
New to the institution	4	5	6	7
Total Majors	7	14	21	28

24) Faculty

a) Provide the total number of faculty members that will support this program: __34__

b) Submit your SACSCOC roster for the proposed degree. Annotate in parentheses the person who will have administrative responsibility for the program. Indicate whether any positions listed are projected new hires and currently vacant.

Faculty Name	**Rank**	**Courses Taught (including term, course number & title, credit hours (D, UN, UT, G)**	**Academic Degrees & Coursework (relevant to courses taught, including institution & major; list specific graduate coursework, if needed)**	**Current Workload**	**Other Qualifications & Comments (related to courses taught)**
Khaled Rasheed	Professor and Director	**Fall 2020** CSCI 4560/6560, Evolutionary Computing, 4.0 (UT/G) **Spring 2019** CSCI 8950, Machine Learning, 4.0 (G)	Ph.D. Computer Science, Rutgers University M.S. Computer Science, Rutgers University B.S. Computer Science, Alexandria University, Egypt	5 credit hours/sem.	Ph.D. dissertation: "GADO: A Genetic Algorithm for Continuous Design Optimization"
Adam Goodie	Professor and Graduate Coordinator	**Spring 2017** PSYC 8240 Judgment and Decision Making, 3 (G)	Ph.D., Psychology, University of California – San Diego M.S., Psychology, University of California – San Diego A.B., Psychology, Washington University in St. Louis	6 credit hours/sem.	Ph.D. dissertation: "Base-rate neglect under direct experience"
Frederick Maier	Assistant Research Scientist and Associate Director	**Fall 2020** CSCI 4380/6380 Data Mining 4.0 (UT/G) **Fall 2018** CSCI/PHIL 4550/6550 Artificial Intelligence 3.0 (UT/G)	Ph.D., Computer Science, University of Georgia M.S., Artificial Intelligence, University of Georgia M.A., Philosophy, Tulane University B.A., Philosophy, Spring Hill College	3 credit hours/sem.	Ph.D. dissertation: "A Study of Defeasible Logics"

Jason Anastasopoulos	Assistant Professor	**Fall 2019** POLS 8500 Modern Text Analysis with Machine Learning 3.0 **Spring 2019** PADP 9200 Big Data and Machine Learning in Public Administration and Policy 3.0	University of California, Berkeley, Ph.D., Political Science, 2014 Harvard University, AM, Statistics, 2005. Cornell University, B.S., Industrial and Labor Relations, 2003		Ph.D. dissertation: "Essays in the politics of diversity in modern America: A causal inference approach"
O. Bradley Bassler	Associate Professor	**Spring 2019,** PHIL 4300/6300, Philosophy of Language, 3.0 (UT/G) **Spring 2019** PHIL/LING 4520/6520, Model Theory, 3.0 (UT/G)	Ph.D. Mathematics and Computer Science, Wesleyan University Ph.D. Committee on Social Thought, University of Chicago B.A. Mathematics and Philosophy, Rice University	6 credit hours/sem.	Ph. D. Thesis, Wesleyan: "d-bar Topological Entropy and Pressure for Amenable Group Actions" Ph.D. Thesis, Chicago: "labyrinthus de compositione continui: The origins of Leibniz' solution to the continuum problem 1666-1672"
Pete Bettinger	Professor	**Fall 2018** FORS 8450 Advanced Forest Planning (3.0) (G)	Ph.D. Forest Resources, Oregon State University M.S. Forest Management and Economics, Virginia Tech B.S. Forestry, Virginia Tech	5 credit hours/sem.	PhD. thesis: "Spatial analysis techniques for ensuring the compatibility of land management activities and aquatic habitat quality in eastern Oregon"
Suchendra Bhandarkar	Professor	**Fall 2018** CSCI 8820, Computer Vision, 4.0 (G)	Ph.D. Computer Engineering, Syracuse University M.S. Computer Engineering, Syracuse University	5 credit hours/sem.	Ph.D. dissertation: "3-D Object Recognition from Qualitative Surface Descriptions"

			B. Tech. Electrical Engineering Indian Institute of Technology, India		
Prashant Doshi	Professor	**Spring 2019** CSCI 8920, Decision Making, 4.0 (G) **Fall 2018** CSCI 4530/6530, Introduction to Robotics, 4.0 (UT/G)	Ph.D., University of Illinois M.S., Drexel University B.E., University of Mumbai, India	5 credit hours/sem.	Ph.D. dissertation: "Optimal Sequential Planning in Partially Observable Multiagent Settings"
Yi Hong	Assistant Professor	**Fall 2018** CSCI 8955, Advanced Data Analytics: Statistical Learning and Optimization, 4.0 (G)	Ph.D. Computer Science, University of North Carolina at Chapel Hill M.S. Computer Science, University of North Carolina at Chapel Hill M.S. Computer Science, Institute of Computing Technology, Chinese Academy of Sciences B.S. Computer Science, Wuhan University, China	5 credit hours/sem.	Ph.D. dissertation: "Image and Shape Analysis for Spatiotemporal Data"
Jaewoo Lee	Assistant Professor	**Spring 2019** CSCI 8960, Privacy Preserving Data Analysis, 4.0 (G)	Ph.D. Computer Science, Purdue University M.S. Computer Science, Yonsei University, South Korea	5 credit hours/sem.	Ph.D. dissertation: "Achieving Practical Differential Privacy"
Sheng Li	Assistant Professor	**Spring 2020**	Ph.D. Computer Engineering,	5 credit hours/sem.	Ph.D. dissertation: "

		CSCI 8950, Machine Learning, 4.0 (G)	Northeastern University M.Eng. Information Security, Nanjing University of Posts and Telecommunications B.Eng. Computer Science & Engineering, Nanjing University of Posts and Telecommunications		Robust Data Representations for Visual Learning"
Tianming Liu	Distinguished Research Professor	**Fall 2018** CSCI 4850/6850, Biomedical Image Analysis, 4.0 (UT/G) **Fall 2020** CSCI 8850, Advanced Biomedical Image Analysis, 4.0 (G)	Ph.D. Computer Science, Shanghai Jiaotong University, China M.S. Automation, Northwestern Polytechnical University, China B.S., Automation, Northwestern Polytechnical University, China	5 credit hours/sem.	Ph.D. dissertation: "On Adaptive Rate Control for Video Streaming"
John A. Miller	Professor	**Spring 2019** Data Science II, 4.0	PhD., Georgia Institute of Technology		
Ramviyas Parasuraman	Assistant Professor	**Spring 2019** CSCI 8535 Multi-Robot Systems, 4.0 (G)	Ph.D., Robotics & Automation, Technical University of Madrid M.Tech, Instrument Technology, Indian Institute of Technology Delhi B.E., Electronics and Instrumentation, Anna University, Madurai, India		Ph.D. dissertation: "Wireless Communication Enhancement Methods for Mobile Robots in Radiation Environments"
Shannon Quinn	Assistant Professor	**Spring 2019**	Ph.D. Computational	5 credit hours/sem.	Ph.D. dissertation: "Distributed

		CSCI 8360 Data Science Practicum, 4.0 (G) **Fall 2017** CSCI 4360/6360, Data Science II, 4.0 (UT/G)	Biology, University of Pittsburgh M.S. Computational Biology, Carnegie Mellon University B.S. Computer Science, Georgia Institute of Technology		Spectral Graph Methods for Analyzing Large-Scale Unstructured Biomedical Data"
Kimberly Van Orman	Lecturer	**Fall 2020** CSCI/PHIL 4550/6550 Artificial Intelligence 3.0 (UT/G) **Fall 2020,** PHIL 4310/6310, Philosophy of Mind, 3.0 (UT/G) **Fall 2020,** ARTI 6950 Faculty Research Seminar, 1.0 (G)	Ph.D. University at Albany	12 credit hours/sem.	Ph.D. dissertation: "Toward Explaining the Gap: How a Particular View of Explanation Underwrites the Explanatory Gap"
Sarah Wright	Associate Professor	**Fall 2018** PHIL 8610 Seminar in Epistemology, 3.0 (G)	Ph.D. in Philosophy, University of Arizona M.A. in Philosophy, Brown University B.A. Philosophy, University of Colorado at Boulder		Ph.D. Thesis: "Virtue Epistemology: Its Proper Form and Its Applications"

With the exception of lecturers, each of the above AI Faculty Fellows, as well as those listed below, may also advise students in the doctoral program and serve as instructor of record for ARTI 9000, Doctoral Research and ART 9300, Doctoral Dissertation.

