UC San Diego
JACOBS SCHOOL OF ENGINEERING
Corporate Affiliates Program

Welcome
CAP Executive Board
February 5, 2026

CAP Chair and Vice Chair

John Black

Chief Technology Officer
Brain Corporation

Cayley Rice

Chief Technology Officer, Space Business
Leidos

Welcome

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New CAP Executive Board Leadership

John Black, Chair
CTO, Brain Corporation

- John aligns Brain Corp's technical vision with its overall business objectives.
- Helped commercialize first autonomous floor scrubber and scale global fleet of 40,000+ robots.
- Received his BS from Carnegie Mellon University, and a MSME from Oakland University.
- Champion for UC San Diego and the Jacobs School, notably recruiting top students and fostering research connections in robotics & AI

Cayley Rice, Vice Chair
CTO, Space Business, Leidos

- Cayley, as the CTO for the Space Business area, influences strategy and leads innovation including technical reviews, the IRAD portfolio, and individual career growth
- Connects and applies R&D to real-world problems to mature and deliver innovative solutions to government customers, including UC San Diego research collaborations
- Earned her BS from Swarthmore College, a MA and Ph.D in Mathematics from UC San Diego, and a MPH from USF
- A longtime champion for UC San Diego, she manages the Leidos Donor Advised Fund, providing philanthropic support to faculty and students

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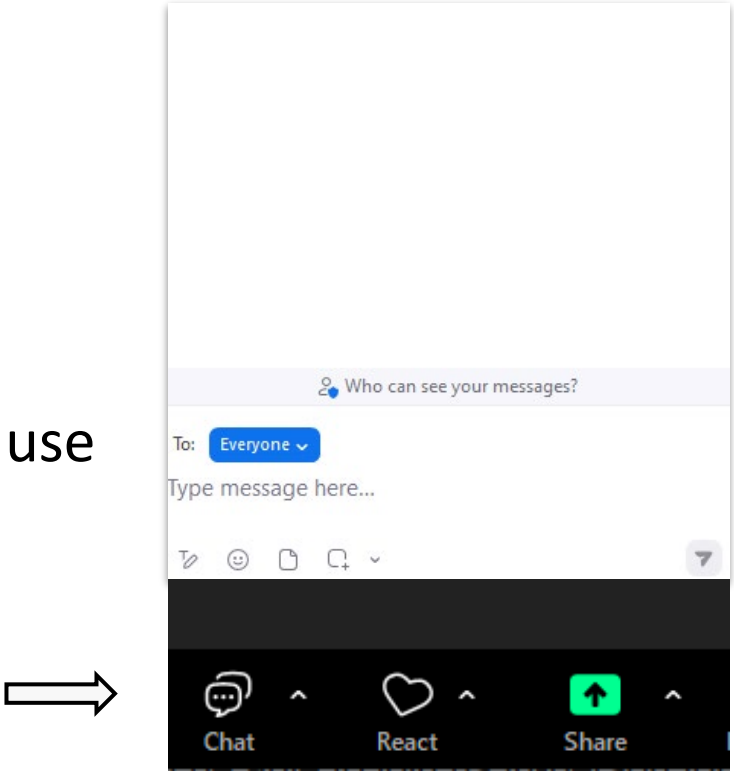
Virtual Attendees

