UNIVERSITY OF MIAMI

FROST INSTITUTE for DATA SCIENCE & COMPUTING

IDSC *enabling* DISCOVERY

Research Focus Areas/

Artificial Intelligence + Machine Learning

AI encompasses machine learning (ML), natural language understanding (spoken/written), computer vision, data mining, human-computer interfaces, data visualization, and deep learning. The application of AI and ML is ushering in crucial advances in medicine, business, and even the arts, humanities, and social sciences, assisting humans in decision making and in solving complex problems.

Data Ethics + Society

In conjunction with UM's Ethics Programs and the Institute for Bioethics and Health Policy, IDSC is identifying, addressing, and resolving research challenges from the appropriate uses and users of intelligent machines to privacy challenges raised by data collection, analysis, surveillance, and secondary use.

Digital Health + Life Sciences Informatics

With access to massive amounts of structured and unstructured patient data across a wide range of data sources, IDSC data-driven exploration in Digital Drug Discovery, Population Health Informatics, and Social and Behavioral Data Science can aid in diagnosis, developing new therapeutics, matching treatment with best outcomes, and predicting patient risk levels for disease. UM is well positioned to harness the power of the data of millions of patients, combining impressive academic programs with one of the most extensive health care systems in the State.

Earth Systems Science

Machine learning (ML) and big data analytics are highly effective tools for developing models and making predictions in Earth Systems Science where data are sparse, and uncertainty high. The pairing of ML with Bayesian statistics is rendering multiple prediction tools that provide more reliable forecasts and a detailed understanding of inherent uncertainties in extreme weather events.

Human Centered Design + Computing

IDSC Human Centered Design and Computing, encompassing Data Visualization and Creative Technologies, fulfills a key educational role in raising awareness about data science and its applications. The use of multimodal media—from static infographics to interactive and XR technologies—helps students and scientists illuminate their data and communicate their findings.

Smart Cities + Smart Environments

Smart Cities research tackles data-collecting technology and data analytics, and innovation and utilization in both hardware and software applications. This combination leverages the U's computational resources and expertise in physical computing and data analytics to design the next generation of smart cities and environments.

Platforms/

Advanced Computing Addressing the ever-expanding needs of data driven research, the Triton supercomputer, a GPU-accelerated system, represents a quantum leap in the University of Miami's computing infrastructure. Built using IBM Power Systems AC9222 servers, Triton was designed to maximize data movement between the IBM POWER9 CPU and attached accelerators like GPUs, and to accommodate traditional high-performance computing, interactive data science, big data, AI, and machine learning workloads.

Systems + Data Engineering The Systems and Data Engineering team are professional software engineers who actively seek collaborative partners for new and innovative software application and systems development projects. The team has developed applications and software systems to support work in clinical research, drug discovery, genomics, mapping, and urban planning, observational biology/ecology, and the digital humanities.

Partnerships/

IDSC's collaborative approach brings together talented minds at the interface of disciplines. From creative start-ups to ideas for industry-shaping innovations, IDSC can help you achieve your research, training, or business goals.

Frost Institute for Data Science and Computing
1320 S Dixie Hwy, Suite 600, Coral Gables, FL 33146-2930
305.243.4962 | idsc.miami.edu

MIAMI IDSC

NEW DEGREE

Master of Science in Data Science

This degree provides interdisciplinary connections and experiential learning opportunities across all aspects of data science and computing, from machine learning to marine science, city planning, or communications.

Students from any academic discipline are invited to explore advancing their careers with foundational knowledge on the applications and implications of data in a variety of fields.

For more information, please contact the Office of Interdisciplinary and Professional Studies at 305.284.8783.

Data Scientist

"The sexiest job of the 21st century."
-HARVARD BUSINESS REVIEW

msdatascience.miami.edu