Proposal for a New Degree Program

I. Information and Rationale

A. Primary Contact Information

Institution: University of Alabama

Contact: Carmen Coleman

Title: Academic Program Development Specialist

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B. Program Information

Date of Proposal Submission: June 2025

Award Level: Master's Degree

Award Nomenclature (e.g., BS, MBA): MS

Field of Study/Program Title: Artificial Intelligence

CIP Code (6-digit): 11.0102

Proposed Delivery Method: In person

C. Administration of the Program:

Name of Dean and College: Clifford Henderson, College of Engineering

Name of Department/Division: Computer Science

Name of Chairperson: Shahram Rahimi

Name of Representative for Proposal (if not chair): Susan Vrbsky

D. Implementation Information

Proposed Program Implementation Date: 8/16/2026

Anticipated Date of Approval from Institutional Governing Board: June 2025

Anticipated Date of ACHE Meeting to Vote on Proposal: September 2025

SACSCOC Sub Change Requirement (Notification, Approval, or NA): Notification

Other Considerations for Timing and Approval (e.g., upcoming SACSCOC review): N/A

E. Concise Program Description

1. Briefly describe the purpose of the proposed program.

The proposed master's degree in Artificial Intelligence (MS in AI) at The University of Alabama is crucial for the growth of the Computer Science PhD program and the expansion of our research footprint. Faculty members affiliated with the Alabama Center for the Advancement of Artificial Intelligence (ALA-AI) depend on a pool of talented students, and the proposed MS in AI utilizes the research opportunities provided by the ALA-AI. The MS in AI will provide students with the foundation needed for students to work at the forefront of artificial intelligence and will prepare students to conduct transformative research at the PhD level.

Students enrolled in the MS in Artificial Intelligence program will have the opportunity to collaborate with ALA-AI faculty and researchers on projects that fulfill degree requirements. The ALA-AI Center is dedicated to fostering a vibrant community for dialogue, research, and education on critical topics in artificial intelligence while also promoting partnerships between academia and industry. Through their involvement with the Center, students will engage with experts not only in computer science but also across a diverse range of disciplines, including physics, healthcare, community science, biosciences, statistics, and more.

The Artificial Intelligence (MS) program will positively impact workforce development efforts in Alabama. Increasing the number of AI-literate professionals in Alabama can be attractive to new and expanding companies. The current and potential impact of AI is profound, as AI is transforming many aspects of our world today. Trained professionals with advanced knowledge of AI are needed to understand existing techniques, as well as how to advance the field of AI, and how to utilize AI to contribute positively to industry and society as a whole. Regardless of whether students choose the thesis/research option or the course-only option, students completing this degree will have the knowledge and skills to contribute to one of the fastest-growing technologies today.

This proposed degree program provides an in-depth study and will differ from programs that provide a cursory examination of the topics of artificial intelligence. Our focus on the computational aspects of AI requires students to have a background in programming, mathematics, and statistics. A BS degree in Computer Science, a STEM degree, or equivalent industry experience is required for admission into the program. The proposed MS in AI program includes a total of 30 credit hours. These four courses (12 credits) form the foundation for the remaining courses in the program: CS565 Artificial Intelligence, C523 Python for Big Data, CS566 Mathematics for AI, and CS583 Computational Foundations of Machine Learning, and are prerequisites for the AI elective courses. Students can choose the course-only option, in which an additional six (18 hours) AI elective courses are taken to complete the degree. Alternatively, students can choose the thesis option, which requires an additional four (12 hours) of AI elective courses plus six credit hours of thesis earned through collaborations on AI research projects with faculty in the Alabama Center for the Advancement of Artificial Intelligence.

2. Describe, if applicable, general opportunities for work-based and/or experiential learning within the proposed program.

While work-based and/or experiential learning is not required for the program, students will have such opportunities with the ALA-AI center.

3. Prove a brief statement regarding how the program's purpose is related to the mission and goals of the department, college, and University.

This program aligns with the mission and goals of the University by preparing professionals in the field of artificial intelligence who can contribute to advancing the intellectual and social well-being of individuals across the state, the nation, and the world. The impact of AI is broad and transformative—enabling greater automation, improving workplace safety, reducing errors, personalizing educational experiences, enhancing decision-making processes, and more. As the demand for skilled AI professionals continues to grow both nationally and within the state, this program is designed to help meet that critical need.

The program is related to the mission and goals of the College of Engineering by advancing knowledge through research and education. The program curriculum will provide students with the knowledge needed to contribute to the advancement of AI knowledge, and engagement with the ALA-AI Center will expose students to problems across all disciplines and increase their ability to address global challenges, an additional mission of the college.

The program is related to the mission and goals of the Department of Computer Science by providing students with a body of knowledge that will allow them to contribute to the AI profession and, ultimately, to society through an academic experience that is rich in theory. This is accomplished by providing students with a theoretical foundation not only in AI, but also in computer science. Lastly, involvement in projects with the ALA-AI Center addresses the remaining mission and goal of the department, which is to provide an academic experience that is rich in practice, the result of which is fundamentally sound and skilled graduates.

F. Specific Rationale (Strengths) for the Program

List 3 – 5 strengths of the proposed program as specific rationale for recommending approval of this proposal.

1. The Department of Computer Science has a group of faculty working in research areas relevant to this degree, such as machine learning, data science, robotics, and brain-computer interface.
2. This degree will provide students with exposure to both the theoretical and practical bases of AI.
3. The degree will approach AI from a computational perspective, which will allow students to contribute to the advancement of AI technology, going beyond that of just using existing technology.
4. The thesis/research option will engage students in projects with researchers in the ALA-AI Center to apply their AI skills
5. Students will be prepared for success in a variety of careers, such as machine learning engineer, data scientist, computer and information research scientist, robotics engineer, etc.

List external entities (more may be added) that may have supplied letters of support attesting to the program's strengths and attach letters with the proposal at the end of this document. (external letters of support are not required, but encouraged)

1. Lisa Evans from MBUSI
2. Blair Kiel from IERUS Technologies

II. Background with Context

A. Student Learning Outcomes

List four (4) to seven (7) of the student learning outcomes of the program.

1. Identify the core AI concepts of machine learning.
2. Implement AI models that are developed
3. Critically evaluate AI models and algorithms
4. Apply AI techniques to solve complex real-world problems
5. Promote responsible AI use in professional and societal contexts
6. Efficiently process and analyze large datasets

Attach Assessment Plan for the proposed program to include the student learning outcomes, assessment measures, and a curriculum map.

The student learning outcomes, assessment measures and a curriculum plan appear at the end of this document.

B. Similar Programs at Other Alabama Public Institutions

List programs at other Alabama public institutions of the same degree level and the same (or similar) CIP codes. If no similar programs exist within Alabama, list similar programs offered within the 16 SREB states. If the proposed program duplicates, closely resembles or is similar to any other offerings in the state, provide justification for any potential duplication.

CIP Code	Degree Title	Institution with Similar Program	Justification for Duplication
11.0102	MS in Artificial Intelligence Engineering	Auburn University	The curriculum is similar, but the degree has slightly different focus areas, and a thesis option is not mentioned. Demand in this area is high enough to justify duplication.
11.0102	MS in Artificial Intelligence for Medicine	UAB	Program domain focus is medicine. The proposed degree is not limited to one domain.
11.0102	MS in Artificial Intelligence	U Texas, Austin	Online degree. The proposed degree will be offered in person. The curriculum is similar but without a thesis option.
11.0102	MS in Artificial Intelligence Systems	U Florida	Similar to the proposed curriculum, including a project. Demand in this area is high enough to justify duplication.