➔ We will be recording this meeting

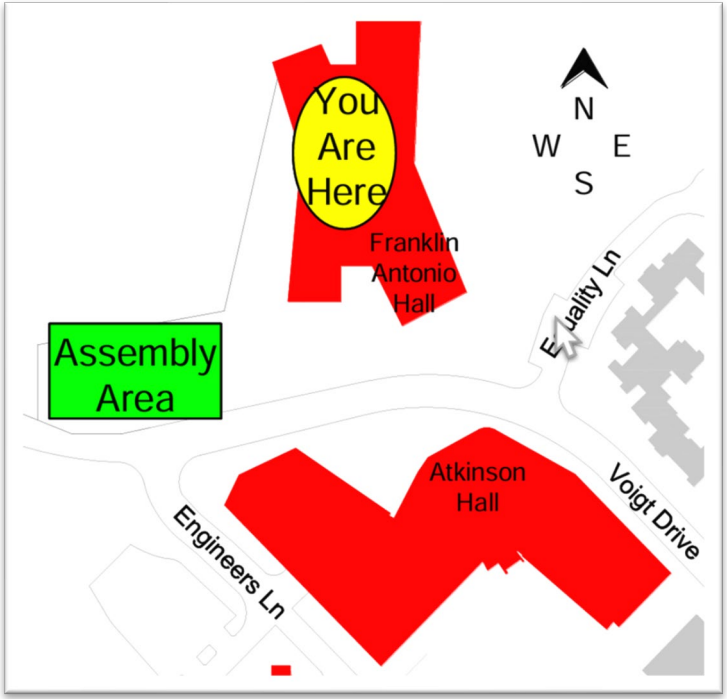
➔ You will be muted

➔ During the panel discussion Q&A, please use the chat box for your questions and inputs.



Safety Protocols

- ➔ Please note the exit doors
- ➔ Evacuation area is the open area just west of this building
- ➔ Find a UC San Diego staff or faculty



Agenda

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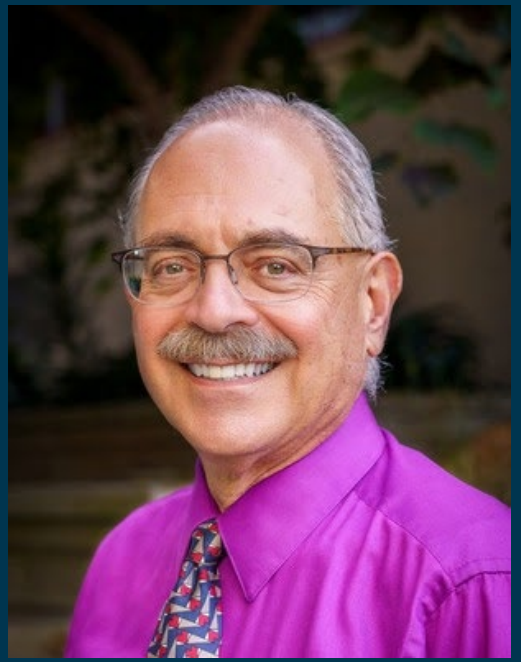
5:00-5:10pm	**CAP Executive Board Leadership Welcome**
	John Black, Chief Technology Officer, Brain Corporation
	Cayley Rice, CTO - Space Business, Leidos
5:10-5:30pm	**Dean's Report**
	Al Pisano
	Special Adviser to the Chancellor
	Dean, Jacobs School of Engineering
5:30-5:50pm	**Computer Science & Engineering AI Strategy**
	Steve Swanson
	Professor and Chair, Computer Science & Engineering
5:50-6:20pm	**CAP Executive Input**
6:20-6:30pm	**CAP Business**
	Wil Dyer
	Director, Corporate Affiliates Program
6:30pm	**Adjournment**