Faculty Name	**Rank**	**Academic Degrees & Coursework**	**Other Qualifications & Comments**
Ismailcem Budak Arpinar	Associate Professor	Ph.D. Computer Science, Middle East Technical University M.Sc. Computer Science, Middle East Technical University	Ph.D. thesis: "Formalization of Workflows and Correctness Issues in Presence of Concurrency"

		B.Sc. Computer Science, Middle East Technical University	
Chris Cieszewski	Professor	Ph.D., University of Alberta M.Sc., U.B.C. Vancouver For. Eng., M.F., Warsaw Agriculture Academy	Ph.D. dissertation: "Development of a Variable Density Height-Growth Model Through Defining Multidimensional Height Growth Spaces"
Mark Ebell	Professor	MD, University of Michigan MS, Clinical Research Design, University of Michigan Family Medicine Residency, University of Michigan BA, Biology, Kalamazoo College	
Jennifer Gay	Associate Professor	PhD, Health Promotion, Education and Behavior, University of South Carolina Arnold School of Public Health MS, Sport and Leisure Services, University of Nevada Las Vegas BA, English, University of South Carolina	PhD Dissertation: "Testing self-determination theory and the roles of the social and physical environments in an adult beginning exerciser population"
John Gibbs	Associate Professor	Ph.D., Ohio State University	PhD Dissertation: "No-thing is more real than nothing: Zen/Chaos Theory in the Dramatic Art of Samuel Beckett. Computer graphics and Illustrations by the author"
John Hale	Professor	Ph.D., Cognitive Science Johns Hopkins University ScB, Cognitive Science, Brown University	Ph.D. dissertation: ""Grammar, Uncertainty and Sentence Processing"
Elena Karahanna	Professor	PhD, MIS, University of Minnesota MBA, Business Administration, Lehigh University BS, Computer Science, Lehigh University	

In Kee Kim	Assistant Professor	Ph.D., Computer Science, University of Virginia, Charlottesville M.S. Computer Science, Inha University, South Korea B.S. Computer Science & Engineering, Inha University, South Korea	Ph.D. dissertation: "Proactive Resource Provisioning to Ensure Predictable End-to-End Performance for Cloud Applications"
Bill Kretzschmar	Professor	Ph.D., University of Chicago	Ph.D. dissertation: " The Literary-Historical Context of Henryson's Fabillis"
Changying Li	Professor	PhD, Pennsylvania State University	
Ping Ma	Professor	Ph.D., Statistics, Purdue University M.S. Statistics, Purdue University B.S., Economical Mathematics, Nankai University	
Aaron Meskin	Department Head, Philosophy	Ph.D., Rutgers University	Ph.D. dissertation: “Relevance and the Philosophy of Art”
Neal Outland	Assistant Professor	Ph.D. Industrial/Organizational Psychology, DePaul University M.A. Industrial/Organizational Psychology, DePaul University B. Sc. Psychology, Loyola University New Orleans	Ph.D. Dissertation: “Getting on the Same Page: How Personality Impacts Diffusion of Knowledge, Mental Model Similarity, and Mental Model Accuracy in Teams”
Roberto Perdisci	Associate Professor	Ph.D. Computer Engineering, University of Cagliari, Italy M.S. Electronic Engineering, University of Cagliari, Italy	Ph.D. thesis: “Statistical Pattern Recognition Techniques for Intrusion Detection in Computer Networks, Challenges and Solutions”
Lakshmish Ramaswamy	Professor	Ph.D. Computer Science, Georgia Institute of Technology M.S. Computer Science and Automation, Indian Institute of Science, India B.E. Computer Science and Engineering, University of Mysore, India	Ph.D. thesis: “Towards Efficient Delivery of Dynamic Web Content”

Margaret Renwick	Associate Professor	Ph.D., Linguistics Cornell University M.A., Linguistics Cornell University B.A., Wellesley College Cognitive & Linguistic Sciences; Italian Studies	Ph.D. dissertation: "Vowels of Romanian: Historical, Phonological and Phonetic Studies"
Javad Mohammadpour Velni	Associate Professor	Ph.D. in Mechanical Engineering, University of Houston, TX M.Sc. in Electrical Engineering, University of Tehran, Iran B.Sc. in Electrical Engineering, Sharif University of Technology, Tehran, Iran	

c) Does the institution require additional faculty to establish and implement the program? Yes or No. ____<u>_No</u>__. Please indicate your answer in the space provided

Additional faculty are not required.

25) Fiscal, Tuition, and Estimated Budget

a) Describe the resources that will be used specifically for the program.

All resources needed for the program are pre-existing except for the two new courses, ARTI 9000, Doctoral Research, and ARTI 9300, Doctoral Dissertation. These new courses will be covered through the reallocation of some of the efforts of the existing faculty.

b) Does the program require a tuition cost structure different from or above a regular tuition designation for the degree level? Yes _____ or No ___X____ (place an X beside one)

c) Does the program require a special fee for the proposed program? Yes ____ or No__X___ (place an X beside one)

d) If the program requires a different tuition cost structure or special fee, such requests require approval through both the Committee on Academic Affairs (for the academic program) and the Committee on Fiscal Affairs (for the tuition increase or special fee designation). The resultant tuition and/or fee request for a new degree is to be submitted to both the academic affairs and fiscal affairs offices. Complete Appendix

III that includes information for a differential tuition cost structure involving a proposal for a new academic program.

N/A

e) Note: The web link for approved tuition and fees for USG institutions is located at the following url: http://www.usg.edu/fiscal_affairs/tuition_and_fees

f) Budget Instructions: Complete the form further below and **provide a narrative to address each of the following**:

g) For Expenditures:

i. Provide a description of institutional resources that will be required for the program (e.g., personnel, library, equipment, laboratories, supplies, and capital expenditures at program start-up and recurring).

- All faculty resources needed for the program are pre-existing. There are currently 17 AI faculty fellows who will support the teaching component of the new program. Those faculty will be teaching the core and elective courses. In addition, 17 other faculty fellows will support the research and dissertation components and serve as instructors of record for the ARTI 9000 and ARTI 9300 courses. No new staff are needed.
- Personnel expenditures for each fiscal year are calculated using average per course instructional cost associated with offering graduate level required courses offered that year. In these calculations, the average instructional cost for each course is taken to be $15,000. The average instructional cost is calculated using the average faculty salary multiplied by the average instructional EFT and divided by the average course load.
- For each year, the expenditure is determined based on offering three required courses (PHIL/LING 6510, CSCI 6380 and CSCI/PHIL 6550) in the fall and three elective courses in the spring. As the new Ph.D. students will never exceed 50% of the total enrollment, the cost is divided by two which yields $45,000 per year. In addition, starting in the third year the students are expected to start enrolling in the two new courses, ARTI 9000 and ARTI 9300. That will increase the expenditure by two more courses per year bringing the total to $75,000 per year.

ii. If the program involves reassigning existing faculty and/or staff, include the specific costs/expenses associated with reassigning faculty and staff to support the program (e.g., cost of part-time faculty to cover courses currently being taught by faculty being reassigned to the new program, or portion of full-time faculty workload and salary allocated to the program).

Neither faculty nor staff hiring would be necessary. The two new courses, ARTI 9000 and ARTI 9300, will be covered through the reallocation of some of the efforts of the existing faculty.

h) For Revenue:

i. If using existing funds, provide a specific and detailed plan indicating the following three items: source of existing funds being reallocated; how the existing resources will be reallocated to specific costs for the new program; and the impact the redirection will have on units that lose funding.

Existing faculty lines budgeted for instruction will be utilized to cover program instructional costs. Since the required courses are offered on yearly or semester basis, and only the class sizes are expected to expand, then no reallocation of existing resources is required.

ii. Explain how the new tuition amounts are calculated.

The tuition is calculated based on the 2020-2021 University of Georgia rate for doctoral students of $370/credit hour or a flat-rate of $4,439 for 12 or more credit hours.

iii. Explain the nature of any student fees listed (course fees, lab fees, program fees, etc.). Exclude student mandatory fees (i.e., activity, health, athletic, etc.).

No additional fees are to be charged.

iv. If revenues from Other Grants are included, please identify each grant and indicate if it has been awarded.

N/A

v. If Other Revenue is included, identify the source(s) of this revenue and the amount of each source.

N/A

i) Revenue Calculation: Provide the revenue calculation, in other words, the actual calculation used to determine the projected tuition revenue amounts for each fiscal year involving start-up and implementation of the proposed program.

	Fall	Spring	Total
Year One: 7 students	7 students x $4,439 = $31,073	7 students x $4,439 = $31,073	$62,146
Year Two: 14 students	14 students x $4,439 = $62,146	14 students x $4,439 = $62,146	$124,292
Year Three: 21 students	21 students x $4,439 = $93,219	21 students x $4,439 = $93,219	$186,438
Year Four: 28 students	28 students x $4,439 = $124,292	28 students x $4,439 = $124,292	$248,584

j) When Grand Total Revenue is not equal to Grand Total Costs:

i. Explain how the institution will make up the shortfall. If reallocated funds are the primary tools being used to cover deficits, what is the plan to reduce the need for the program to rely on these funds to sustain the program?

N/A.

ii. If the projected enrollment is not realized, provide an explanation for how the institution will cover the shortfall.

There will be no budget shortfall and there will be no additional cost to the University, as the existing courses will continue to be taught by the existing faculty members and the two new courses will be covered through the reallocation of some of the efforts of the existing faculty.