11.0102	MS in Artificial Intelligence	U Georgia	No specific undergrad major is required. It is multidisciplinary across fields ranging from philosophy to business. The proposed degree is specific to CS and requires a STEM background.

C. Relationship to Existing Programs within the Institution

1. Is the proposed program associated with any existing offerings within the institution, including options within current degree programs? **Yes ☒ No ☐**

   (Note: Most new programs have some relationship to existing offerings, *e.g.*, through shared courses or resources). If yes, complete the following table. If this is a graduate program, list any existing undergraduate programs which are directly or indirectly related. If this is a doctoral program, also list related master's programs.

Related Degree Program Level	Related Degree Program Title	Explanation of the Relationship Between the Programs
BS	Computer Science	Shared courses or resources
BS	Data Science	Shared courses or resources
MS	Computer Science	Shared courses or resources
PhD	Computer Science	Shared courses or resources

2. Will this program replace any existing programs or specializations, options, or concentrations? **Yes ☐ No ☒**

   If yes, please explain.

3. Will the program compete with any current internal offerings? **Yes ☐ No ☒**

   If yes, please explain.

   If applicable, attach a letter of support from the competing or overlapping department(s)

D. Collaboration

Have collaborations with other institutions or external entities been explored? **Yes ☐ No ☒**

If yes, provide a brief explanation indicating those collaboration plan(s) for the proposed program.

Have any collaborations within your institution been explored? **Yes ☒ No ☐**

If yes, provide a brief explanation indicating those collaboration plan(s) for the proposed program.
If not, provide a brief explanation why collaboration is not being explored, including impact on the students and University.

Collaborations with researchers at the ALA-AI Center on thesis and projects will provide students with the opportunity to work with faculty from many different fields across the University.

E. Specialized Accreditation

1. Will this program have any external accreditation requirements in addition to the institution's SACSCOC program requirements? **Yes ☐ No ☒**

   If yes, list the name(s) of the specialized accrediting organization(s) and the anticipated timeframe of the application process.

2. Does your institution intend to pursue any other non-required accrediting organizations for the program?* **Yes ☐ No ☒**

   If yes, list the name(s) of the organization(s) and the purpose of the pursuit.

   If there are plans to pursue non-required external accreditation at a later date, list the name(s) and why the institution is not pursuing them at this time.

   Note: Check *No* to indicate that non-required external accreditation will not be pursued, which requires no explanation.

F. Professional Licensure/Certification

Please explain if professional licensure or industry certification is required for graduates of the proposed program to gain entry-level employment in the occupations selected. Be sure to note which organization(s) grants licensure or certification.

Neither professional licensure nor industry certification is required for graduates to gain entry-level employment.

G. Additional Education/Training

Please explain whether further education/training is required for graduates of the proposed program to gain entry-level employment in the occupations selected.

Further education/training is not required for graduates to gain entry-level employment.

H. Admissions

Will this program have any additional admissions requirements beyond the institution's standard admissions process/policies for this degree level? **Yes ☒ No ☐**

If yes, describe any other special admissions or curricular requirements, including any prior education or work experience required for acceptance into the program.

Students are required to have completed an undergraduate degree in Computer Science, a degree in a STEM field, or equivalent industry experience . Students must demonstrate competency in algorithms prior to admission via coursework or equivalent experience.

I. Mode of Delivery

Provide the planned delivery format(s) (*i.e.*, in-person, online, hybrid) of the program as

defined in policy along with the planned location(s) at which the program will be delivered (*i.e.*, on-campus and/or at specific off-campus instructional site(s)). Please also note whether any program requirements can be completed through competency-based assessment.

The delivery format will be in-person and on-campus. Program requirements cannot be completed through competency-based assessment.

J. Projected Program Demand (Student Demand)

Briefly describe the primary method(s) used to determine the level of student demand for this program using evidence, such as enrollments in related coursework at the institution, or a survey of student interest conducted (indicate the survey instrument used), number and percentage of respondents, and summary of results.

A Qualtrics survey was distributed to BS students in the computer science department at The University of Alabama to indicate their interest in an MS in AI degree program to provide an estimate of the demand by our current undergraduate students. Of the 119 students who responded to the survey, 84% (99 students) answered they would be interested in pursuing an MS in AI. A similar survey was distributed among our graduate students, and 95% of the respondents (37 students) said that an MS in AI would be of interest to CS graduate students. Of the 37 survey respondents, 16 are MS students, but we note that we accept students into our PhD program without an MS, so many of our PhD students earn their MS simultaneously working towards a PhD.

As a demonstration of the demand for our courses, this semester we are offering 13 graduate-level courses, five of which are AI courses. During spring registration every AI course quickly filled to capacity with students added to waiting lists. Of the 93 seats available in the AI courses, 71% of these seats were filled by our MS students, with the remaining seats filled by our PhD students. This semester MS students are enrolled in 1.5 AI courses on average.

K. Standard Occupational Code System

Using the federal Standard Occupational Code (SOC) System, indicate the top three occupational codes related to post-graduation employment from the program. A full list of SOCs can be found at https://www.onetcodeconnector.org/find/family/title#17.

A list of Alabama's *In-Demand Occupations* is available at https://www.ache.edu/index.php/policy-guidance/.

List the SOC and description.

SOC 1 (**required**): 15-1221.00 Computer and Information Research Scientists

SOC 2 (**required**): 15-2051.00 Data Scientists

SOC 3 (**required**): 11-3021.00 Computer and Information Systems Managers

Briefly describe how the program fulfills a specific industry or employment need for the State of Alabama. As appropriate, discuss alignment with Alabama's Statewide or Regional Lists of In-Demand Occupations (https://www.ache.edu/index.php/policy-guidance/) or with emerging industries as identified by Innovate Alabama or the Economic Development Partnership of Alabama (EDPA).

Almost all industries can take advantage of the benefits of AI to optimize the resources

utilized, streamline operations, and gain insights into industry trends. Manufacturing can be made more efficient, as AI can automate repetitive office tasks to allow employees to focus on other aspects of their work, and data can be used by organizations to aid in decision-making.

The AlabamaWorks! Website displays over 1,000 jobs that list artificial intelligence in the job description. Not all of those jobs require an expert in AI but instead require knowledge of how to use AI. However, many of the jobs listed do require a trained expert in AI, such as Software Engineer – AI Formulations, Data Scientist, Modeling and Simulation Systems Engineer, and Senior AI/ML Engineer. The median salary for these jobs is in the six-figure range.

According to Forbes (https://www.forbes.com/councils/forbestechcouncil/2024/03/12/the-future-of-work-embracing-ais-job-creation-potential/ visited Feb. 13, 2025), the future of the workforce will be transformed by AI, and while millions of jobs may be displaced by automation, new roles are expected to be created and increase the number of jobs. LinkedIn has reported a 74% annual increase in job listings for AI specialists, such as data scientists, machine learning engineers and AI researchers. The healthcare sector is expected to see an increase of almost 1 million jobs due to advancements in AI, and AI-driven positions in manufacturing, such as robotics, will be in demand as well. According to Veritone (https://www.veritone.com/press-releases/veritone-analyzes-u-s-bureau-of-labor-statistics-april-2024-jobs-report-and-ai-job-growth/ visited Feb. 13, 2025), in April 2024, the U.S. Bureau of Labor Statistics observed a 32% increase in AI jobs year-over-year. An MS in AI at UA will help to fill the skills gap to align with the evolving job market.

