

# AI Research at Indiana University

At Indiana University, artificial intelligence research includes diverse faculty and students investigating many areas, including speech and language recognition, robotic systems, cognitive science, planning, computer vision, knowledge representation and inference, and more. What sets IU AI research apart is collaboration—both interdisciplinary work among AI faculty experts and work with government and industry partners—and access to IU's world-leading university IT infrastructure.

## Studying human learning

A large team of IU faculty and researchers in psychology, neuroscience, and network science are pursuing new theories of how humans learn, which in turn will inform and enhance machine learning.

## AI and national security

IU is expanding its longstanding relationship with the Naval Surface Warfare Center Crane, addressing the needs of military and industry partners for practical AI applications in areas such as trusted microelectronics, cybersecurity, supply chain integrity, and fraud prevention and detection.

## New research center

A landmark \$60 million gift from IU alumnus and IT pioneer Fred Luddy is funding a new interdisciplinary research center addressing issues in AI. Based in the Luddy School of Informatics, Computing, and Engineering, the center will focus initially on AI approaches to digital health.

## AI and International partners

Indiana University and the Sorbonne Université in France held the first joint symposium on AI in summer 2019. As a result, many new ideas are being explored such as: big data analytics, bioinformatics, complex networks, AI and ethics, and brain sciences, with the goal of pursuing collaborations.



An infant takes part in AI research activities in IU Bloomington's Computational Cognition and Learning Lab.



INDIANA UNIVERSITY

OFFICE OF THE VICE PRESIDENT FOR RESEARCH

# Unparalleled support for AI research

AI research at IU takes advantage of one of the most advanced university IT infrastructures in the world.

- **Big Red 200**, the fastest university-owned supercomputer in the nation, which is used to support advanced research in artificial intelligence, machine learning, data analytics, and scientific and medical research, among other areas.
- Access to world-class data storage systems including **99 petabytes of online research data storage**.
- **25 percent of the world's research and education internet traffic** runs across an IU-managed network
- The **IU Global Network Operations Center** (GlobalNOC), which manages more than 20 research networks on a global scale, including a crucial network for the National Oceanic and Atmospheric Administration, networks for 12 U.S. states, and the Internet 2 research network for more than 300 universities, government agencies, and affiliated organizations.
- **The OmniSOC**, founded by IU, Northwestern University, Purdue University, Rutgers University, and University of Nebraska, which works to dramatically reduce the time between first awareness of a security threat to its effective mitigation.
- The **Research and Education Networking Information Sharing and Analysis Center** (REN-ISAC) based at IU, which is one of 19 industry-specific centers recognized by the Department of Homeland Security and includes 620 member institutions.

## How fast is Big Red 200?

The new supercomputer is the latest major milestone in IU's decades-long leadership in pushing the boundaries of computing to advance world-class research.



Big Red 200 can process

**71,000** **3 GB BRAIN SCANS**

in RAM simultaneously.



It would take everyone in the state of Indiana more than

**28** YEARS



performing one calculation per second

**24** HOURS A DAY

**7** DAYS A WEEK

**365** DAYS A YEAR



to perform the same number of calculations that Big Red 200 can do in just

**1** SECOND

For more information, contact the **Office of the Vice President for Research** at [vpr@iu.edu](mailto:vpr@iu.edu) or 812-856-2096.

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