



**The Grainger College
of Engineering**

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

CS-DS-AI at UIUC

Rashid Bashir and Team

Dean of The Grainger College of Engineering

09/09/24

college make-up:

~11,700 Undergraduate Students

~6,600 Graduate Students

488 Tenure/Tenure-track Faculty

-
140 Specialized Faculty

-
820 Academic Professionals, Staff, Post-Docs

-
\$620M College Budget

-
\$320M+ Annual Extramural Research Expenditures



Campus Wide Notable External funded AI Institutes, Centers, Partnerships.....



NSF Molecule Maker Lab (SCS+CS)

AI for Molecular Discovery, Synthetic Strategy & Manufacturing



NSF-USDA AIFARMS (ACES+CS)

AI for Future Agricultural Resilience, management & Sustainability Institute



NSF INVITE (Education+CS)

Inclusive Intelligent Technologies for Education



NSF Institute for Exceptional Education (UBuffalo led)



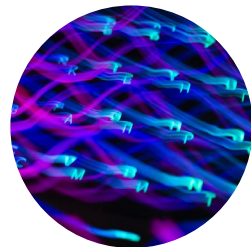
NSF ACTION (UCSB Led)

The NSF AI Institute for Agent-based Cyber Threat Intelligence & Operation



C3.ai DTI

Digital Transformation Institute



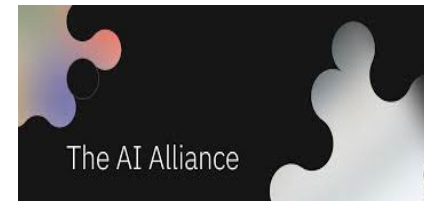
IBM-Illinois

IBM-Illinois Discovery Accelerator Institute



AICE

Amazon-Illinois Center on AI Interactive Conversational Experiences



IBM Led open AI Alliance

<https://thealliance.ai/>



Overview of Available Compute and Data Resources at NCSA

Name	Capabilities	Use Model	Details
Delta	GPU-rich supercomputer for simulation, AI/ML, Data Science (NSF funded)	Batch/Browser	440 A100, 400 A40, 8 MI100, 124 dual Milan (NSF, 10% for UIUC)
DeltaAI	GPU-rich supercomputer for AI/ML (NSF funded)	Batch/Interactive	320 GH200 (NSF, 10% for UIUC)
TBD	GPU-rich supercomputer for AI/ML	Batch/Interactive	80 GH200
Nightingale	Mixed CPU/GPU, HIPAA compliant, ePHI/CUI secure	Batch/Interactive	Suitable for HIPAA, CUI, FERPA
Radiant	On-Prem Cloud – OpenStack	Interactive	31,000 vcpus, 8 vgpus
Hydro	Mixed CPU/GPU for MPI/AI/ML	Batch	55 nodes incl 18 A100
HAL	GPU-rich cluster for AI/ML	Batch	16 P9 with 64V100; DGX2; FPGA
Taiga/Granite	Data Storage Services – Disk and tape	Shared File System	18PB disk 40PB tape; can grow
Campus Cluster	Mixed CPU/GPU “condo style” cluster	Batch	769 CPU, 50 GPU nodes

Details and up-to-date config: <https://wiki.ncsa.illinois.edu/display/USSPPRT/NCSA+Allocations>

DeltaAI delivered and in operation

Siebel School of Computing and Data Science

computing and data science ecosystem

3

Integration of computing and data science across The Grainger College of Engineering

1

Computer Science

Integration of computing across the UIUC campus

CS+X

- Computer Science + Advertising
- Computer Science + Animal Sciences
- Computer Science + Anthropology
- Computer Science + Astronomy
- Computer Science + Chemistry
- Computer Science + Crop Sciences
- Computer Science + Economics
- Computer Science + Education
- Computer Science + Geography & Geographic IS
- Computer Science + Linguistics
- Computer Science + Mathematics
- Computer Science + Music
- Computer Science + Philosophy
- Computer Science + Statistics