III. Curriculum Information for Proposed Degree Program

A. Program Completion Requirements: Enter the credit hour value for all applicable components (enter N/A if not applicable).

Curriculum Overview of Proposed Program	
Credit hours required in **general education**	N/A
Credit hours required in **program courses**	12
Credit hours in **program electives/concentrations/tracks**	12-18
Credit hours in **free electives**	0
Credit hours in **required research/thesis**	0-6
Total Credit Hours Required for Completion	**30**

Note: The above credit hours **MUST** match the credit hours in the *Curriculum Components of Proposed Program* table in Section G.

B. Maximum number of credits that can be transferred in from another institution and applied to the program: 9

C. Intended program duration in semesters for full-time students: 3-4

D. Intended program duration in semesters for part-time students: N/A

E. Does the program require students to demonstrate industry-validated skills, specifically through an embedded industry-recognized certification, structured work-based learning with an employer partner, or alignment with nationally recognized industry standards? **Yes ☐ No ☒**

If yes, explain how these components fit with the required coursework.

F. Does the program include any concentrations? **Yes ☐ No ☒**

If yes, provide an overview and identify these courses in the *Electives/Concentrations/Tracks* section in the Curriculum Components of Proposed Program Table in Section G.

G. Please provide all course information as indicated in the following table. Indicate new courses with "Y" in the associated column. If the course includes a required work-based learning component, such as an internship or practicum course, please indicate with a "Y" in the WBL column.

Program Name:	**Artificial Intelligence**			
Program Level:	**MS**			
Curriculum Components of Proposed Program				
Course Number	**Course Title**	**Credit Hours**	**New? (Y)**	**WBL? (Y)**
General Education Courses *(Undergraduate Only)*				
Program Courses (4 courses; 12 hours)				
CS 565	Artificial Intelligence	3		
CS 566	Mathematics for AI	3	Y	
CS 523	Python for Big Data	3	Y	
CS 583	Computational Foundations of Machine Learning	3		
Program Electives/Concentrations/Tracks (choose 4-6 courses; 12-18 hours)				
CS 551	Data Science	3		
CS 560	Introduction to Autonomous Robots	3		
CS 561	Brain Computer Interface (BCI)	3		
CS 563	Computer Vision	3	Y	
CS 581	High Performance Computing	3		
CS 584	Reinforcement Learning	3		
CS 651	Deep Generative Modeling	3		
CS 665	Intelligent Robotics	3		
CS 683	Large Language Models	3	Y	
CS 598	Non-Thesis Research	3		
Thesis/Research (choose 0-6 hours)				
CS 599	Thesis Research	6		

	*Total Credit Hours Required for Completion	30		

***Note**: The total credit hours should equal the total credit hours in the Curriculum Overview table (V.B, p. 9).

IV. Program Resource Requirements

A. Proposed Program Faculty*

Current Faculty and Faculty to Be Hired

Complete the following **New Academic Degree Proposal Faculty Roster** to provide a brief summary and qualifications of current faculty and potential new hires specific to the program.

***Note**: Institutions must maintain and have current as well as additional faculty curriculum vitae available upon ACHE request for as long as the program is active, but CVs are **not** to be submitted with this proposal.

Current Faculty			
1	2	3	4
CURRENT FACULTY NAME (FT, PT)	**COURSES TAUGHT** including Term, Course Number, Course Title, & Credit Hours (D, UN, UT, G, DU)	**ACADEMIC DEGREES and COURSEWORK** Relevant to Courses Taught, including Institution and Major; List Specific Graduate Coursework, if needed	**OTHER QUALIFICATIONS and COMMENTS** Related to Courses Taught and Modality(ies) (IP, OL, HY, OCIS)
Jackey Gong (FT)	Deep Generative AI (CS651, G, 3 hours) Fall;	PhD in Control Science and Engineering, Huazhong University of Science and Technology, China	IP
Monica Anderson (FT)	Intro Autonomous Robots (CS560, G, 3 hours) Fall;	PhD in Computer Science, University of Minnesota, Minneapolis	IP
Chris Crawford (FT)	Brain Computer Interface (CS561, G, 3 hours) Spring;	PhD in Computer Science, University of Florida	IP
Hongsheng He (FT)	Intelligent Robotics (CS665, G, 3 hours) Fall; Reinforcement Learning (CS584, G, 3 hours) Spring;	PhD in Electrical and Computer Engineering, National University of Singapore	IP
Purushotham Bangalore (FT)	HPC (CS581, G, 3 hours) Fall;	PhD in Computational Engineering, Mississippi State University	IP

Additional Faculty (To Be Hired)			
1	2	3	4
FACULTY POSITION (FT, PT)	**COURSES TO BE TAUGHT** including Term, Course Number, Course Title, & Credit Hours (D, UN, UT, G, DU)	**ACADEMIC DEGREES and COURSEWORK** Relevant to Courses Taught, including Institution and Major; List Specific Graduate Coursework, if needed	**OTHER QUALIFICATIONS and COMMENTS** Related to Courses Taught and Modality(ies) (IP, OL, HY, OCIS)
Position #1 (FT)	Computer Vision (CS563, G, 3 hours) Spring;	PhD in Computer Science or related field, tenure track	IP

Position #2 (FT)	Large Language Models (CS683, G, 3 hours) Spring;	PhD in Computer Science or related field, tenure track	IP
Position #3 (FT)	Python for Big Data (CS523, G, 3 hours) Fall, Spring; AI (CS565, G, 3 hours) Fall, Spring; Data Science (CS551, G, 3 hours) Fall;	PhD in Computer Science or related field, teaching track faculty	IP
Position #4 (FT)	Mathematics for AI (CS566, G, 3 hours) Fall, Spring; Computational Foundations of ML (CS583, G, 3 hours) Fall, Spring; Data Science (CS551, G, 3 hours) Spring;	PhD in Computer Science or related field, teaching track faculty	IP

Abbreviations: (FT, PT): Full-Time, Part-Time; (D, UN, UT, G, DU): Developmental, Undergraduate Nontransferable, Undergraduate Transferable, Graduate, Dual: High School Dual Enrollment
Course Modality: (IP, OL, HY, OCIS): In-Person, Online, Hybrid, Off-Campus Instructional Site
Courses Taught/To be Taught – For a substantive change prospectus/application, list the courses *to be taught*, not historical teaching assignments.

B. All Proposed Program Personnel

Provide all personnel counts for the proposed program.

Employment Status of Program Personnel		Personnel Information		
		Count from Proposed Program Department	Count from Other Departments	Subtotal of Personnel
Current	Full-Time Faculty	6	0	6
	Part-Time Faculty	0	0	0
	Administration	0	0	0
	Support Staff	0	0	0
****New To Be Hired**	Full-Time Faculty	4 (2 TT+2 NTRC)	0	4
	Part-Time Faculty	0	0	0
	Administration	0	0	0
	Support Staff	0	0	0
			Personnel Total	**10**

****Note**: **Any new funds** designated for compensation costs (Faculty (FT/PT), Administration, and/or Support Staff to be Hired) **should be included** in the **New Academic Degree Program Business Plan Excel file**. Current personnel salary/benefits (Faculty (FT/PT), Administration, and/or Support Staff) **should not be included** in the **Business Plan**.