I. EXPENDITURES	First FY Dollars	Second FY Dollars	Third FY Dollars	Fourth FY Dollars
Personnel – reassigned or existing positions				
Faculty **(see 25.a.ii)**	$45,000	$45,000	$75,000	$75,000
Part-time Faculty **(see 25 a.ii)**				
Graduate Assistants **(see 25 a.ii)**				
Administrators **(see 25 a.ii)**				
Support Staff **(see 25 a.ii)**				
Fringe Benefits				
Other Personnel Costs				
Total Existing Personnel Costs	$45,000	$45,000	$75,000	$75,000

EXPENDITURES (Continued)				
Personnel – new positions (see 25 a.i)				
Faculty				
Part-time Faculty				
Graduate Assistants				
Administrators				
Support Staff				
Fringe Benefits				
Other personnel costs				
Total New Personnel Costs	$0	$0	$0	$0

Start-up Costs (one-time expenses) (see 25 a.i)				
Library/learning resources				
Equipment				
Other	$0	$0	$0	$0
Physical Facilities: construction or renovation (see section on Facilities)				
Total One-time Costs				
Operating Costs (recurring costs – base budget) (see 25 a.i)				
Supplies/Expenses				
Travel				
Equipment				
Library/learning resources				
Other				
Total Recurring Costs				
GRAND TOTAL COSTS				
III. REVENUE SOURCES				
Source of Funds				
Reallocation of existing funds **(see 25 b.i)**				
New student workload				
New Tuition **(see 25 b.ii)**	$62,146	$124,292	$186,438	$248,584
Federal funds				
Other grants **(see 25 b.iv)**				
Student fees **(see 25 b.iii)** Exclude mandatory fees				

(i.e., activity, health, athletic, etc.).				
Other **(see 25 b.v)**				
New state allocation requested for budget hearing				
GRAND TOTAL REVENUES	$62,146	$124,292	$186,438	$248,584
Nature of Revenues				
Recurring/Permanent Funds				
One-time funds				
Projected Surplus/Deficit (Grand Total Revenue – Grand Total Costs) (see 25 c.i. & c.ii).	$17,146	$79,292	$111,438	$173,584

26) Facilities/Space Utilization for New Academic Program Information

Facilities Information — Please Complete the table below.

			Total GSF
a.	**Indicate the floor area required for the program in gross square feet (gsf). When addressing space needs, please take into account the projected enrollment growth in the program over the next 10 years.**		2000
b.	**Indicate if the new program will require new space or use existing space. (Place an "x" beside the appropriate selection.)**		
	Type of Space		**Comments**
i.	Construction of new space is required (x).-→	N/A	
ii.	Existing space will require modification (x). →	N/A	
iii.	If new construction or renovation of existing space is anticipated, provide the justification for the need.		N/A
iv.	Are there any accreditation standards or guidelines that will impact facilities/space needs in the future? If so, please describe the projected impact.		No
v.	Will this program cause any impact on the campus infrastructure, such as parking, power, HVAC, other? If yes, indicate the nature of the impact, estimated cost, and source of funding.		No
vi.	Indicate whether existing space will be used.	X	Existing facilities will be sufficient
c.	**If new space is anticipated, provide information in the spaces below for each category listed:**		
i.	Provide the estimated construction cost.		
ii.	Provide the estimated total project budget cost.		
iii.	Specify the proposed funding source.		
iv.	What is the availability of funds?		
v.	When will the construction be completed and ready for occupancy? (Indicate semester and year).		
vi.	How will the construction be funded for the new space/facility?		
vii.	Indicate the status of the Project Concept Proposal submitted for consideration of project authorization to the Office of Facilities at the BOR. Has the project been authorized by the BOR or appropriate approving authority?		
d.	**If existing space will be used, provide information in the space below.**		
	Provide the building name(s) and floor(s) that will house or support the program. Indicate the campus, if this is part of a multi-campus institution and not physically located on the main		

	campus. Please do not simply list all possible space that could be used for the program. We are interested in the actual space that will be used for the program and its availability for use.			
	Boyd Graduate Studies building (home of the Institute for Artificial Intelligence) will house and support the program. Classroom spaces on south and north campus will be used for classes.			
e.	**List the specific type(s) and number of spaces that will be utilized (e.g. classrooms, labs, offices, etc.)**			
i.	**No. of Spaces**	**Type of Space**	**Number of Seats**	**Assignable Square Feet (ASF)**
	6	Classrooms	40 to 60	15,000
		Labs (dry)		
		Labs (wet)		
		Meeting/Seminar Rooms		
		Offices		
		Other (specify)		
Total Assignable Square Feet (ASF)				
ii.	If the program will be housed at a temporary location, please provide the information above for both the temporary space and the permanent space. Include a time frame for having the program in its permanent location.			

Chief Business Officer or Chief Facilities Officer Name & Title	**Phone No.**	**Email Address**
	Signature	

Note: A Program Manager from the Office of Facilities at the System Office may contact you with further questions separate from the review of the new academic program.

FINAL NOTE:

Appendices that do not apply to the proposed program should not be attached.

APPENDIX

Use this section to include letters of support, curriculum course descriptions, and recent rulings by accrediting bodies attesting to degree level changes for specific disciplines, and other information.

APPENDIX A

Course Description of new courses

Course prefix/number	Credit hours	Course title	Course description
ARTI 9000	1-12	Doctoral Research	Faculty supervised research
ARTI 9300	1-12	Doctoral Dissertation	Major professor supervised research

Appendix B

US Institutions with Degree Programs in Artificial Intelligence

Revision: March 2019

Summary:

This document provides information on degree programs related to artificial intelligence at several dozen universities taken from the following groups:

- UGA comparator institutions as specified by the Board of Regents;
- UGA aspirational institutions as specified by the Board of Regents;
- Universities of the Southern Universities Group;
- Universities of the University System of Georgia.

The websites of each institution were explored, as were databases and other sources providing information on each institution. In particular, an online database (https://apps.usg.edu/ords/f?p=118:1) of degree programs for USG institutions was searched, as was a database of degree programs provided by the U.S. Department of Education (http://nces.ed.gov/collegenavigator/). Below is a brief summary of findings.

Comparator institutions

Based on the review of university websites and catalogs, it appears that none of UGA's 15 comparator institutions offer an undergraduate or graduate degree specifically in Artificial Intelligence. AI is part of many degree programs, however. Where AI is studied, it is primarily done in a computer science or similar department (e.g., computer engineering).

Cognitive science is an interdisciplinary discipline closely related to AI, and it is possible that an interdisciplinary Ph.D. program in AI could be structured similarly to a Ph.D. Cognitive Science program (though with more emphasis on computing, formal systems, and engineering). Several comparator institutions offer certificates, minors, and bachelor's degrees in cognitive science, and the University of Maryland offers a graduate degree in cognitive science.

Aspirational Institutions

All of UGA's 9 aspirational institutions engage in research related to AI, and the majority have cognitive science programs. None, however, appear to have a standalone graduate degree in AI.

Southern Universities Group

Of the SUG institutions, only UGA and Georgia Tech appear to offer stand-alone degree in AI or a subfield of it. UGA offers a master's degree in AI, and Georgia Tech offers a Ph.D. in Machine Learning, and another Ph.D. in Robotics. Like the UGA degree, both of the Georgia Tech degrees are interdisciplinary with multiple participating schools or colleges within the university.

Many other SUG institutions perform AI research and offer related degrees. Several institutions also offer certificates, minors, undergraduate, and graduate degrees in cognitive science.

USG and US Dept of Education Databases

The USG database indicates that UGA is the only USG institution offering a stand-alone degree in either AI or cognitive science (when searching for these fields, the Georgia Tech degree programs are not found). However, the Department of Education database does list Georgia Tech as offering a degree in artificial intelligence (based on the CIP code for AI).

AI elsewhere in the U.S.

In general, it is difficult to find interdisciplinary AI MS or PhD programs similar to either UGA's existing MSAI degree or the proposed PhD program. In fact, the only other MS degree in artificial intelligence appears to be Northeastern University's program, which was founded in 2018.[1] In supporting documentation for their program, faculty at Northeastern indicate that only UGA and Carnegie Mellon have programs roughly similar to theirs.[6] In that documentation, CMUs master's degree in machine learning is specifically mentioned, though it should be pointed out that CMU also offers PhDs in both machine learning and robotics.

However, as presented later, the Department of Education lists the following as offering either a master's or a PhD in artificial intelligence:

Offering Master's Degrees:

- Brandeis University (No program found. Potentially computer science or computational linguistics)
- Carnegie Mellon University (Machine Learning)
- Indiana University-Bloomington (MS in Intelligent Systems Engineering)
- North Carolina State University at Raleigh (No specific program found. Potentially computer science).
- Syracuse University (No specific program found. Potentially computer science).
- University of Colorado Boulder (No specific program found. Potentially computer science).
- University of Pennsylvania (Potentially Robotics)
- University of Pittsburgh-Pittsburgh Campus (Intelligent Systems Program)
- University of Southern California (Potentially MS Intelligent Robotics)
- University of Washington-Seattle Campus (Potentially Master of Science in Data Science)

Offering PhDs:

- Carnegie Mellon University (Machine Learning)
- University of Pittsburgh-Pittsburgh Campus (Intelligent Systems Program)
- Georgia Institute of Technology (Machine Learning; Robotics)

https://faculty.northeastern.edu/app/uploads/sites/2/2018/04/MSAI_4_11.pdf

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1. UGA Peer Groups

The Board of Regents of the University System of Georgia has created for each USG institution a list of comparator and aspirational universities. Each list is comprised of public universities in the United States. The comparator and aspirational institutions for The University of Georgia are shown below. Also shown are the members of the Southern University Group (SUG).