2

Data Science

Integration of data science (w. LAS and iSchool) across the UIUC campus

CS, Math, Stat & iSchool

X+DS

- Accountancy + Data Science
- Astronomy + Data Science
- Business + Data Science
- Finance + Data Science
- Information Sciences + Data Science

4

UNDER DEVELOPMENT

- NPRES+DS
- MatSE+DS
- ChemE+DS
- PHYS+DS



Aerospace Engineering



Agricultural & Biological Engineering



Bioengineering
CS+Bioengineering



Chemical & Biomolecular Engineering



Civil & Environmental Engineering



Electrical & Computer Engineering



Industrial & Enterprise Systems Engineering



Materials Science & Engineering



Mechanical Science & Engineering



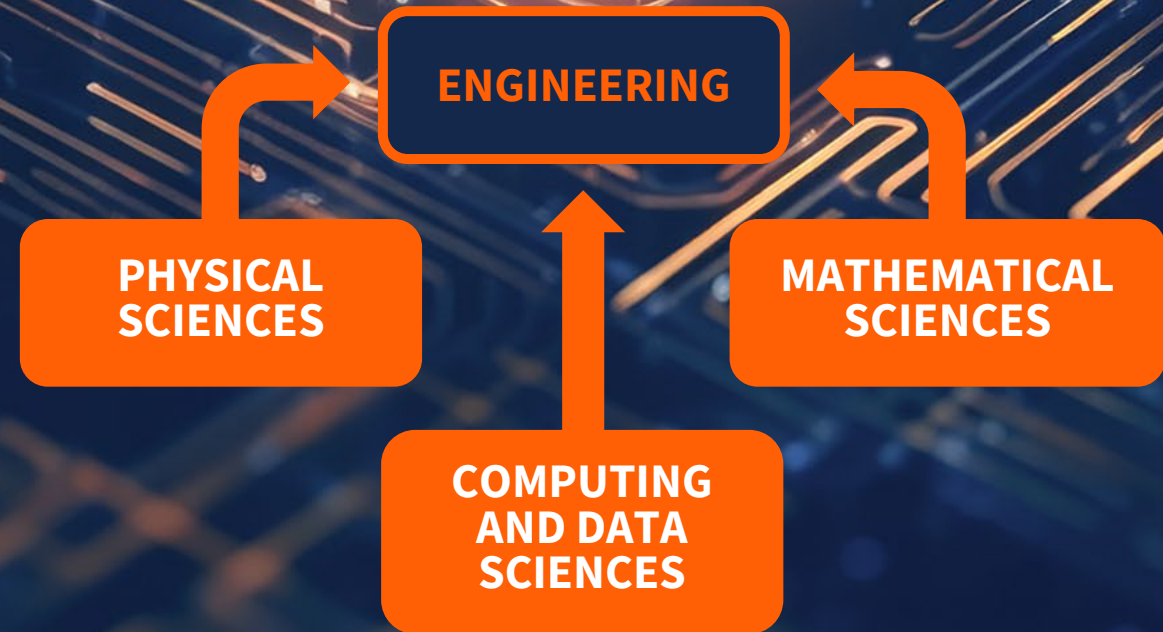
Nuclear, Plasma & Radiological Engineering