Welcome New CAP Partners

Welcome Guests

Autodesk
Illumina
Intel
Schaeffler

Dean’s Report



Albert P. Pisano

Dean, Jacobs School of Engineering
Special Adviser to the Chancellor

Getting Ready to Pivot

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AGENDA

1. Looking Back at 2025
2. Forging Ahead: 2026 and Beyond
3. Special Presentation:

   Computer Science & Engineering AI Strategy

Looking Back at 2025

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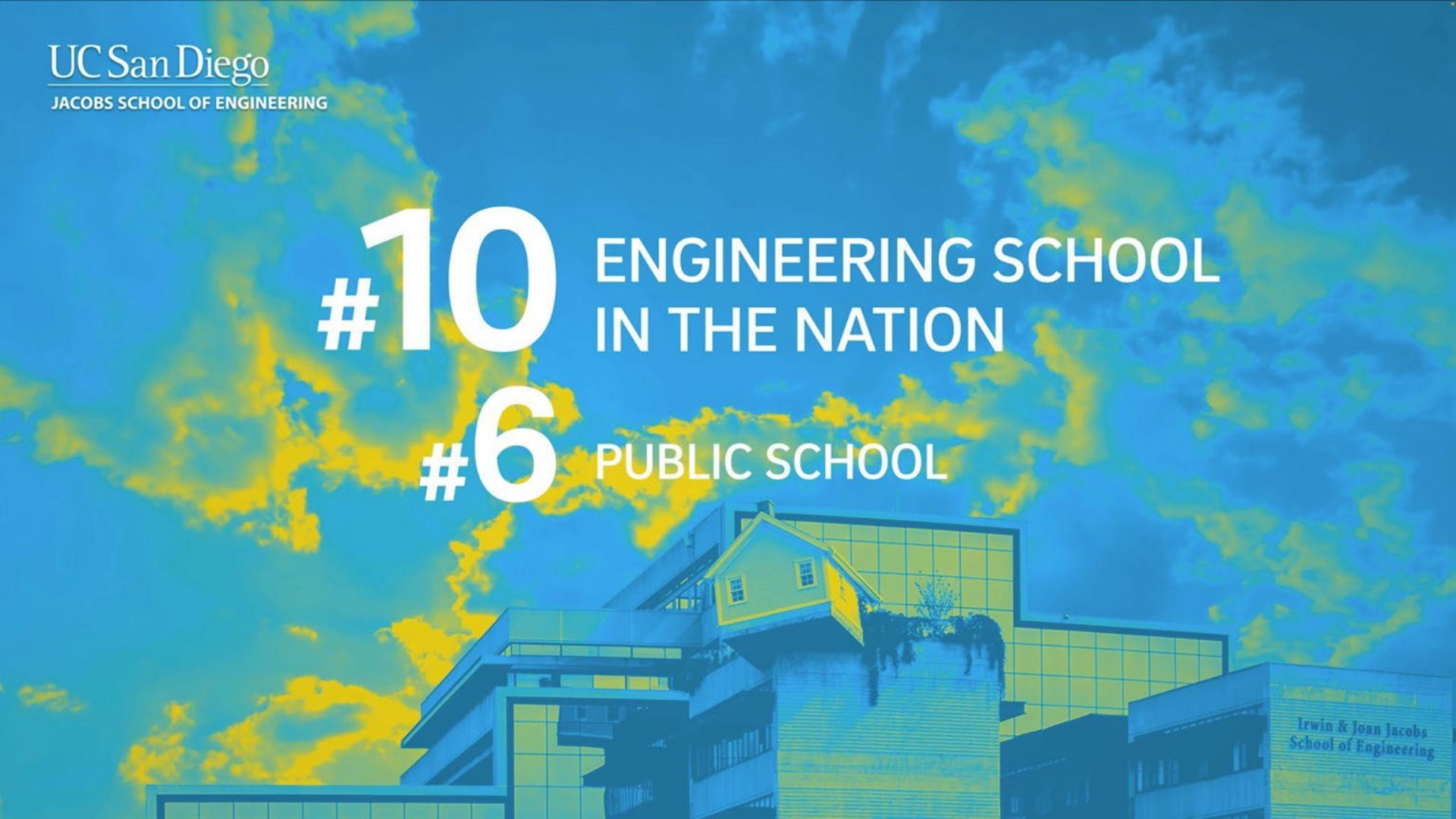
#10 ENGINEERING SCHOOL IN THE NATION