Source: https://oir.uga.edu/peers/ (Retrieved February 2019)

Comparator Institutions

1. Indiana University Bloomington
2. Iowa State University
3. Michigan State University
4. North Carolina State University
5. Ohio State University
6. Purdue University
7. Stony Brook University
8. Univ. of Maryland - College Park
9. University of Arizona
10. University of California - Davis
11. University of Florida
12. University of Iowa
13. University of Kentucky
14. University of Missouri - Columbia
15. Virginia Polytechnic Inst. and State Univ.

Aspirational Institutions

1. Pennsylvania State University
2. University of California - Berkeley
3. University of California - Los Angeles
4. University of Illinois - Urbana-Champaign
5. University of Michigan - Ann Arbor
6. University of Minnesota
7. University of Texas - Austin
8. University of Virginia
9. University of Wisconsin - Madison

Southern University Group Institutions

1. Arizona State University
2. Auburn University
3. Clemson University
4. Florida State University
5. Georgia Institute of Technology
6. Georgia State University
7. Louisiana State University
8. Mississippi State University
9. North Carolina State University
10. Oklahoma State University
11. Texas A&M University
12. Texas Tech University
13. University of Alabama
14. University of Alabama - Birmingham
15. University of Arkansas - Fayetteville
16. University of Delaware
17. University of Florida
18. University of Georgia
19. University of Houston
20. University of Kentucky
21. University of Maryland - College Park
22. University of Mississippi
23. University of North Carolina - Chapel Hill
24. University of Oklahoma
25. University of South Carolina - Columbia
26. University of Southern Mississippi
27. University of Tennessee - Knoxville
28. University of Texas - Austin
29. University of Virginia
30. Virginia Polytechnic Inst. and State Univ.
31. West Virginia University
32. Southern Regional Education Board

2. Artificial Intelligence at Comparator, Aspirational, and SUG Institutions

2.1 Artificial Intelligence at UGA Comparator Institutions

No comparator institution appears to offer an undergraduate or graduate degree in AI. Where AI is studied, it is primarily done in a computer science (CS) department or similar department (e.g., computer engineering).

The following comparator institutions offer degrees in CS or related fields. The columns to the right of the institution's name indicate whether the institution places emphasis on artificial intelligence. This judgment is based on: 1) a manual review of the institution's websites; 2) whether the *AI International* site[7] indicates that the institution has an AI program; and 3) the Institution Ranking for Artificial Intelligence research according to Microsoft Academic Search (this is based on a search performed in February 2019).

Based on the results, it can be concluded that essentially all comparator institutions perform AI research of some sort or other, and some are relatively highly ranked.

Comparator Peer Universities	AI Emphasis (website review)	AI Program (aiinternational.org)	MS Academic AI Top 100, 10 Years	MS Academic AI Top 100, 5 Years
Indiana University Bloomington	•	•		
Iowa State University	•	•		
Michigan State University	•	•	**82**	**82**
North Carolina State University	•	•		
Ohio State University	•	•	**75**	**70**
Purdue University	•	•	**77**	**65**
Stony Brook University	•			
Univ. of Maryland - College Park	•		**41**	**46**
University of Arizona	•			
University of California - Davis	•	•		
University of Florida	•		**99**	
University of Iowa	•	•		
University of Kentucky	•	•		
University of Missouri - Columbia	•			
Virginia Polytechnic Inst. and State Univ.	•			

2.2 Artificial Intelligence at UGA Aspirational Institutions

Institution	AI Emphasis (website review)	AI Program (aiinternational.org)	2018 US News, Top 20 in AI	MS Academic AI Top 100, 10 Years	MS Academic AI Top 100, 5 Years
Pennsylvania State University	•				**36**
University of California - Berkeley	•	•	**4**	**7**	**6**
University of California - Los Angeles	•	•	**14**	**25**	**33**
University of Illinois - Urbana-Champaign	•	•	**8**	**13**	**20**
University of Michigan - Ann Arbor	•	•	**10**	**19**	**14**
University of Minnesota	•	•		**51**	**58**
University of Texas - Austin	•	•	**9**	**35**	**39**
University of Virginia	•	•			
University of Wisconsin - Madison	•	•	**20**	**79**	**71**

[7] http://aiinternational.org/universities.html

2.5 Artificial Intelligence at Southern University Group Institutions

The Southern University Group is made up of 31 public universities and the Southern Regional Education Board.

As noted earlier, no SUG Institution other than UGA and Georgia Tech appear to offer stand-alone degree in AI or one of its subfields. Where AI is studied, it is in primarily done so in a computer science department or similar department. The below table indicates whether a SUG Institution has a research strength in AI.

Institution	AI Emphasis (website review)	AI Program (aiinternational.org)	2018 US News Ranking Top 20 in AI	MS Academic AI Top 100, 10 Years	MS Academic AI Top 100, 5 Years
Arizona State University	•	•		**71**	**64**
Auburn University	•	•			
Clemson University	•				
Florida State University	•				
Georgia Institute of Technology	•	•	**7**	**39**	**43**
Georgia State University	•	•			
Louisiana State University					
Mississippi State University	•	•			
North Carolina State University	•	•			
Oklahoma State University	•				
Texas A&M University	•	•			
Texas Tech University	•	•			
University of Alabama	•				
University of Alabama - Birmingham	•				
University of Arkansas - Fayetteville	•	•			
University of Delaware	•				
University of Florida	•			**99**	
University of Georgia	•	•			
University of Houston	•				
University of Kentucky	•	•			
University of Maryland - College Park	•	•		**41**	**46**
University of Mississippi	•				
University of North Carolina - Chapel Hill	•			**44**	**29**
University of Oklahoma	•				
University of South Carolina - Columbia	•	•			
University of Southern Mississippi					
University of Tennessee - Knoxville	•	•			
University of Texas - Austin	•	•		**35**	**39**
University of Virginia	•	•			
Virginia Polytechnic Inst. and State Univ.	•				
West Virginia University	•				

4. Artificial Intelligence at USG Institutions

According to a database of Degrees and Majors offered by USG Institutions,[8] only UGA offers degrees in either Cognitive Science or Artificial Intelligence.[9] However, both are interdisciplinary by nature, and so courses relevant to both are offered in other departments (e.g., computer science).

Section 4.2 lists the results for multiples queries to the USG Degree Program database. The query generating the results is given.

4.1 USG Institutions

1. Abraham Baldwin Agricultural College
2. Albany State University
3. Atlanta Metropolitan State College
4. Augusta University
5. Clayton State University
6. College of Coastal Georgia
7. Columbus State University
8. Dalton State College
9. East Georgia State College
10. Fort Valley State University
11. Georgia Archives
12. Georgia College & State University
13. Georgia Gwinnett College
14. Georgia Highlands College
15. Georgia Institute of Technology
16. Georgia Public Library Service
17. Georgia Southern University
18. Georgia Southwestern State University
19. Georgia State University
20. Gordon State College
21. Kennesaw State University
22. Middle Georgia State University
23. Savannah State University
24. South Georgia State College
25. University of Georgia
26. University of North Georgia
27. University of West Georgia
28. Valdosta State University

[8] https://www.usg.edu/institutions/

[9] https://app.usg.edu/portal/page/portal/DMA

4.2 Query and Query Results

Source: https://apps.usg.edu/ords/f?p=118:1:::NO:::
Accessed: February 2019

"Artificial"	
U of Georgia	Master of Science with a Major in Artificial Intelligence
"Cogni"	
U of Georgia	Bachelor of Arts with a Major in Cognitive Science
"Data"	
Kennesaw State U	Post-Baccalaureate Certificate in Data Management and Analytics
Kennesaw State U	Post-Baccalaureate Certificate in High Performance Computing Cluster and Big Data Analytics
Kennesaw State U	Doctor of Philosophy with a Major in Analytics and Data Science
Savannah State U	Certificate of Less than One Year in Data Analytics
U of Georgia	Post-Baccalaureate Certificate in Agricultural Data Science
U of Georgia	Certificate of Less than One Year in Applied Data Science
U of Georgia	Bachelor of Science with a Major in Data Science
U of West Georgia	Post-Baccalaureate Certificate in Data Analysis and Evaluation Methods
"Machine"	
Gainesville State College	Associate of Applied Science in Technology in Machine Tool Technology
Gainesville State College	Associate of Applied Science in Technology in Advanced Machine Tool Technology
Georgia Institute of Technology	Doctor of Philosophy with a Major in Machine Learning
"Robot"	
Columbus State U	Certificate of Less than One Year in Robotics
Georgia Institute of Technology	Doctor of Philosophy with a Major in Robotics
"Informatics"	
Armstrong State U	Post-Baccalaureate Certificate in Clinical Informatics
Augusta U	Post-Master's Certificate in Nursing Informatics
College of Coastal Georgia	Bachelor of Science in Health Informatics
Columbus State U	Post-Baccalaureate Certificate in Healthcare Informatics
Georgia Institute of Technology	Master of Science in Bioinformatics
Georgia Institute of Technology	Doctor of Philosophy with a Major in Bioinformatics
Georgia Perimeter College	Bachelor of Science with a Major in Health Informatics
Georgia Southwestern State U	Post-Baccalaureate Certificate in Health Informatics
Georgia State U	Post-Baccalaureate Certificate in Clinical Health Informatics
Kennesaw State U	Master of Science with a Major in Healthcare Management and Informatics
U of Georgia	Certificate of Less than One Year in Informatics
U of Georgia	Post-Baccalaureate Certificate in Bioinformatics
U of Georgia	Master of Science with a Major in Bioinformatics
U of Georgia	Doctor of Philosophy with a Major in Bioinformatics
U of North Georgia	Bachelor of Science with a Major in Healthcare Services and Informatics Administration
"Intelli"	
Augusta U	Master of Arts with a Major in Intelligence and Security Studies
U of Georgia	Master of Science with a Major in Artificial Intelligence