Physics
CS+Physics

Launched the

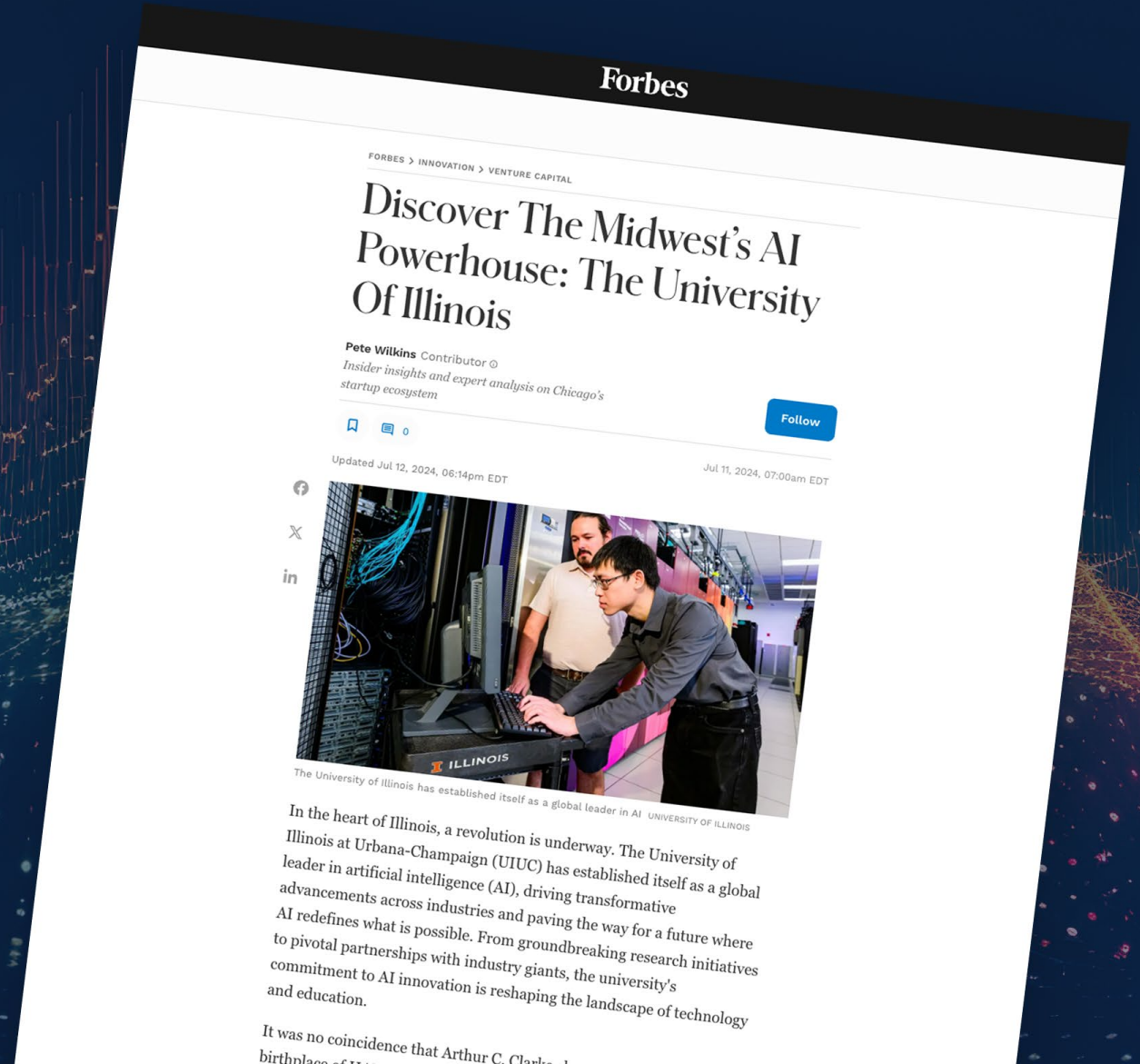
Siebel School of Computing and Data Science