Provide justification that the institution has proposed a sufficient number of faculty (full-time and part-time) for the proposed program to ensure curriculum and program quality, integrity, and review.

We currently have six full-time departmental faculty who teach the courses needed for the proposed MS in AI. We anticipate we will need to hire an additional two tenure-track faculty positions in the area of AI for this program to teach classes and serve as advisors to students involved in research projects/theses, and we are also requesting an additional two teaching faculty. These new hires will result in a total of 10 faculty to support this degree program. Once this program begins, in addition to offering the four new courses created for this degree, we will no longer be able to limit the frequency of the offerings of our existing AI courses, as we do now. Because all of our 5xx courses are slash-listed with 4xx courses, in addition to students in the MS in AI program, we also need to accommodate the increasing demand for these courses from our computer science and data science undergraduate students. The proposed increase in faculty will allow us to provide AI courses to all of the students in our department and will allow us to offer at least one section of the required AI program courses every semester, as well as all of the AI elective courses once a year or more.

C. Equipment

Will any special equipment be needed specifically for this program? **Yes ☐ No ☒**
If *yes*, list the special equipment. Special equipment cost should be included in the **New Academic Degree Program Business Plan Excel file.**

D. Facilities

Will any new facilities be required specifically for the program? **Yes ☐ No ☒**

If *yes*, list only **new** facilities. New facilities cost should be included in the **New Academic Degree Program Business Plan Excel file.**

Will any renovations to any existing infrastructure be required specifically for the program? **Yes ☐ No ☒**

If *yes*, list the renovations. Renovation costs should be included in the **New Academic Degree Program Business Plan Excel file.**

E. Assistantships/Fellowships

Will the institution offer any assistantships specifically for this program? **Yes ☐ No ☒**

If *yes*, how many assistantships will be offered?

The expenses associated with any *new* assistantships should be included in the **New Academic Degree Program Business Plan Excel file.**

F. Library

Provide a brief summarization (one to two paragraphs) describing the current status of the library collections supporting the proposed program.

Will additional library resources be required to support the program? **Yes ☐ No ☒**

If *yes*, briefly describe how any deficiencies will be remedied, and include the cost in the **New Academic Degree Program Business Plan Excel file.**

University Libraries provides access to scholarly databases that support student learning and research. These web-based collections are available 24/7 to students on and off campus. Each database authenticates through the myBama single sign-on platform, ensuring the same experience for both on-site and remote students. Of the 685 databases available, 38 include literature relevant to Artificial Intelligence and associated topics of importance within this field. Three particularly significant databases/discovery platforms offered by University Libraries include:

- **ACM Digital Library**: The Association for Computing Machinery is a comprehensive database of full-text articles and bibliographic literature covering computing and information technology.
- **Engineering Village**: Information discovery platform for the engineering community that allows users to search a single or multiple databases simultaneously and with data deduplication. Databases included: Compendex; GEOBASE; Inspec; Inspec Analytics; Knovel; and NTIS.
- **IEEE Xplore**: Index and full text of IEEE (Institute of Electrical and Electronics Engineers) and IEE (Institution of Electrical Engineers) publications: journals, conference proceedings, and standards in electrical engineering. Also includes eBook collections from MIT Press, Now Publishers, SAE, Artech House Publishers and Princeton University Press.

In addition, two citation indexes (Scopus and Web of Science) provide even wider access to publications related to research within the field of Artificial Intelligence— providing access to the latest research graduate students need to complete coursework or more formal scholarship. Further, University Libraries provides support for programmatic access (e.g., via API) to several of its resources, including the Scopus and Science Direct.

Refereed Journals and Primary Source Materials

University Libraries provides access to millions of full-text articles, including primary and secondary source materials, across 1300+ peer-reviewed journals supporting Artificial Intelligence and related fields—including the most important, highly cited journals in those fields. Importantly, the breadth and depth of coverage within these collections provides graduate students with the proper theoretical grounding for completing this program's research requirements. Below is a selected list of significant journals to which University Libraries holds subscriptions:

- *IEEE Transactions on Pattern Analysis and Machine Intelligence*, IEEE
- *Expert Systems with Applications*, Elsevier
- *Journal of Machine Learning Research*, Microtome Publishing
- *IEEE Transactions on Fuzzy Systems*, IEEE
- *Journal of the ACM*, Association for Computing Machinery
- *AI Open*, Elsevier
- *International Journal of Computer Vision*, Springer Nature
- *International Journal of Information Management*, Elsevier

Interlibrary Loan & Document Delivery

In cases where students or faculty require resources not available within University Libraries' local collections, they can utilize the Interlibrary Loan (ILL) and Document Delivery services. These services provide seamless access to materials from other top research libraries worldwide, ensuring that students and faculty can obtain critical books, journal articles, conference papers, and other research materials necessary for their work. This extended access significantly enhances the research capabilities of graduate students in the Artificial Intelligence program, allowing them to engage with a broader range of scholarship beyond what is immediately available through University Libraries.

G. Accreditation Expenses

Will the proposed program require accreditation expenses? **Yes ☐ No ☒**

If *yes*, briefly describe the estimated cost and funding source(s) and include cost in the **New Academic Degree Program Business Plan Excel file.**N/A

H. Other Costs

Please explain any other costs to be incurred with program implementation, such as marketing or recruitment costs. Be sure to note these in the **New Academic Degree Program Business** N/A

I. Revenues for Program Support

Will the proposed program require budget reallocation? **Yes ☐ No ☒**

If *yes*, briefly describe how any deficiencies will be remedied and include the revenue in the **New Academic Degree Program Business Plan Excel file.**

N/A

Will the proposed program require external funding (*e.g.*, Perkins, Foundation, Federal Grants, Sponsored Research, etc.)? **Yes ☐ No ☒**

If *yes*, list the sources of external funding and include the revenue in the **New Academic Degree Program Business Plan Excel file.**

N/A

Please describe how you calculated the tuition revenue that appears in the **New Academic Degree Program Business Plan Excel file.** Specifically, did you calculate using cost per credit hour or per term? Did you factor in differences between resident and non-resident tuition rates?

Although only 33% of our MS students are domestic and 67% are international, we expect there to be a larger demand among domestic students both resident and non-resident. We assume a conservative estimate for the number of non-resident students with 50% of the projected students in the program as resident and 50% non-resident. The tuition revenues are calculated accordingly using the cost per term published for the "Fall 2024 or Spring 2025" term

Two tenure-track and two teaching-track faculty members are requested. The salaries were calculated as

- First year
    - 1 teaching faculty salary (NTRC) - $80,000
    - 1 assistant professor salary (TT) - $115,00
- Second year two additional faculty were added
    - 1 teaching faculty salary (NTRC) - $80,000

- 1 associate professor salary (TT) - $135,000

New Academic Degree Program Summary/Business Plan

Use the Excel form from ACHE's Academic Program webpage located on the OIE New Programs and Changes page under forms or at https://www.ache.edu/index.php/forms/, named **New Academic Degree Program Business Plan**, to complete the New Academic Program Degree Proposal.