"Information"

Albany State U	Bachelor of Science with a Major in Health Information Management
Albany State U	Associate of Science in Health Information Technology
Albany State U	Bachelor of Science with a Major in Management Information Systems Technology
Armstrong State U	Master of Science in Computer and Information Sciences
Armstrong State U	Certificate of Less than One Year in Information Technology with Applications
Armstrong State U	Bachelor of Information Technology
Armstrong State U	Bachelor of Science in Information Technology
Armstrong State U	Certificate of Less than One Year in Information Technology with Programming
Atlanta Metro. State College	Certificate of Less than One Year in Information Technology
Augusta State U	Bachelor of Business Administration with a Major in Management Information Systems
Augusta U	Bachelor of Science in Information Technology
Augusta U	Post-Baccalaureate Certificate in Healthcare Information Security
Augusta U	Master of Science with a Major in Information Security Management
Augusta U	Bachelor of Science in Health Information Administration
Bainbridge State College	Associate of Applied Science in Computer Information Systems
Bainbridge State College	One-Year Certificate in Health Information Technology
Bainbridge State College	Associate of Applied Science in Health Information Technology
Bainbridge State College	One-Year Certificate in Computer Information Systems
Clayton State U	Bachelor of Information Technology with a Major in Information Technology
Clayton State U	Bachelor of Science in Information Technology
Clayton State U	Associate of Applied Science in Information Technology
Columbus State U	Bachelor of Science with a Major in Information Technology
Columbus State U	Post-Baccalaureate Certificate in Information Security Professional
Columbus State U	Post-Baccalaureate Certificate in Information Security Officer
Columbus State U	Certificate of Less than One Year in Geographic Information Systems and Science
Columbus State U	Bachelor of Business Administration with a Major in Computer Information Systems
Dalton State College	Bachelor of Science in Health Information Management
Dalton State College	Bachelor of Business Administration with a Major in Management Information Systems
Darton State College	Bachelor of Science with a Major in Health Information Management
Darton State College	Associate of Science in Health Information Technology
Gainesville State College	Certificate of Less than One Year in Geographic Information Science
Georgia College & State U	Bachelor of Business Administration with a Major in Management Information Systems
Georgia College & State U	Certificate of Less than One Year in Geographic Information Science
Georgia College & State U	Master of Management Information Systems
Georgia Gwinnett College	Bachelor of Science with a Major in Information Technology
Georgia Institute of Technology	Post-baccalaureate certificate In Geographic Information Systems
Georgia Institute of Technology	Master of Science in Geographic Information Science and Technology
Georgia Perimeter College	Certificate of Less than One Year in Library Information Science Technology
Georgia Southern U	Master of Science in Information Technology
Georgia Southern U	Bachelor of Information Technology
Georgia Southern U	Bachelor of Science in Information Technology with a Major in Information Technology
Georgia Southern U	Bachelor of Business Administration with a Major in Management Information Systems
Georgia Southwestern State U	Bachelor of Science with a Major in Information Technology
Georgia State U	Post-Baccalaureate Certificate in Information Systems
Georgia State U	Bachelor of Business Administration with a Major in Computer Information Systems
Georgia State U	Master of Science in Information Systems
Georgia State U	Doctor of Philosophy with a Major in Computer Information Systems
Georgia State U	Master of Science in Information Systems Audit & Control
Georgia State U	Post-Baccalaureate Certificate in Geographic Information Systems
Georgia State U	Certificate of Less than One Year in Geographic Information Science
Gordon State College	Associate of Science in Information Technology
Gordon State College	Bachelor of Science with a Major in Health Information Management
Kennesaw State U	Master of Science with a Major in Information Design and Communication
Kennesaw State U	Bachelor of Applied Science with a Major in Information Technology
Kennesaw State U	Bachelor of Science in Information Technology
Kennesaw State U	Master of Science in Information Technology
Kennesaw State U	Post-Baccalaureate Certificate in Information Technology Foundations
Kennesaw State U	Post-Baccalaureate Certificate in Information Technology Security

Kennesaw State U	Bachelor of Business Administration with a Major in Information Systems
Kennesaw State U	Master of Science in Information Systems
Kennesaw State U	Certificate of Less than One Year in Information Security
Kennesaw State U	Post-Baccalaureate Certificate in Information Security and Assurance
Kennesaw State U	Bachelor of Business Administration with a Major in Information Security and Assurance
Kennesaw State U	Certificate of Less than One Year in Information Systems
Kennesaw State U	Master of Science in Information and Instructional Design
Kennesaw State U	Certificate of Less than One Year in Geographic Information Sciences
Kennesaw State U	Bachelor of Science with a Major in Geographic Information Science
Kennesaw State U	Post-Baccalaureate Certificate in Health Information Technology
Kennesaw State U	Certificate of Less than One Year in Health Information Technology
Macon State College	Bachelor of Science in Information Technology
Macon State College	One-Year Certificate in Information Technology
Macon State College	Bachelor of Science in Health Information Management
Macon State College	Associate of Science in Health Information Technology
Macon State College	Bachelor of Science in Business and Information Technology
Middle Georgia State U	Bachelor of Science in Information Technology
Middle Georgia State U	Certificate of Less than One Year in Information Technology
Middle Georgia State U	Master of Science in Information Technology
Middle Georgia State U	Bachelor of Science in Health Information Management
Savannah State U	Bachelor of Business Administration with a Major in Information Systems
Southern Polytechnic State U	Master of Science with a Major in Information Design and Communication
Southern Polytechnic State U	Bachelor of Applied Science with a Major in Information Technology
Southern Polytechnic State U	Bachelor of Science in Information Technology
Southern Polytechnic State U	Master of Science in Information Technology
Southern Polytechnic State U	Post-Baccalaureate Certificate in Information Technology Fundamentals
Southern Polytechnic State U	Certificate in Information Technology
Southern Polytechnic State U	Transition Certificate in Information Technology
Southern Polytechnic State U	Certificate of Less than One Year in Information Security and Assurance
Southern Polytechnic State U	Master of Science in Information and Instructional Design
Southern Polytechnic State U	Certificate of Less than One Year in Geographical Information Systems
Southern Polytechnic State U	Post-Baccalaureate Certificate in Health Information Technology
U of Georgia	Certificate of Less than One Year in Geographic Information Science
U of Georgia	Post-Baccalaureate Certificate in Geographic Information Science
U of Georgia	Graduate Certificate in Geographic Information Science
U of Georgia	Bachelor of Business Administration with a Major in Management Information Systems
U of North Georgia	Bachelor of Business Administration with a Major in Information Systems
U of North Georgia	Certificate of Less than One Year in Geographic Information Science
U of North Georgia	Certificate of Less than One Year in Health Information Administration
U of West Georgia	Post-Baccalaureate Certificate in Geographic Information Systems
U of West Georgia	Bachelor of Business Administration with a Major in Management Information Systems
Valdosta State U	Bachelor of Science with a Major in Computer Information Systems
Valdosta State U	Master of Library and Information Science

5. US Institutions Offering AI and Cognitive Science Degrees (by CIP Code)

Below is classification information for Cognitive Science and Artificial Intelligence according to the Classification of Instructional Programs (CIP) scheme. The scheme was originally developed by the U.S. Department of Education's National Center for Education Statistics (NCES) in 1980. It is used in the collection of data about fields of study and programs at educational institutions.[10]

A list of schools offering degrees with the CIP codes for Cognitive Science and AI is also provided.

5.1 Classification of Instructional Programs (CIP) Codes

CIP Code: 30.2501
Title: Cognitive Science
Definition: A program that focuses on the study of the mind and the nature of intelligence from the interdisciplinary perspectives of computer science, philosophy, mathematics, psychology, neuroscience, and other disciplines. Includes instruction in mathematics and logic, cognitive process modeling, dynamic systems, learning theories, brain and cognition, neural networking, programming, and applications to topics such as language acquisition, computer systems, and perception and behavior.
Source: http://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cipid=87515

CIP Code: 11.0102
Title: Artificial Intelligence.
Definition: A program that focuses on the symbolic inference, representation, and simulation by computers and software of human learning and reasoning processes and capabilities, and the computer modeling of human motor control and motion. Includes instruction in computing theory, cybernetics, human factors, natural language processing, and applicable aspects of engineering, technology, and specific end-use applications.