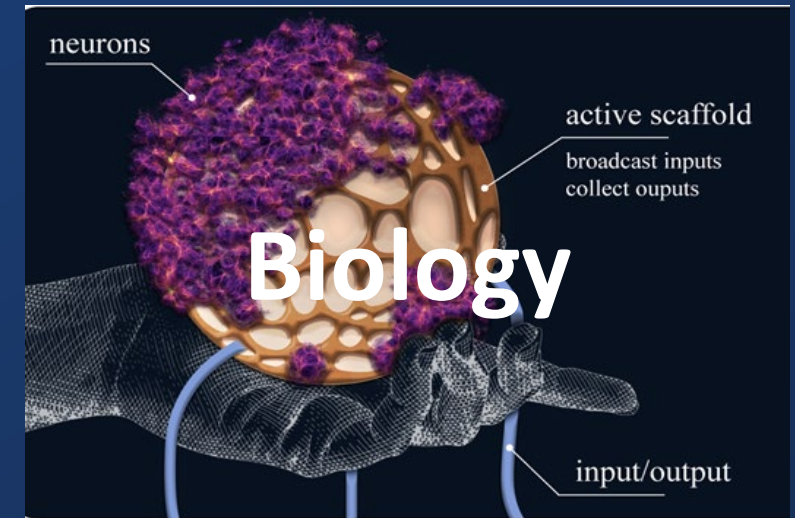
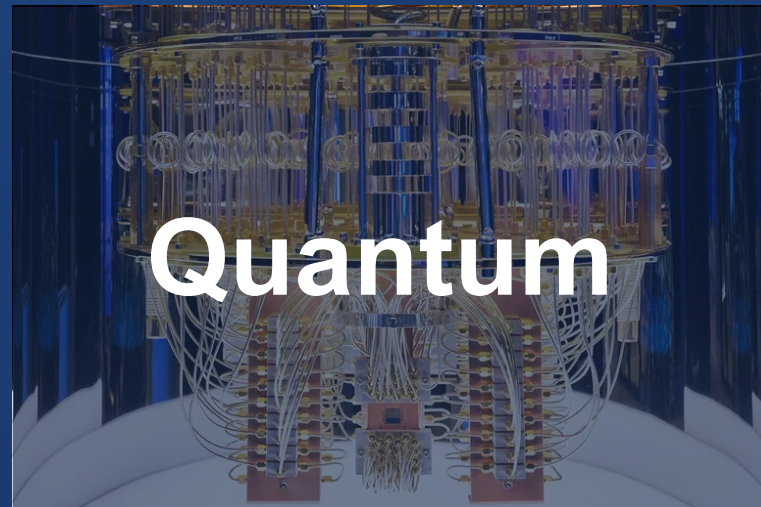
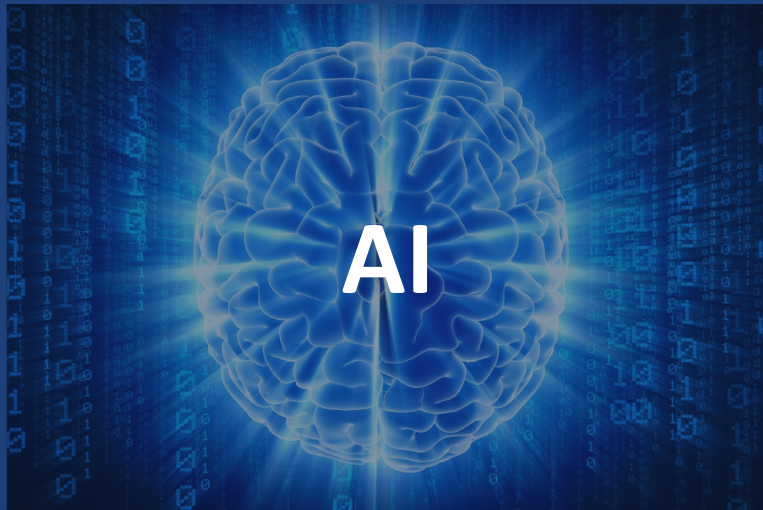
Generative AI is transforming the world.

Research and Application Areas:

- Design and Manufacturing
- Healthcare
- Education
- Our own enterprise !



THE FUTURE OF COMPUTING



“BEYOND SILICON”

*R&D hub
and network*

Attracting researchers, innovators, designers, startups, and major industrial partners to Illinois to carry out next generation testing and prototyping, and to grow the state's tech talent.



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of Engineering**

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN



UNIVERSITY OF
ILLINOIS CHICAGO



Northwestern
University



THE UNIVERSITY OF
CHICAGO

ILLINOIS TECH



CHICAGO STATE
UNIVERSITY



**CITY COLLEGES
OF CHICAGO**

ILLINOIS QUANTUM AND MICROELECTRONICS PARK

\$500M

State funding



Harley Johnson, Brian DeMarco and Laura Appenzeller serving as leaders of IQMP & DARPA project.

\$140M

DARPA-Illinois Quantum Proving Ground Project

PsiQuantum, who aim to build first utility-scale fault-tolerant quantum computer

\$500M

Psi Quantum





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