

ARTIFICIAL INTELLIGENCE & DATA SCIENCE
AT THE UNIVERSITY OF FLORIDA

Transforming *the Workforce*



THE UNIVERSITY OF FLORIDA

Artificial Intelligence Leadership for the Future

THE UNIVERSITY OF FLORIDA IS BECOMING THE LEADER IN AI WORKFORCE DEVELOPMENT with our AI-across-the-curriculum approach that infuses AI and data science into all academic endeavors. UF's \$100 million investment in AI will transform Florida's workforce and economy to resonate globally and continue the university's rise into America's top-tier public universities.

Learn more at ai.ufl.edu.

*"The access our students have to AI courses, certificates, and degrees **ensures that they will make a dynamic impact** in industry and society in all sectors."*

—**JA'NET GLOVER**, SENIOR DIRECTOR, CAREER CONNECTIONS CENTER



AI by the Numbers

\$15.7 Trillion

POTENTIAL CONTRIBUTION TO THE GLOBAL ECONOMY BY 2030 FROM AI. (PWC)

270%

THE NUMBER OF ENTERPRISES USING AI GREW BY 270% BETWEEN 2015 AND 2019.

(GARTNER)

59%

OF ORGANIZATIONS NAMED SHORTAGE OF DATA SCIENCE TALENT AS THE PRIMARY BARRIER TO REALIZING VALUE FROM THEIR BIG DATA TECHNOLOGIES.

(GLOBE NEWSWIRE)

51%

OF EXECUTIVES SAID THE PRIMARY GOALS OF AI IMPLEMENTATION WERE ENHANCING THE FEATURES AND PERFORMANCE OF THEIR PRODUCTS. (HARVARD BUSINESS REVIEW)



Building Tomorrow

THE CENTERPIECE OF THIS INITIATIVE IS THE MOST POWERFUL SUPERCOMPUTER IN U.S. HIGHER EDUCATION, made possible by the generosity of NVIDIA and NVIDIA co-founder and University of Florida alumnus Chris Malachowsky.

AI Supercomputer Technical Specs

The University of Florida has installed two supercomputers in its state-of-the-art data center:

- ▶ **HiPerGator 3.0** is the university's general-purpose supercomputer.
 - Has been in operation since 2013
 - Contains 66,000 cores and 4 petabytes of new Blue fast storage
 - Operates at 1 petaflop or better
- ▶ **HiPerGator AI** is the most powerful and fastest supercomputer in higher education.
 - Has 1,120 NVIDIA A100 GPUs
 - AI floating point operations execute at 0.7 exaflops

HiPerGator AI is anticipated to be among the top 25 fastest supercomputers in the world based on these statistics and a recent world ranking of a similar NVIDIA supercomputer. The ranking will be conducted again in summer 2021.



Partnering with Campus

THE UNIVERSITY OF FLORIDA ENGAGES WITH INDUSTRY MEMBERS TO FORM STRATEGIC PARTNERSHIPS WITH IMPACTS BOTH STATE AND NATIONWIDE.

Partnership benefits include access to UF faculty expertise and research collaboration opportunities to enhance technology transfer. Industry members will be able to engage with AI classroom instruction through professional development programs. Student teams will be able to showcase professional talent through industry-inspired partnerships that enrich the AI curriculum.

Additionally, UF is working with statewide stakeholders to bring AI literacy skills to multiple generations of citizens from K-12 students and beyond.



REFLECTIONS ON THE MALACHOWSKY HALL FOR DATA SCIENCE & INFORMATION TECHNOLOGY ▲

“As a result of this building’s thoughtful design, students will benefit from better training, faster acquisition of key research skills and opportunities to work side by side with some of the best scientists in the world. That will make them even more prepared for their careers after they graduate from the University of Florida.”
—MORI HOSSEINI, THE UNIVERSITY OF FLORIDA BOARD CHAIR



Reimagining Curriculum

The University of Florida's annual contracts and grants portfolio exceeds **\$900M** per year.

Leadership in AI is about more than technology. It's about reimagining the curriculum, not just in computer science but in medicine, humanities, agriculture and the social sciences, too.

The University of Florida is committed to ensuring that all students are encouraged to learn the fundamentals of AI and data science, no matter their major. The curriculum will be enhanced through new majors, robust courses and comprehensive certificate offerings.

Student Snapshot ▶

The University of Florida has over 58,000 students enrolled in 16 colleges. Internships, co-ops and other experiential opportunities are key in developing and preparing students for the workforce, before and after graduation.

37,874 UNDERGRADUATES
IN 2019

61% OF UNDERGRADUATES
COMPLETED AT LEAST ONE
INTERNSHIP WHILE AT UF

Additional Investments

▶ HIRING 100 NEW AI-FOCUSED FACULTY

Our faculty are already integrating AI and data science into their research programs. Additionally, we are committed to hiring an additional 100 faculty members in AI with applications reflecting a diversity of backgrounds and experiences. Searches for 56 of these positions are already underway, and all colleges are participating.

▶ INVESTING IN CLASSROOM FACILITIES

Malachowsky Hall for Data Science & Information Technology, a 263,000-square-foot academic building located in the heart of the University of Florida's main campus, will connect students and researchers from across disciplines and create a hub for advances in computing, communication and cyber-technologies with the potential for profound societal impact.

▶ AI AND ACADEMICS

The University of Florida is offering courses in every college, and launching AI certificates and majors to ensure students have a variety of entry points to learn and grow skills in AI.

CATALYZING BREAKTHROUGHS

Our Impact

THE UNIVERSITY OF FLORIDA'S AI INITIATIVE WILL MAKE UP A NATIONAL LEADER IN AI, WITH FAR-REACHING IMPACT.