Assessment plan for the Artificial Intelligence MS Program

Outcome: 1. Understand the core AI concepts of machine learning.
Description: This outcome will be mainly assessed by the performance in Computational Foundations of Machine Learning (CS 583).
Measure: By employing a variety of assessment methods, we will comprehensively evaluate students' breadth of knowledge in AI fundamentals. The assessment methods will include multiple-choice questions, short-answer questions, and problem-solving questions in exams and quizzes to assess the understanding of fundamental concepts and principles; projects will also be designed to evaluate the broader understanding and application of knowledge. Depending on the types of assessment method, answers to questions or rubrics will be used to assess the student-learning outcome. Typically, an answer with ≥ 80% of accuracy based on the solution or rubric will be considered satisfactory; accuracy below 70% will be considered unacceptable. The fraction of students receiving a satisfactory grade will be tracked from semester-to-semester.
Schedule for Data Collection/Evaluation: Once per year
Key Personnel for collecting and evaluate the data: Graduate Associate Head

Outcome: 2. Implement AI models that are developed.
Description: This outcome will be mainly assessed by the performance in the core courses, including AI (CS565), Computational Foundations of Machine Learning (CS 583), Mathematics for AI (CS566) and Python for Big Data (CS523).
Measure: By employing a variety of assessment methods, we will comprehensively evaluate students' breadth of knowledge in AI fundamentals. The assessment methods will include multiple-choice questions, short-answer questions, and problem-solving questions in exams and quizzes to assess the understanding of fundamental concepts and principles; projects will also be designed to evaluate the broader understanding and application of knowledge. Depending on the types of assessment method, answers to questions or rubrics will be used to assess the student-learning outcome. Typically, an answer with ≥ 80% of accuracy based on the solution or rubric will be considered satisfactory; accuracy below 70% will be considered unacceptable. The fraction of students receiving a satisfactory grade will be tracked from semester-to-semester.
Schedule for Data Collection/Evaluation: Once per year
Key Personnel for collecting and evaluate the data: Graduate Associate Head

Outcome: 3. Critically evaluate AI models and algorithms.
Description: This outcome will be mainly assessed by the performance in core courses, including AI (CS565) and Computational Foundations of Machine Learning (CS 583).
Measure: By employing a variety of assessment methods, we will comprehensively evaluate students' ability to evaluate AI models and algorithms. The assessment methods will include multiple-choice questions, short-answer questions, and problem-solving questions in exams and quizzes to assess the understanding of fundamental concepts and principles; projects will also be designed to evaluate the broader understanding and application of knowledge. Depending on the types of assessment method, answers to questions or rubrics will be used to assess the student-learning outcome. Typically, an answer with ≥ 80% of accuracy based on the solution or rubric will be considered satisfactory; accuracy below 70% will be considered unacceptable. The fraction of students receiving a satisfactory grade will be tracked from semester-to-semester.
Schedule for Data Collection/Evaluation: Once per year
Key Personnel for collecting and evaluate the data: Graduate Associate Head

Outcome: 4. Apply AI techniques to solve complex real-world problems.
Description: This outcome will be mainly assessed by the performance in core courses, including AI (CS565), Computational Foundations of Machine Learning (CS 583).
Measure: By employing a variety of assessment methods, we will comprehensively evaluate students' ability to solve real-world problems using AI. The assessment methods will include projects and design challenges in individual and group project-based assignments to evaluate student's ability to integrate and apply knowledge to real-world problems. Rubrics will be used to assess the student-learning outcome. Typically, an answer with ≥ 80% of accuracy based on the rubric will be considered satisfactory; accuracy below 70% will be considered unacceptable. The fraction of students receiving a satisfactory grade will be tracked from semester-to-semester.
Schedule for Data Collection/Evaluation: Once per year
Key Personnel for collecting and evaluate the data: Graduate Associate Head

Outcome: 5. Promote responsible AI use in professional and societal contexts.
Description: This outcome will be mainly assessed by the performance in core courses, including AI (CS565) and Computational Foundations of Machine Learning (CS 583).
Measure: By employing a variety of assessment methods, we will comprehensively evaluate students' ability to understand the ethical implications of AI and promote responsible AI use. The assessment methods will include multiple-choice questions, short-answer questions, and problem-solving questions in exams and quizzes to assess the understanding of fundamental concepts and principles. Depending on the types of assessment method, answers to questions or rubrics will be used to assess the student-learning outcome. Typically, an answer with ≥ 80% of accuracy based on the solution or rubric will be considered satisfactory; accuracy below 70% will be considered unacceptable. The fraction of students receiving a satisfactory grade will be tracked from semester-to-semester.
Schedule for Data Collection/Evaluation: Once per year
Key Personnel for collecting and evaluate the data: Graduate Associate Head

Outcome: 6. Efficiently process and analyze large datasets.
Description: This outcome will be mainly assessed by the performance in the core course CS523 Python for Big Data, as well as the optional courses of CS598 Non-Thesis Research and CS599 Thesis Research.

- *Measure for CS523 Python for Big Data*: By employing a variety of assessment methods, we will comprehensively evaluate students' ability to efficiently process and analyze large data sets. The assessment methods will include multiple-choice questions, short-answer questions, and problem-solving questions in exams and quizzes to assess the understanding of fundamental concepts and principles; projects will also be designed to evaluate the broader understanding and application of knowledge. Depending on the types of assessment method, answers to questions or rubrics will be used to assess the student-learning outcome. Typically, an answer with ≥ 80% of accuracy based on the solution or rubric will be considered satisfactory; accuracy below 70% will be considered unacceptable. The fraction of students receiving a satisfactory grade will be tracked from semester-to-semester.
- *Measure for CS598 Non-thesis Research or CS599 Thesis Research courses.* This outcome will be mainly assessed by the technical document and presentation. Students are required to 1) produce a technical document in the form of a report for CS598 or a thesis for CS599, and 2) deliver an oral presentation based on the report. Students will work on a research project with advisor from the ALA-AI Center. We will comprehensively evaluate students' ability to design and implement a research project associated with the ALA-AI Center. The technical document and presentation will be used to evaluate the student's understanding of the problem, the design of the experiment, the AI techniques chosen, the ability to effectively apply AI methods, and the analysis of the experiment results. Students will be required to present their project/thesis to a group of ALA-AI Center researchers, and their project/thesis will be scored based on a rubric that will be created. Based on students' response, one of three possible

outcomes will be assigned, "exceeds," "meets," or "does not meet," the expectation.