Source: http://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cipid=87243

[10] http://nces.ed.gov/ipeds/cipcode/

5.2 US Colleges and Universities Offering Advanced Artificial Intelligence Degrees

Source: http://nces.ed.gov/collegenavigator/

Accessed: February 2019

Institution	Bachelors	Masters	Doctorate	Undergrad Certificate	Grad Certificate
Brandeis University		16			
Carnegie Mellon University	0	72	11		
Eastern Michigan University					0
Georgia Institute of Technology-Main Campus			1		
Indiana University-Bloomington		3			
North Carolina State University at Raleigh		0			
Syracuse University		0			
University of Colorado Boulder		0			
University of Georgia		5			
University of Pennsylvania		49			
University of Pittsburgh-Pittsburgh Campus		1	5		
University of Southern California		9			
University of Washington-Seattle Campus		28			

5.3 US Colleges and Universities Offering Advanced Cognitive Science Degrees

Source: http://nces.ed.gov/collegenavigator/

Accessed: February 2019

Institution	Bachelors	Masters	Doctorate	Undergrad Certificate	Grad Certificate
Arizona State University-Polytechnic			4		
Brown University	9	4	2		
Case Western Reserve University	23	1			
George Mason University					0
Indiana University-Bloomington	13		4		
Johns Hopkins University	18	9	2		
Massachusetts Institute of Technology	0		3		
Michigan Technological University		5	1		
North Carolina State University at Raleigh		0			
Rensselaer Polytechnic Institute	4	1	2		
Stanford University	63	4			
Stony Brook University	11				
The University of Texas at Dallas	7	76			
Tufts University	35		2		
University of California-Merced	61		3		
University of California-San Diego	201	5	10		
University of Colorado Boulder			0		
University of Colorado Denver/Anschutz Medical Campus			0		
University of Iowa					2
University of Kentucky					0
University of Louisiana at Lafayette			1		
University of Memphis					7
University of Michigan-Ann Arbor	46				1
University of Minnesota-Twin Cities			0		

6. Detailed Look at Institutions offering AI Doctoral Degrees (CIP Code)

6.1 Carnegie Mellon University

CMU's School of Computer Science offers multiple PhD programs, managed by one or more departments or institutes within the school or collaborating academic units.[11] Below is a list of degrees offered, not all of which are relevant to a discussion of artificial intelligence.

- Computer Science
  - PhD in Computer Science
  - PhD in Computer Science/Neural Basis of Cognition
- Interdisciplinary PhD tracks:
  - PhD in Algorithms, Combinatorics and Optimization
  - PhD in Pure and Applied Logic
- Human-Computer Interaction Institute
  - PhD in Human-Computer Interaction
- Institute for Software Research
  - PhD in Software Engineering
  - PhD in Societal Computing
  - PhD in Software Engineering/Dual Degree Portugal
- Language Technologies Institute
  - PhD in Language and Information Technologies
  - PhD in Language and Information Technologies/Dual Degree Portugal
- Machine Learning Department
  - PhD in Machine Learning
  - Joint PhD in Neural Computation and Machine Learning
  - Joint PhD in Machine Learning and Public Policy
  - Joint PhD in Statistics & Machine Learning
- Robotics Institute
  - PhD in Robotics
  - PhD in Robotics/Neural Basis of Cognition

[11] https://www.cs.cmu.edu/doctoral-programs

We briefly discuss those that appear relevant below.

PhD Computer Science: Students must complete 72 units of course work (typically 12 units each), including 4 courses taken from 5 breadth subject areas, of which AI is one. Additionally, students must take 24 units of electives; 12 of those may come from courses outside of the School of Computer Science.

PhD in Computer Science/Neural Basis of Cognition: The program, offered in conjunction with the Center for the Neural Basis of Cognition, consists of coursework in computational and quantitative neuroscience, quantitative methodologies, experimental research (through rotations), training in teaching and presentations, and a dissertation.

PhD in Pure and Applied Logic: Much of historical AI research (automated theorem proving, knowledge representation) has been logic based. This program is very much focused on formal systems, however, and is not interdisciplinary to the extent that the proposed UGA PhD AI program is.

PhD in Language and Information Technologies: The program consists of 72 units of both linguistics and computer science courses. In addition to traditional linguistics, there are courses focusing on NLP, machine translation, software engineering, etc., making the degree truly interdisciplinary.

Machine Learning: There are multiple degrees offered through the Machine Learning Department (which was formed in 2006). These are: the PhD in Machine Learning; the Joint PhD in Neural Computation and Machine Learning; the Joint PhD in Machine Learning and Public Policy; the Joint PhD in Statistics & Machine Learning.

Machine learning is a large and very important part of AI, and it would be a very important part of the AI degree at UGA. However, the PhD in Machine Learning is not interdisciplinary to the extent that the AI degree would be. The interdisciplinary Machine Learning & Public Policy degree is perhaps closer to what we are intending at UGA. The degree consists of a 3 semester seminar series focusing on the research process; 2 semesters of research seminars in specialized fields; courses on quantitative methods (statistics, econometrics, and machine learning); 2 semesters of social and policy sciences; a concentration area requirement; 1st and 2nd year research papers; and a public policy dissertation. If possible, a similar track could be included in the UGA degree (perhaps in coordination with SPIA).

Robotics: The PhD in Robotics is relevant, in the sense that robotics and AI are closely related. Among the 5 breadth areas that students take courses in are perception and cognition. The degree, however, appears squarely in the computer science, mathematics, and engineering disciplines. The interdisciplinary PhD in Robotics/Neural Basis of Cognition adds 4 courses in cellular and molecular neuroscience, systems neuroscience, cognitive neuroscience, and computational neuroscience.

6.2 The Intelligent Systems Program at the University of Pittsburgh

The Intelligent Systems Program (ISP) is an interdisciplinary graduate program at the University of Pittsburgh. MS and PhD degrees are offered, and faculty come from the School of Medicine, the School of Law, the School of Education, the School of Information Sciences, the Swanson School of Engineering, and the Kenneth P. Dietrich School of Arts and Sciences.

This program consists of 72 credits (coursework and research; typical courses are 3 credits), a preliminary research report, a comprehensive exam, and a dissertation. There is also an MS degree, and it appears that there is little difference in coursework between the two (presumably, the remaining credits are research credits).

Based upon a review of the program's website, there appear to be 34 affiliated faculty members and approximately 24 students (it is unknown whether all MS and PhD students are listed).

Significantly, the program dates to 1986, with the first students coming in 1987. M.S. degrees date to 1989 at the latest and it appears that PhDs came as early as 1990 (an online copy of a dissertation from 2003 clearly shows Intelligent Systems as the degree program).[12]

[12] The website lists Alan Lesgold and Richmond Thomason as the program's first directors, indicating a starting year of 1986. In 2018, a 30th anniversary was held. http://www.isp.pitt.edu/ispanniversary/

Given that the number of faculty members and students is roughly similar to that of the UGA AI Institute, we describe the courses for the ISP program in more detail.

- Required
  - ISSP 2020 Topics in Intelligent Systems
  - INFSCI 3005 Intro to Doctoral Program
  - ISSP 2030 Advanced Topics in Intelligent Systems
  - ISSP 2160 / CS 2710 Foundations of Artificial Intelligence
- 2 required
  - ISSP 2170 / CS 2750 Machine Learning
  - ISSP 3712 / CS 3740 Knowledge Representation
  - ISSP 2230 / CS 2731 Introduction to Natural Language Processing
  - ISSP 2180 / CS 2770 Computer Vision
- Theory - Applied or mathematical statistics (1 required)
  - BIOST 2041 Intro to Statistical Methods 1
  - BIOST 2042 Intro to Statistical Methods 2
  - BIOINF 2054 Statistical Foundations for Bioinformatics Data Mining
  - BIOINF 2118 Statistical Foundations of Biomedical Informatics
  - STAT 2131 Applied Statistical Methods 1
  - STAT 2132 Applied Statistical Methods 2
- Theory - Theory of computation, algorithms (1 required)
  - CS 2110 Theory of Computation
  - CS 2150 Design and Analysis of Algorithms
  - ISSP 3520 / CS 3120 Theory of Learning Algorithms
- +1 additional theory course.
- +4 ISSP courses numbered 2000 or higher and approved by the PhD committee.

Note: There is a Biomedical Informatics Track Curriculum (ISP/MI) with a separate curriculum.

6.3 Georgia Institute of Technology

It is unclear which degree program at Georgia Tech has been associated with the Artificial Intelligence CIP code. Georgia Tech does offer PhDs in both Machine Learning and Robotics, which are possible candidates, and so we briefly discuss both here.

Machine learning:

The machine learning PhD program at Georgia Tech is an interdisciplinary managed by the Machine Learning Center. Students were first admitted in 2017, and there appear to be over 125 associated faculty. Currently, there are 8 participating schools: Aerospace Engineering (College of Engineering); Biomedical Engineering (CoE); Computational Science and Engineering (College of Computing); Computer Science (CoC); Electrical and Computer Engineering (CoE); Industrial and Systems Engineering (CoE); Interactive Computing (CoC); and Mathematics (College of Sciences)

The program involves 5 core and 5 elective courses, as well as a qualifying exam and a dissertation. The core courses are in the following areas: Mathematical Foundations; Intermediate Statistics; ML Theory and Methods; Data Models; and Optimization. The electives are taken from the following: Statistics and Applied Probability; Advanced Theory; Applications; Computing and Optimization; Platforms.