#6 PUBLIC SCHOOL



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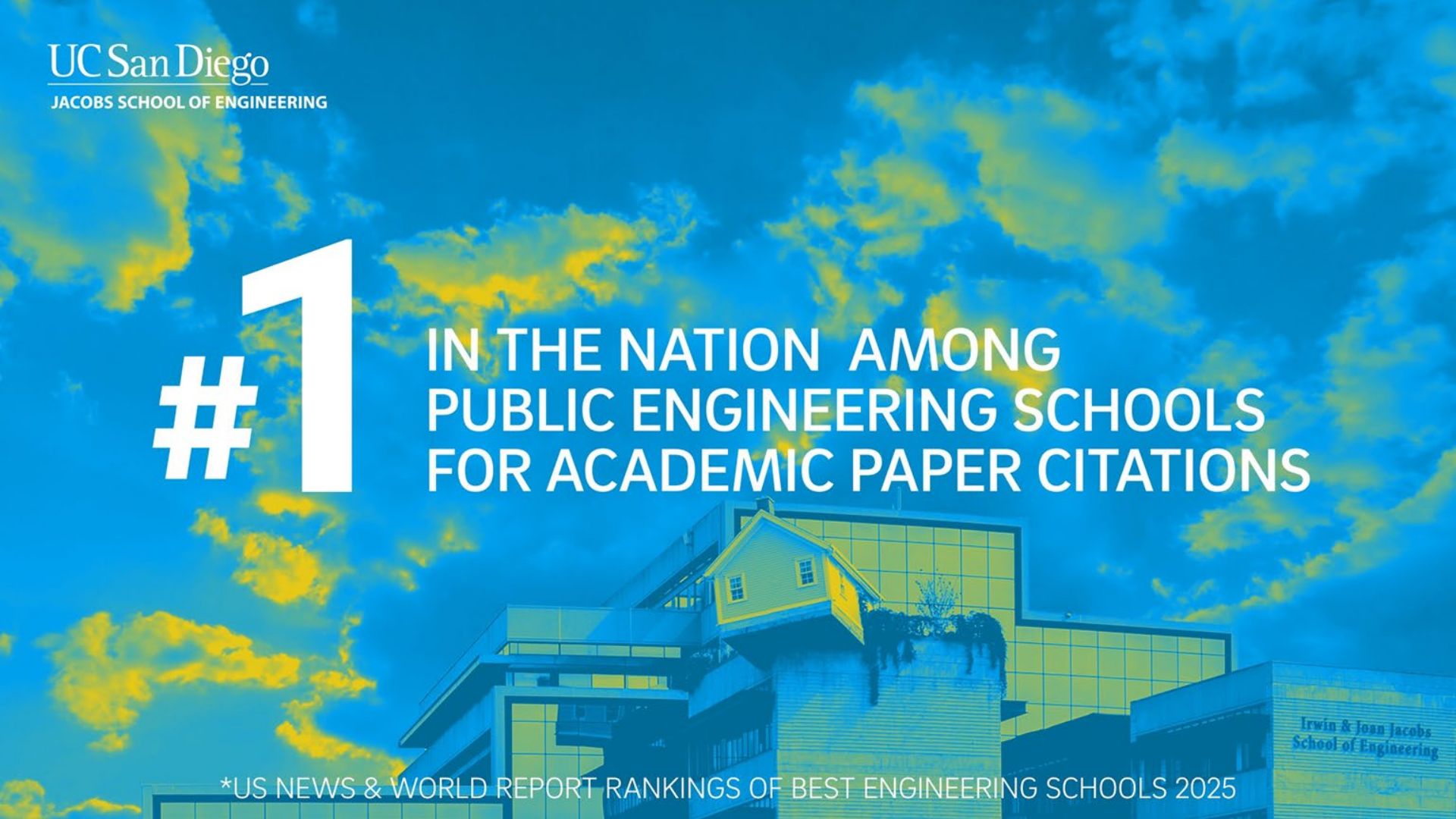
#1 IN THE NATION AMONG PUBLIC ENGINEERING SCHOOLS FOR ACADEMIC PAPER CITATIONS



*US NEWS & WORLD REPORT RANKINGS OF BEST ENGINEERING SCHOOLS 2025

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#2

ENGINEERING SCHOOL FOR RESEARCH EXPENDITURES PER FACULTY MEMBER

*US NEWS & WORLD REPORT RANKINGS OF BEST ENGINEERING SCHOOLS 2025

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$316 MILLION
IN RESEARCH EXPENDITURES
UP 23% FROM LAST YEAR

*US NEWS & WORLD REPORT RANKINGS OF BEST ENGINEERING SCHOOLS 2025

Research Expenditures Trending up!