Schedule for Data Collection/Evaluation: Every semester offered
Key Personnel for collecting and evaluate the data: Graduate Associate Head

Curriculum Map – MS in AI

Course	SLO#1	SLO#2	SLO#3	SLO#4	SLO#5	SLO#6
CS 565 AI		X	X	X	X	
CS 566 Mathematics for A		X				
CS 523 Python for Big Data		X				X
CS 583 Comp. Foundations of ML	X	X	X	X	X	
CS 598 Non-Thesis Research						X
CS 599 Thesis Research						X

Plan of Study – MS in AI

SEMESTER 1	HOURS	SEMESTER 2	HOURS
CS 565 Artificial Intelligence	3	CS 5xx or 6xx AI-Elective	3
CS 566 Mathematics for AI	3	CS 5xx or 6xx AI-Elective	3
CS 523 Python for Big Data	3	CS 5xx or 6xx AI-Elective or 599 Thesis Research	3
CS 583 Comp. Foundations of ML	3		
	12		**9**

SEMESTER 3	HOURS
CS 5xx or 6xx AI-Elective	3
CS 5xx or 6xx AI-Elective	3
CS 5xx or 6xx AI-Elective or 598 Non-Thesis Research or CS 599 Thesis Research	3
	9

Total Hours: 30

ACADEMIC DEGREE PROGRAM PROPOSAL SUMMARY

INSTITUTION:	**University of Alabama**		
PROGRAM NAME:	**Artificial Intelligence**	**CIP CODE:**	**11.0102**
SELECT LEVEL:	**GRADUATE (MASTER'S)**		

ESTIMATED *NEW* EXPENSES TO IMPLEMENT PROPOSED PROGRAM

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	TOTAL
FACULTY	$195,000	$410,000	$420,250	$430,756	$441,525	$452,563	$463,877	$2,813,972
ADMINISTRATION/STAFF	$0	$0	$0	$0	$0	$0	$0	$0
EQUIPMENT	$0	$0	$0	$0	$0	$0	$0	$0
FACILITIES	$0	$0	$0	$0	$0	$0	$0	$0
ASSISTANTSHIPS/FELLOWSHIPS	$0	$0	$0	$0	$0		$0	$0
LIBRARY	$0	$0	$0	$0	$0	$0	$0	$0
ACCREDITATION AND OTHER COSTS	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL EXPENSES	$195,000	$410,000	$420,250	$430,756	$441,525	$452,563	$463,877	**$2,813,972**

NEW REVENUES AVAILABLE FOR PROGRAM SUPPORT

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	TOTAL
REALLOCATIONS	$0	$0	$0	$0	$0	$0	$0	$0
EXTERNAL FUNDING	$0	$0	$0	$0	$0	$0	$0	$0
TUITION + FEES	$239,760	$719,280	$719,280	$1,198,800	$1,438,560	$1,438,560	$1,438,560	$7,192,800
TOTAL REVENUES	$239,760	$719,280	$719,280	$1,198,800	$1,438,560	$1,438,560	$1,438,560	**$7,192,800**

ENROLLMENT PROJECTIONS

Note: "New Enrollment Headcount" is defined as unduplicated counts across years.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	AVERAGE
FULL-TIME ENROLLMENT HEADCOUNT	No data reporting	30	30	50	60	60	60	**48.33**
PART-TIME ENROLLMENT HEADCOUNT		0	0	0	0	0	0	**0.00**
TOTAL ENROLLMENT HEADCOUNT		30	30	50	60	60	60	**48.33**
***NEW* ENROLLMENT HEADCOUNT**		20	30	40	40	40	40	**35.00**
Validation of Enrollment			**YES**	**YES**	**YES**	**YES**	**YES**	

DEGREE COMPLETION PROJECTIONS

Note: Do not count Lead "0"s and Lead 0 years in computing the average annual degree completions.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	AVERAGE
DEGREE COMPLETION PROJECTIONS	**No data reporting**	10	20	30	40	40	40	**30.00**

THE UNIVERSITY OF ALABAMA

Resolution

Granting Initial Approval of and Permission to Submit to the Alabama Commission on Higher Education (ACHE) a Proposal for a Master of Science (M.S.) degree in Artificial Intelligence (CIP Code 11.0102) in the Department of Computer Science in the College of Engineering

WHEREAS, there is an urgent and growing need for professionals with expertise in artificial intelligence (AI) to design innovative AI techniques, apply existing methodologies, and critically assess the impact of AI on society and industry; and

WHEREAS, the proposed degree program is intentionally structured to offer a rigorous, technical curriculum that equips students with the foundational knowledge and skills required to lead in the field of artificial intelligence and to pursue advanced research at the doctoral level; and

WHEREAS, graduates of this program will be well-prepared to enter a wide array of professions, including but not limited to AI Developer, Data Scientist, Senior AI/ML Engineer, Computer and Information Systems Manager, Data Analyst, Computer Vision Engineer, and Big Data Engineer; and

WHEREAS, employment opportunities for graduates span a broad spectrum of sectors, including healthcare, banking and financial services, e-commerce, manufacturing, automotive, government and military, pharmaceuticals, and agriculture; and

WHEREAS, through comprehensive training in both artificial intelligence and computer science, graduates of this program will possess the interdisciplinary expertise needed to meet the increasing demand for AI professionals and to contribute meaningfully to innovation and progress across diverse industries;

NOW, THEREFORE, BE IT RESOLVED by the Board of Trustees of The University of Alabama that it grants initial approval of and permission to submit to the Alabama Commission on Higher Education (ACHE) a Proposal for a Master of Science (M.S.) degree in Artificial Intelligence (CIP Code 11.0102) in the Department of Computer Science in the College of Engineering at The University of Alabama.

THE UNIVERSITY OF ALABAMA® | *Office of the* President

April 15, 2025

Chancellor Sid Trant
The University of Alabama System
500 University Boulevard East
Tuscaloosa, Alabama 35401

Dear Chancellor Trant:

I am pleased to endorse the recommendation from Executive Vice President and Provost James Dalton and Deans Susan Carvalho of the Graduate School and Clifford Henderson of the College of Engineering for approval of the attached proposal for a Master of Science (M.S.) degree in Artificial Intelligence (CIP Code 11.0102). There is a critical and growing demand for professionals with expertise in artificial intelligence to develop innovative solutions and assess AI's impact across various sectors. The proposed degree program offers a rigorous, interdisciplinary curriculum that prepares graduates for advanced research and a wide range of careers in fields such as healthcare, finance, manufacturing, government, and more.

If you approve of this proposal, I would appreciate you forwarding this request to the Board of Trustees at your earliest convenience.

Sincerely,

Stuart R. Bell
President

Enclosure

c: Executive Vice President and Provost James Dalton
Dean Susan Carvalho
Dean Clifford Henderson

203 Rose Administration Building | Box 870100 | Tuscaloosa, AL 35487-0100 | 205-348-5100 | Fax 205-348-7238
president@ua.edu | http://www.ua.edu

THE UNIVERSITY OF ALABAMA | Office for Academic Affairs

April 15, 2025

President Stuart R. Bell
The University of Alabama
203 Rose Administration
Tuscaloosa, Alabama 35487

Dear President Bell:

I am pleased to endorse the recommendation from Deans Susan Carvalho of the Graduate School and Clifford Henderson of the College of Engineering for approval of the attached proposal for a Master of Science (M.S.) degree in Artificial Intelligence (CIP Code 11.0102). There is a critical and growing demand for professionals with expertise in artificial intelligence to develop innovative solutions and assess AI's impact across various sectors. The proposed degree program offers a rigorous, interdisciplinary curriculum that prepares graduates for advanced research and a wide range of careers in fields such as healthcare, finance, manufacturing, government, and more.

If you approve of this new degree program, I would appreciate you forwarding this request to Chancellor Trant for his approval.

Sincerely,

James T. Dalton, Ph.D.
Executive Vice President and Provost

Enclosure

c: Dean Susan Carvalho
Dean Clifford Henderson

254 Rose Administration Building | Box 870114 | Tuscaloosa, AL 35487-0114 | 205-348-4890 | Fax 205-348-9137

THE UNIVERSITY OF ALABAMA | Graduate School
Office of the Dean and Associate Provost

April 2, 2025

Provost James Dalton
The University of Alabama
Office for Academic Affairs
254 Rose Administration Building
Tuscaloosa, AL 35487

Dear Provost Dalton:

I join Dean Cliff Henderson in recommending the approval of the attached proposal for a New Graduate Program: MS in Artificial Intelligence offered through the College Engineering. This proposed program meets specific needs and will attract new enrollments.