Robotics: The PhD in Robotics is a collaboration between the College of Computing or the College of Engineering and managed by the Institute for Robotics and Intelligent Machines. The general requirements are: 36 semester hours of coursework, a qualifying exam, and writing and defending a dissertation. Regarding coursework, students take: Introduction to Robotics Research); 3 foundation courses, each taken from a distinct unit in Mechanics, Controls, Perception, Artificial Intelligence, and Human-Robot Interaction; 3 electives, each from the same 3 units

as above; Multidisciplinary Robotics Research I and II; and 3 related courses outside of the major (constituting a minor).

6.4 Northeastern University (Master of Science in Artificial Intelligence)

In 2018, the College of Computer and Information Science (CCIS) proposed a Master of Science program in Artificial Intelligence (AI) with concentrations in 5 areas: Vision, Intelligent Interaction, Robotics and Agent-Based Systems, Machine Learning, and Knowledge Management and Reasoning. A draft proposal indicated that it is intended allow 40 incoming students per year and be a 15-month program. While not a PhD program, we present it here because it is interdisciplinary, and the course areas are relevant to the discussion of a PhD at UGA.

The curriculum for the MSAI consists of 5 core courses, plus 2 electives drawn from the one of the 5 concentrations above, plus one other elective. Courses appear to be 4 semester hours. Students in the program can choose to complete a 1-semester MS project (in lieu of one elective) or a 2-semester thesis (in lieu of 2 electives). The full list of courses is shown below.

- Core Courses
  - CS5100 Foundations of AI
  - CS6140 Machine Learning
  - CSXXXX Intelligent Interaction (new course)
  - CS5010 Programming Design Paradigm
  - CS5800 Algorithms
- 2 Electives from 1 of the below concentrations:
  - Vision
    - CS5330 Pattern Recognition and Computer Vision
    - EECE5639 Computer Vision
    - EECE7360 Advanced Computer Vision
    - CS7180 Special Topics in AI: Learning and Inference in Vision
  - Intelligent Interaction
    - CS6130 Affective Computing
    - CS5150 Game Artificial Intelligence
    - GSND6350 Data-Driven Player Modeling
    - CS7340 Theory and Methods in Human-Computer Interaction
    - CSXXXX Cognitive Modeling (new)
    - CSXXXX Intelligent User Interfaces (new)
  - Robotics and Agent-based systems
    - CS5335 Robotic Planning and Perception
    - EECE5698 Special Topics: Mobile Robotics
    - EECE5698: Special Topics: Robotics Sensing and Navigation
    - CSXXXX Reinforcement Learning and Sequential Decision-Making (to be offered F18)
    - CSXXXX Autonomous Agents & Multi-Agent Systems (new)
  - Machine Learning
    - CS7140/EECE7397 Advanced Machine Learning
    - DS5230 Unsupervised Learning and Data Mining
    - CSXXXX Deep Learning (to be offered S19)
    - MATHXXXX Introduction to Statistical Learning Theory and Algorithms (new)
  - Knowledge Management and Reasoning
    - CS6120 Natural Language Processing
    - CS6200 Information Retrieval
    - CS6220 Data Mining Techniques
    - CSXXXX Knowledge Representation and Planning (new)
    - PHIL4515 (soon to be changed to 5000-level) Advanced Logic
    - PHIL5XXX Formal Epistemology (new)

- One additional elective, outside the student's specialization. This can be taken from partner colleges. Suggested courses are:
  - CS7180: Special Topics in Artificial Intelligence
  - CS6800: Applications of Information Theory
  - EECE7337: Information Theory
  - PSYCXXXX: Cognition (new)
  - GSND5110: Game Design and Analysis
  - LING5100: Introduction to Linguistics (new)
  - LAW7639: Internet Law
  - PHIL5XXX: AI and Ethics (new)
  - ECON5XXX: Information Economics and Game Theory

Appendix C

Letters of Support

College of Arts and Sciences
Philosophy Department

October 15, 2019

Professor Alan Dorsey
Dean, Franklin College of Arts and Sciences
The University of Georgia

Dear Dean Dorsey,

I am writing in support of the proposed Ph.D. degree in Artificial Intelligence in the Institute for Artificial Intelligence. I've reviewed the proposal and discussed it with my colleagues. The Department of Philosophy is strongly in favor of the proposal.

AI is a rapidly growing field and there is a clear need for well-trained researchers in the area. The development of this degree program will put UGA in the forefront of the area both nationally and internationally.

At UGA and elsewhere, Philosophy is central to the study of Artificial Intelligence. The UGA Department of Philosophy has three faculty members with appointments in the Institute, and we teach a range of classes for both the MS in Artificial Intelligence and the AB in Cognitive Science. We see the development of a PhD program in AI as creating significant potential for further interdisciplinary research collaboration. And we are particularly pleased to see the mention of AI Ethics in the proposal. Not only is this a rapidly growing and crucially important field of research but, because of the great strengths in this department in the area of Applied Ethics, we believe it is an area that is ripe for productive collaboration.

We note also that the development of the AI PhD will have a positive effect on graduate credit hour production in Philosophy since many required classes in the proposal will be taught in this department.

In brief, this is an excellent proposal for a degree program which promises significant intrinsic and instrumental benefits. I strongly support it.

Sincerely,

Aaron Meskin

Aaron Meskin

Professor and Head of Philosophy

107 Peabody Hall • Athens, Georgia 30602-1627 • Telephone 706-542-2823 • Fax 706-542-2839

UNIVERSITY OF GEORGIA

142 Gilbert Hall
Athens, Georgia 30602
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www.linguistics.uga.edu

Department of Linguistics
Franklin College of Arts and Sciences

August 28, 2020

Dean Alan Dorsey
Franklin College of Arts and Sciences
Old College
CAMPUS

Dear Dean Dorsey,

I am writing in support of the proposal by the Institute of Artificial Intelligence to create a new Ph.D. program in Artificial Intelligence. This degree program would put UGA at the forefront of a rapidly growing field, and would provide advanced training for the next generation of AI specialists.

One important area for Artificial Intelligence research is natural language processing (NLP), which naturally intersects with Linguistics. Two of our faculty members in the Department of Linguistics are also on the Institute faculty, and students in the undergraduate degree program in Cognitive Science and the M.S. in AI program already take some of our courses in Linguistics. As we build our own curriculum in text and corpus linguistics and computational linguistics, we see the proposed Ph.D. program in AI as creating further opportunities for a fruitful collaboration between our two units. I strongly support this proposal.

Sincerely,

Keith Langston
Professor and Department Head

UNIVERSITY OF GEORGIA

Department of Computer Science
415 Boyd Graduate Studies Research Center
200 D.W. Brooks Drive
University of Georgia
Athens, Georgia 30602-7404
TEL 706-542-2911 | FAX 706-542-2966
www.cs.uga.edu

Franklin College of Arts & Sciences
Department of Computer Science

Dean Alan Dorsey
Franklin College of Arts and Sciences
Old College
CAMPUS

September 04, 2020

Dear Dean Dorsey

I write as the Department Head of the Computer Science Department at UGA in support of the proposal to offer a PhD degree program in the Institute for Artificial Intelligence at UGA. This degree program is long overdue and it will contribute to a good number of research areas in AI that are much needed these days. Many units on campus including the Computer Science will greatly benefit from it.

Currently, we have 14 faculty members who are Faculty Fellows in the Institute for AI. Some of them are very active in their MS program and they are looking forward to have AI PhD students whose interest in research areas that coincide with their research interest.

This program will benefit our Department in many ways. More students enrolled in this degree program will take our Computer Science Courses which are a major portion of their required courses. In addition, our faculty and students will have the opportunity to share research perspectives and build research collaborations with the AI PhD students and faculty.

In summary, our faculty are very supportive of this proposal and looking forward to work with the students in the program in many research areas that are currently in big demand in Academia and industry such as Machine learning, NLP, Data Mining, etc..

Sincerely,

Thiab Taha
Professor and Head
Computer Science Department

UNIVERSITY OF GEORGIA

Franklin College of Arts and Sciences
Department of Psychology

Psychology Building
125 Baldwin Street
Athens, Georgia 30602
TEL 706-542-2174 | FAX 706-542-3275
lsmiller@uga.edu
www.psychology.uga.edu

August 24, 2020

Dean Allen Dorsey
Franklin College of Arts and Sciences
University of Georgia

Dear Dean Dorsey
I am writing in support of the proposed Ph.D. degree program in Artificial Intelligence for the Institute for Artificial Intelligence. I've thoroughly reviewed the proposal and feel confident in the support of the Department of Psychology.

AI continues to be an expanding and important area of science that cuts across several fields including cognitive science, engineering, linguistics, and of course computer science. I feel that this program is very timely and will put UGA at the forefront of this burgeoning area.

I have reviewed potential positive and negative impacts on our current Psychology PhD programs and see this as a win-win, with the AI Institute developing this cutting edge program and expanding opportunities for students from our graduate programs who focus on cognitive science. I additionally expect to see some additional credit hour production within Psychology as a result of AI students taking one or more of our classes.