AI will play a crucial role in the transformation of Florida's economy into a diversified, technology-driven, high-wage economy.

▶ For Florida: This initiative is critical to ensuring that the state of Florida fully embraces AI and the opportunities for future economic growth. From the development and training of an AI-enabled workforce, to the application of AI in a wide array of pressing challenges, the University of Florida will serve a central role in advancing and protecting the state we call home. Supporting the University of Florida's AI initiative supports a catalyst for Florida's future prosperity and growth.

▶ For the University: The University of Florida is transforming on a systemic level into an AI university. As the University of Florida emerges as a national leader in the development and application of AI and its associated technologies, the university will be better positioned to attract increased funding from federal agencies.

▶ For Our Graduates and Alumni: Graduating thousands of AI-skilled students each year will help build the economy of Florida and our nation. We aren't producing just a few experts; we are producing graduates with all levels of skill ranging from AI literacy through competence and world-class expertise.



FOR FLORIDA AND BEYOND

Extending Our Research

UF CATALYZES INTERDISCIPLINARY TEAMS OF RESEARCHERS TO TACKLE CHALLENGING, REAL-WORLD PROBLEMS.

As a comprehensive land-grant institution with an extremely strong and diverse portfolio of research programs, the University of Florida is incorporating and applying AI and data science across disciplines. This technology will supercharge the university's highly successful research and development portfolio across all fields. To encourage rapid initiation of research projects, the Vice President for Research has developed a seed grant program to stimulate this activity. In December 2020, the University of Florida awarded 20 faculty teams \$50,000 each to pursue a wide range of projects. These projects will use the university's exceptional computing capabilities to analyze vast amounts of data and predict solutions to health, agriculture, engineering and educational challenges.



AI Research Initiatives by College



COLLEGE OF AGRICULTURAL AND LIFE SCIENCES/IFAS

Agroview, an artificial intelligence technology which helps farmers save money and better care for their crops, was the university's 2020 Invention of the Year.



COLLEGE OF THE ARTS

Researchers and artists are currently utilizing AI to classify and analyze human motion, impacting the future of clinical and telehealth settings, orthopedic centers, choreographic practice, and cross-cultural movement analysis.



COLLEGE OF DENTISTRY

The UF College of Dentistry will use AI to find patterns of gene expression of oral diseases and link imaging, pathology and genomic data to improve outcomes in patients with malignancies of the mouth and jaws.



COLLEGE OF DESIGN, CONSTRUCTION AND PLANNING

Researchers are creating automated design and construction systems, and developing smart and resilient built environments.



COLLEGE OF EDUCATION

Faculty are working at the intersection of data mining, computational psychometrics, machine learning, and applied artificial intelligence, to dramatically improve learning outcomes and to transform education for all.



COLLEGE OF HEALTH AND HUMAN PERFORMANCE

Researchers are using AI to diagnose Parkinson's Disease, advance data analytics in sports, and revolutionize the tourism and hospitality industries.



COLLEGE OF JOURNALISM AND COMMUNICATIONS

The STEM Translational Communication Center is exploring the impact of delivering personalized messages through a "virtual human" to increase colorectal cancer screening rates among minority and rural populations.



COLLEGE OF LAW

Developing the appropriate ecosystem of ethics, governance, incentives, and safeguards to maximize the benefits of AI while minimizing its harms in multiple areas, including FinTech, criminal justice, and health care regulation.



COLLEGE OF LIBERAL ARTS AND SCIENCES

Research into the ethics of artificial intelligence applications, for example, assisting law enforcement in anticipating crime before it happens. Additionally, UF researchers are applying AI to the sciences such as astrophysics, chemistry and biology.



COLLEGE OF MEDICINE

Teams will harness the power of big data to develop decision-making systems and predictive analytics to help patients, clinicians, health systems and payers optimize health care decisions. Other teams will use AI technologies that aim to reduce health disparities while improving the patient experience, such as virtual health navigators.



COLLEGE OF MEDICINE - JACKSONVILLE

Researchers are seeking to leverage big data toward improved population-based risk prediction for cancer and in-hospital mortality, as well as applying natural language processing toward health equity.



COLLEGE OF NURSING

Researchers will use advances in machine learning and natural language processing to improve patient outcomes with precision nursing.



COLLEGE OF PHARMACY

AI-based technology is powering researchers to improve and speed up the drug discovery, development and use process.



COLLEGE OF PUBLIC HEALTH AND HEALTH PROFESSIONS

Scientists are using AI in biostatistics, epidemiology and health professions research. Examples include treatment effect studies, tracking infection transmission clusters, understanding cognitive changes and developing models that recognize racial bias.



COLLEGE OF VETERINARY MEDICINE

Experts are exploring the use of machine-learning techniques to predict the risk of infectious diseases in livestock and aquatic species, and are creating strategies to reduce the use of antimicrobials in livestock and improve the diagnostic accuracy and prediction of muscle-skeletal lesions through medical imaging.



HERBERT WERTHEIM COLLEGE OF ENGINEERING

Researchers are developing software technologies that can explain how bias can creep into AI algorithms. Additionally, AI is being used to create interventions to improve the resilience of coastal communities for the state of Florida.



WARRINGTON COLLEGE OF BUSINESS

Faculty research focuses on the use of analytics and AI to analyze large volumes of stock market, accounting, electronic commerce and supply chain data to improve business decisions and outcomes.





**WITH UF'S FAR-REACHING AI INITIATIVE,
INDUSTRY PARTNERS WILL FIND A
UNIQUE OPPORTUNITY TO COLLABORATE,
CONTRIBUTE, AND SHAPE HOW AI WILL
INTEGRATE INTO EVERYDAY SOCIETY.**

Learn more at ai.ufl.edu.

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