The proposal was recommended for approval by the Graduate Council of The University of Alabama at its meeting on April 2, 2025. We ask for timely handling of this item so that it may be considered at the June 2025 Board of Trustees Meeting.

If you approve of this proposal, please forward this request to President Bell at your earliest convenience.

Sincerely,

Susan Carvalho

Dr. Susan Carvalho
Associate Provost and Dean of the Graduate School

cc.: Dr. Andre Denham, Associate Dean, Graduate School

College of
Engineering
Office of the Dean

February 11, 2025

Dear Provost Dalton,

I am writing this letter to strongly support the initiative in the Department of Computer Science for the creation of a Master of Science Degree in Artificial Intelligence. This program will provide students with advanced skills and knowledge to engage in innovative AI research and industry applications.

The proposed MS in AI degree will be housed in the Department of Computer Science at The University of Alabama. The program focuses on computational aspects of AI and requires students to have a BS degree in Computer Science or a STEM degree for admission. The program's curriculum, consisting of 30 credit hours, provides a course of study in foundations in AI, machine learning, computational aspects of AI, and elective courses for specialization. Students who choose a research/thesis option will have the opportunity to work with faculty and researchers at the Alabama Center for the Advancement of Artificial Intelligence. The two degrees currently being offered in the state of Alabama that are most closely related to the proposed degree are an MS in AI for Medicine at UAB, whose focus is limited to the domain of medicine, and the MS in AI at Auburn. The curriculum at Auburn is similar to our proposed MS in AI, although a thesis option is not mentioned for Auburn, but we feel the demand in this area is already large enough and growing quickly that having such a degree program here at UA is imperative. There are also plans to expand the use of the courses developed in this AI program to further broaden opportunities for other engineering students across the College who would benefit from exposure to and knowledge in AI topics.

The proposed degree can contribute to the growth of the Computer Science PhD program and expansion of its research footprint. The MS in AI ensures that graduates are equipped to meet the needs of this rapidly expanding field, making meaningful contributions to academia, industry, and society.

I support the creation of this program.

Sincerely,

Clifford L. Henderson

Dr. Clifford L. Henderson
Dean of Engineering
The University of Alabama

THE UNIVERSITY OF ALABAMA®

Box 870200 | Tuscaloosa, AL 35487-0200 | 205-348-6400 | Fax 205-348-8573

IERUS Technologies
2904 Westcorp Blvd. Suite 210
Huntsville, AL 35805

October 10, 2024

Alabama Commission on Higher Education
100 N. Union Street
Montgomery, AL 36104

Dear Commission,

I would like to put my name behind the effort to establish the MS program in AI. As an alumnus and a professional surrounded by a world influenced by AI, I know this is a crucial endeavor for our University.

The implementation of this program is important as it maintains competitiveness with other universities. Many leading institutions have already established similar programs. We must continue to push the edges of our capabilities in providing a first-class education. We will be able to attract top-tier students, pursue future research initiatives and lay the groundwork for the next chapter in The University of Alabama's Computer Science Department.

I must confess, as someone who uses AI-enhanced tools daily, I was tempted to have an LLM write this letter for me. I realized that would defeat the purpose of providing a heartfelt letter of support. I did use LLM's to provide quick and easily digestible information on what the top ranked AI Graduate programs currently were and what set them apart. This is a perfect use case; I cannot urge strongly enough how much my work practices have changed for the better due to these new technologies. Current and future students will need to be able to properly use or implement AI theory and practice. I offer my full support and wish to provide any assistance that I can support.

Sincerely,

James Blair Kiel
Blair.kiel@ierustech.com
James.b.kiel@lmco.com
(LM office)256.722.4625
(cell)256.656.6319

Mercedes-Benz

Lisa L. Evans
CIO, Mercedes-Benz US International
Board of Advisors, College of Computer Science
University of Alabama
10OCT24

Alabama Commission on Higher Education
100 N. Union Street
Montgomery, AL 36104

Dear Members of the Accreditation Board,

I am writing to express my strong support for the proposed Master of Science in Artificial Intelligence program at the University of Alabama (UA). As both the CIO of a Mercedes-Benz US International with many facilities located near the university and a member of the Board of Advisors for the College of Computer Science, I have a deep understanding of the university's potential to contribute meaningfully to our region's technological and industrial growth.

Artificial intelligence (AI) is transforming industries worldwide, and the demand for professionals skilled in AI has never been higher. UA with its strong foundation in computer science, is perfectly positioned to develop a new generation of AI experts through this graduate program. The program will not only help bridge the growing skills gap in AI but also align with the needs of industries like mine, where AI-driven solutions are becoming increasingly essential.

This program will equip students with the advanced knowledge and practical experience necessary to succeed in both research and industry, making them valuable contributors to businesses and organizations in our region and beyond. By fostering close collaboration between the university and companies like ours, this program can strengthen the local economy while ensuring that graduates are prepared for the global challenges of the future.

I fully support the approval of this program, as it will elevate the university's reputation, enhance its contribution to the technological workforce, and help meet the growing demand for AI expertise in industries worldwide.

Thank you for your consideration of this important initiative.

Sincerely,
Lisa L. Evans
CIO, Mercedes-Benz US International
Board of Advisors, College of Computer Science

University of Alabama System®

New Program Proposal Supplement

In addition to the items ACHE has requested for program proposals, please include the following additional items when developing and submitting academic program proposals to the System Office and the Board of Trustees for approval.

1. Institution:

☑ UA ☐ UAB ☐ UAH

Please select more than one institution for cooperative, joint, and shared degree programs.

2. Program Identification

Program Name: Artificial Intelligence
Degree Nomenclature: M.S.
Date of NPP Submission: 2/28/2025

3. Six-digit CIP Code: 11.0102

4. Executive Summary (not to exceed two pages)

The proposed Master's Degree in Artificial Intelligence (MS in AI) at The University of Alabama is a strategic initiative designed to strengthen the Computer Science PhD program, enhance the research capacity of the Alabama Center for the Advancement of Artificial Intelligence (ALA-AI), and contribute to workforce development in the state. This program will provide students with advanced skills and knowledge to engage in cutting-edge AI research and industry applications.

The proposed MS in AI is crucial for the growth of the Computer Science PhD program and the expansion of our research footprint. The degree is specifically tailored for students with a background in computer science or a related STEM field. The program offers two pathways: a thesis/research option and a course-only option. Students choosing the thesis/research option will benefit from close collaboration with ALA-AI faculty and researchers across various disciplines, including healthcare, bioscience, physics, and statistics. The thesis/research track offers students the opportunity to engage in AI-focused research projects, and the interdisciplinary approach fosters a vibrant research community aimed at addressing contemporary AI challenges and driving innovation.