Thus, I am supportive of the proposal for a PhD program and degree in Artificial Intelligence.

Sincerely,

Dr. L. Stephen Miller
Head and Professor
Department of Psychology

UNIVERSITY OF GEORGIA

Institute of Cybersecurity and Privacy
415 Boyd Graduate Studies Research Center
University of Georgia
Athens, Georgia 30602-7404
https://cybersecurity.uga.edu

Franklin College of Arts & Sciences
Institute of Cybersecurity and Privacy

January 22, 2021

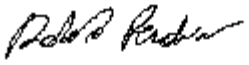
RE: Ph.D. degree in Artificial Intelligence in the Institute for Artificial Intelligence

To whom it may concern,

It is my great pleasure to recommend the approval of the PhD degree in Artificial Intelligence proposed by the UGA Institute for Artificial Intelligence.

Given the emergence of research topics that focus on Artificial Intelligence and Machine Learning applications to Cybersecurity and Privacy, as well as the urgent need for advanced research on the security and privacy of AI-based systems, the PhD in Artificial Intelligence presents a significant opportunity for strengthening the collaboration between the Institute for Artificial Intelligence and the Institute for Cybersecurity and Privacy. Therefore, I strongly support the proposal for establishing a PhD degree in Artificial Intelligence at UGA.

Sincerely,



Roberto Perdisci, PhD
Director, Institute of Cybersecurity and Privacy
Patty and D.R. Grimes Distinguished Associate Professor in Computer Science
Dept. of Computer Science
University of Georgia
Phone: (706) 542 3482
Email: perdisci@uga.edu

College of Engineering
UNIVERSITY OF GEORGIA

Georgia Informatics Institutes for Research and Education
UNIVERSITY OF GEORGIA

Monday, January 25th, 2021

Dr. Alan Dorsey
Dean, Franklin College of Arts and Sciences
The University of Georgia

Dear Dr. Dorsey,

I am providing this letter in support of the proposal by the Institute for Artificial Intelligence to create a new Ph.D. degree program in Artificial Intelligence. This innovative program builds upon existing strengths at the University, including the already popular and well-conceived Master of Science in Artificial Intelligence, and pushes the boundaries of training in the increasingly important field for both industry and academia.

The Georgia Informatics Institutes is pleased to be involved in this well-conceived proposal. It provides new graduate-level opportunities for students earning our undergraduate certificate in informatics and includes our interdisciplinary graduate course, INFO 8000: Foundations of Informatics for Research and Practice. In addition, it will bring graduate students to campus who may benefit from our university-wide professional development and fellowship programs.
Sincerely,

Kyle Johnsen, Ph.D.
Associate Professor, School of Electrical and Computer Engineering
Director, Georgia Informatics Institutes for Research and Education
Boyd Graduate Studies Research Center
University of Georgia
Athens, GA 30602
Email: kjohnsen@uga.edu
Office: 706-583-8166
Cell: 352-219-5419

UNIVERSITY OF GEORGIA

Institute of Bioinformatics
Davison Life Sciences, Suite B118B
120 East Green Street
Athens, Georgia 30602

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iob@uga.edu
TEL: 706-542-7783
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Dean Alan Dorsey
Franklin College of Arts & Sciences
Old College
The University of Georgia
Athens, GA 30602

January 26, 2021

Dear Dean Dorsey:

I am writing in support of the proposed PhD degree program in the Institute for Artificial Intelligence at UGA. As you are aware, the Institute of Bioinformatics has more than 40 faculty members from across UGA who train more than 50 PhD students. Our students have a keen interest in machine learning and many other computational methods that would be shared or synergistic with PhD students in Artificial Intelligence. Thus, we envision new opportunities for our current and future students to help increase the class-sizes in this new program, as well as research opportunities for our students and faculty.

Our students and faculty also make use of many of the same computational resources that would be used by PhD students in Artificial Intelligence. The GACRC is well-resourced and is expected to grow with many other programs at UGA. Because GACRC has the base system installed, and has the staff in place to support the system, it is relatively easy and low-cost to increase the capacity of the system to accommodate additional users.

In sum, we see many benefits to our current students and faculty that would flow from this new program. If I can provide any additional information, please just reach out.

Sincerely,

Travis Glenn

Dr. Travis C. Glenn
Director, Institute of Bioinformatics
Professor, Dept. Environmental Health Science
University of Georgia,
Athens GA 30602

Email: travisg@uga.edu
Tel: (706) 583-0662
Web: baddna.uga.edu

Documentation of Approval and Notification

Proposal: New Major in Artificial Intelligence (Ph.D.)

College: Franklin College of Arts and Sciences

Department: Institute for Artificial Intelligence

Proposed Effective Term: Fall 2021

Department:

- Institute for Artificial Intelligence Director, Dr. Khaled Rasheed, 9/16/20

School/College:

- Franklin College of Arts and Sciences Associate Dean, Dr. Jean Martin-Williams, 10/20/20

Graduate School:

- Graduate School Dean and Vice Provost for Graduate Education, Dr. Ron Walcott, 11/20/20

Additional Support Letters:

- Philosophy Department Head, Dr. Aaron Meskin, 10/15/19
- Linguistics Department Head, Dr. Keith Langston, 8/28/20
- Computer Science Department Head, Dr. Thiab Taha, 9/4/20
- Psychology Department Head, Dr. L. Stephen Miller, 8/24/20
- Institute of Cybersecurity and Privacy Director, Dr. Roberto Perdisci, 1/22/21
- Georgia Informatics Institutes for Research and Education Director, Dr. Kyle Johnsen, 1/25/21
- Institute of Bioinformatics Director, Dr. Travis Glenn, 1/26/21

Use of Course Notification:

- English Department Head, Dr. Michelle Ballif, 2/3/21
- Management Information Systems Department Head, Dr. Maric Boudreau, 2/3/21
- College of Engineering Associate Dean, Dr. Ramaraja Ramasamy, 2/3/21
- School of Electrical and Computer Engineering Chair, Dr. Fred Beyette, 2/3/21
- Warnell School of Forestry and Natural Resources Associate Dean, Dr. Robert Bringolf, 2/3/21

Proposal Notification:

- College of Agricultural and Environmental Sciences Dean, Dr. Nick Place, 2/23/21
- College of Agricultural and Environmental Sciences Associate Dean, Dr. Josef Broder, 2/23/21
- College of Agricultural and Environmental Sciences Assistant Dean, Dr. Douglas Bailey, 2/23/21
- Terry College of Business Dean, Dr. Benjamin Ayers, 2/23/21
- Terry College of Business Associate Dean, Dr. Henry Munneke, 2/23/21

- Terry College of Business Associate Dean, Dr. Mike Pfarrer, 2/23/21
- Odum School of Ecology Dean, Dr. John Gittleman, 2/23/21
- Odum School of Ecology Associate Dean, Dr. John Drake, 2/23/21
- Mary Frances Early College of Education Dean, Dr. Denise Spangler, 2/23/21
- Mary Frances Early College of Education Associate Dean, Dr. Stacey Neuharth-Pritchett, 2/23/21
    - *No concerns with proposal*
- College of Engineering Dean, Dr. Donald Leo, 2/23/21
- College of Engineering Associate Dean, Dr. Ramaraja Ramasamy, 2/23/21
- College of Environment and Design Dean, Dr. Sonia Hirt, 2/23/21
- College of Environment and Design Associate Dean, Ms. Ashley Steffens, 2/23/21
    - *No concerns with proposal*
- College of Family and Consumer Sciences Dean, Dr. Linda Kirk Fox, 2/23/21
- College of Family and Consumer Sciences Associate Dean, Dr. Sheri Worthy, 2/23/21
- Warnell School of Forestry and Natural Resources Dean, Dr. Dale Greene, 2/23/21
- Warnell School of Forestry and Natural Resources Associate Dean, Dr. Robert Bringolf, 2/23/21
- Grady College of Journalism and Mass Communication Dean, Dr. Charles Davis, 2/24/21
- Grady College of Journalism and Mass Communication Associate Dean, Dr. Maria Len-Rios, 2/24/21
- School of Law Dean, Mr. Peter “Bo” Rutledge, 2/23/21
- School of Law Associate Dean, Mr. Randy Beck, 2/23/21
- College of Pharmacy Dean, Dr. Kelly Smith, 22/23/21
    - *No concerns with proposal*
- College of Pharmacy Assistant Dean for Student Affairs, Dr. Duc Do, 2/23/21
- College of Public Health Dean, Dr. Marsha Davis, 2/23/21
- College of Public Health Associate Dean, Dr. Erin Lipp, 2/23/21
- School of Public and International Affairs Dean, Dr. Matthew Auer, 2/23/21
- School of Public and International Affairs Associate Dean, Dr. John Maltese, 2/23/21
- School of Social Work Dean, Dr. Anna Scheyett, 2/23/21
- School of Social Work Associate Dean, Dr. Shari Miller, 2/23/21
- College of Veterinary Medicine Dean, Dr. Lisa Nolan, 2/23/21
- College of Veterinary Medicine Associate Dean, Dr. Andrew Parks, 2/23/21