A key objective of the program is to address the growing demand for AI-literate professionals, positioning Alabama as a hub for AI talent and attracting both new and expanding companies to the region. The program's curriculum, consisting of 30 credit hours, combines foundational courses in AI, machine learning, and computational foundations with elective courses that allow for specialization. Examples of courses include Data Science, Computer Vision, Brain Computer Interface, Reinforcement Learning, and Large Language Models. Regardless of whether students choose the thesis/research option or the course-only option, students completing this degree will have the knowledge and skills to contribute to one of the fastest growing technologies today.

The MS in AI program's rigorous focus on the computational aspects of AI ensures that graduates are well-equipped to meet the needs of this rapidly evolving field, making meaningful contributions to both industry and society.

5. **Steps taken to determine if other UA System institutions might be interested in collaborating in the program.**
Although we have not taken any steps to determine if other UA system institutions might be interested in collaborating, we will consider doing so in the future.

6. **Summary of other campus comments, internal to the UA System or external (if any), regarding your plans for developing this program. Please include substantive feedback from the pre-proposal process.**

Feedback was received from our Computer Science Industrial Advisory Board. Members of our board were overwhelmingly supportive of the degree, and several members provided curriculum suggestions as well as letters of support. In addition, the Director of the Alabama Center for the Advancement of Artificial Intelligence received positive feedback regarding an MS in AI from center faculty and researchers in a myriad of fields, such as physics, healthcare, community science, bioscience, and statistics.

7. **Describe the process that will be used by your institution for routine internal and/or external program review.**

During the post-implementation period, the department will monitor enrollment, new enrollments, and the number of graduates each year. Additionally, the department will track the post-graduation outcomes of its graduates. Annually, the department will report on student learning outcomes as outlined in question 8.

At The University of Alabama, all departments undergo an academic program review (APR) approximately every eight years. This process includes a departmental self-study, an on-site visit by a review team comprising internal and external members, and the development of a strategic action plan by the department, informed by the review team's recommendations.

8. Describe the process that will be used in assessing program outcomes (to include student learning outcomes).

Outcome: 1. Identify the core AI concepts of machine learning.
Outcome: 2. Implement the AI models developed.
Outcome: 3. Critically evaluate AI models and algorithms
Outcome: 4. Apply AI techniques to solve complex real-world problems
Outcome: 5. Promote responsible AI use in professional and societal contexts
Outcome: 6. Efficiently process and analyze large datasets

The first five of these student learning outcomes are assessed in the core courses required by the degree. We will employ a variety of assessment methods to comprehensively evaluate students' knowledge/ability related to each learning outcome. The assessment methods will include multiple-choice questions, short-answer questions, and problem-solving questions in exams and quizzes to assess the understanding of fundamental concepts and principles; projects will also be designed to evaluate the broader understanding and application of knowledge. Depending on the type of assessment method, answers to questions or rubrics will be used to assess the student-learning outcome. Data collection and evaluation will occur once per year with the Graduate Program Associate Head as the key personnel to collect and evaluate the data.

The sixth student learning outcome will be mainly assessed in the project and thesis courses. We will comprehensively evaluate students' ability to design and implement a research project based on a technical document and oral presentation. The document and presentation will be used to evaluate the student's understanding of the problem, the design of the experiment, the AI techniques chosen, the ability to effectively apply AI methods, and the analysis of the experiment results. Data collection and evaluation will occur every semester with the Graduate Program Associate Head as the key personnel to collect and evaluate the data.

9. Other pertinent information, if any.

University of Alabama System®

Board Rule 502
Notice of Pending Proposal (NPP) for a New Program of Instruction
(To be completed by the Provost's Office)

1. Institution:

☑ UA ☐ UAB ☐ UAH

Please select more than one institution for cooperative, joint, and shared degree programs.

2. Date of NPP Submission (mm/dd/yyyy): 02/27/25

3. Contact Information

Institutional Contact Person: Carmen Coleman
Telephone: 205-348-3439
Email: crjones18@ua.edu

4. Program Identification

Program Name: Artificial Intelligence
Degree Nomenclature: Master of Science (M.S.)

5. 6-digit CIP Code: 11.0102

6. Program Mode of Delivery

Provide the planned delivery format(s) (i.e., in-person, online, hybrid) of the program along with the planned location(s) at which the program will be delivered (i.e., on-campus and/or at specific off-campus instructional site(s)). Please also note whether any program requirements can be completed through competency-based assessment.

- [x] In-person
- [ ] Online
- [ ] Hybrid
- [x] On-campus
- [ ] Off-campus
- [ ] Competency-based
- [ ] Other, please describe:

7. Select a meeting for Board consideration:

- ○ April 11-12, 2024
- ○ June 6-7, 2024
- ○ September 12-13, 2024
- ○ November 7-8, 2024
- ○ February 6-7, 2025
- ○ April 3-4, 2025
- ◉ June 5-6, 2025
- ○ September 11-12, 2025
- ○ November 6-7, 2025
- ○ February 5-6, 2026
- ○ April 2-3, 2026
- ○ June 4-5, 2026

8. Is the proposed academic degree program currently listed on your campus Three-Year Academic Program Planning Report that is annually submitted to the Board of Trustees?

○ Yes

◉ No

If no, please explain.

When our three-year academic plan was originally submitted, the transformative impact of AI was just beginning to unfold. Since then, demand for AI-related education and research has grown significantly, driven by both student interest and industry needs. In response, we have expanded our efforts to develop new AI courses and degree programs while strengthening our research initiatives. The College has also encouraged us to enhance our presence in AI through new faculty hires and the establishment of the ALA-AI Center. With these resources in place, we are confident that our department is well-equipped to offer this degree, which will be included in the three-year academic plan submitted this year.

9. Provide a brief description of the program.

The proposed Artificial Intelligence (M.S.) program will provide students with the foundation needed for students to work at the forefront of artificial intelligence and will prepare students to conduct research at the PhD level. This proposed degree provides an in-depth study and will differ from programs that provide a cursory examination of the topics of artificial intelligence. Our focus on the computational aspects of AI requires students to have a background in programming, mathematics, and statistics. Students enrolled in the MS in AI program and choose the thesis/research option will have the opportunity to work with the ALA-AI Center faculty and researchers on projects to fulfill the degree requirements. This degree provides students with the knowledge and skills to contribute to one of the fastest-growing technologies today.

10. Relationship of program to other programs within the institution.

10.1. How will the program support or be supported by other programs within the institution?

There will be shared courses or resources with our other programs: BS in Computer Science, BS in Data Science, MS in Computer Science and PhD in Computer Science.

10.2. Will this program replace any existing program(s) or specialization(s), option(s) or concentration(s) within existing programs?

○ Yes

◉ No

If yes, please explain:

11. If this program is similar or duplicative of any other programs in the system or the state, please give your rationale for program duplication.

An MS in AI is offered at Auburn University. The curriculum is similar but a thesis option is not mentioned. Demand in this area is high enough to justify duplication.

An MS in AI for Medicine is offered at UAB. Their program domain focus is medicine, while our proposed degree is not limited to one domain.

12. Do you plan to explore possible program collaboration with other institutions? Please explain.

Not at this time, but we will consider program collaboration in the future.

13. Please describe the need and/or level of student demand for this program.

A Qualtrics survey was distributed to B.S. students in the Computer Science department at the University of Alabama to indicate their interest in an MS in AI degree program to provide an estimate of the demand by our current students. Of the 119 students who responded to the survey, 84% (99 students) answered they would be interested in pursuing an MS in AI. Demand for knowledge in AI among CS and STEM students is extremely high.