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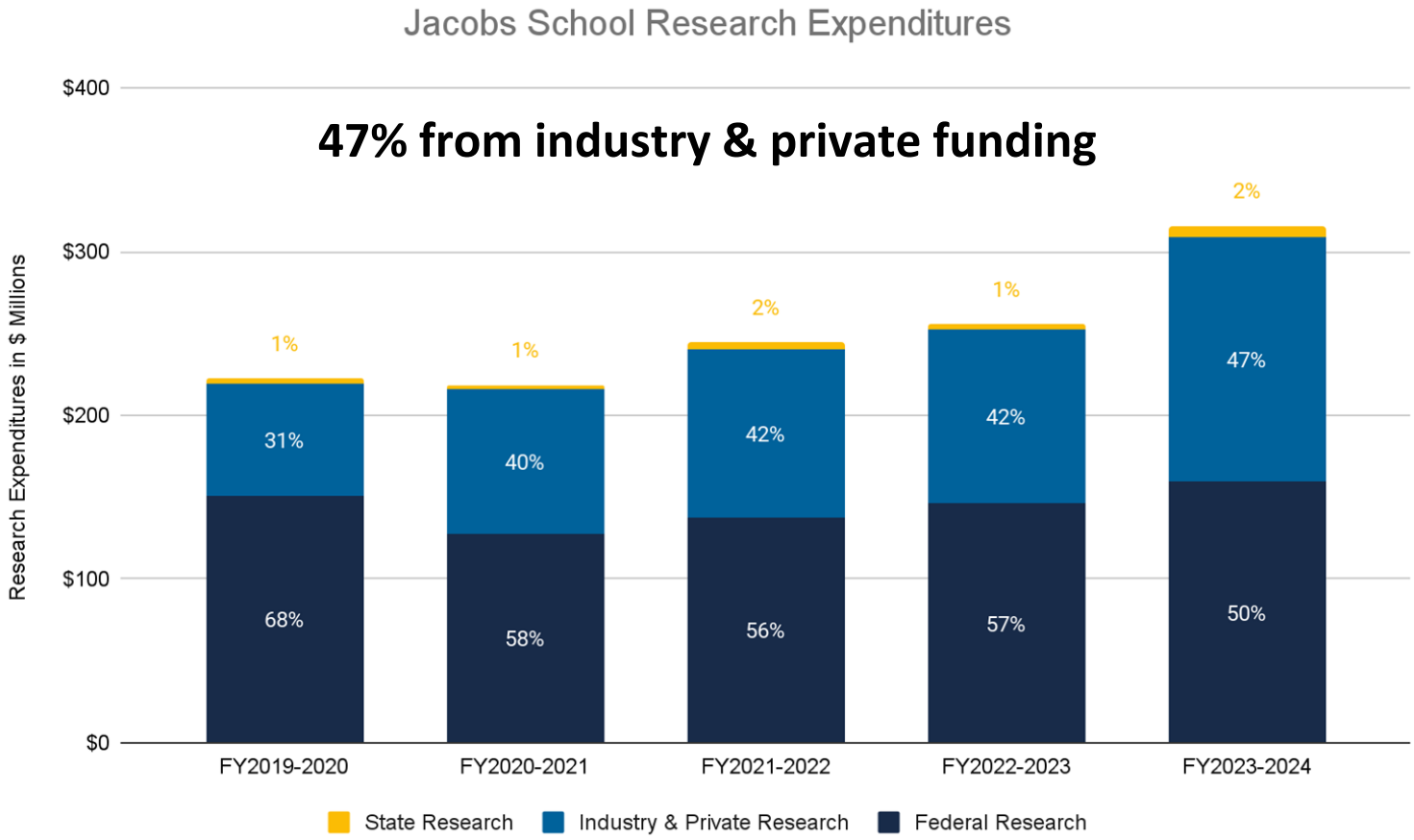

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GRADUATE PROGRAM RANKINGS

BIOENGINEERING
#8 IN THE NATION

COMPUTER ENGINEERING
#12 IN THE NATION

ELECTRICAL ENGINEERING
#14 IN THE NATION

AEROSPACE ENGINEERING
#18 IN THE NATION

CIVIL ENGINEERING
#20 IN THE NATION

MECHANICAL ENGINEERING
#22 IN THE NATION

*US NEWS & WORLD REPORT RANKINGS OF BEST ENGINEERING SCHOOLS 2025

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COMPUTER SCIENCE RANKS #13 IN THE NATION

SYSTEMS
#10 IN THE NATION

ARTIFICIAL INTELLIGENCE
#11 IN THE NATION

PROGRAMMING LANGUAGES
#11 IN THE NATION

THEORY
#14 IN THE NATION

*US NEWS & WORLD REPORT RANKINGS OF BEST ENGINEERING SCHOOLS 2025

We Powered Emerging Industries

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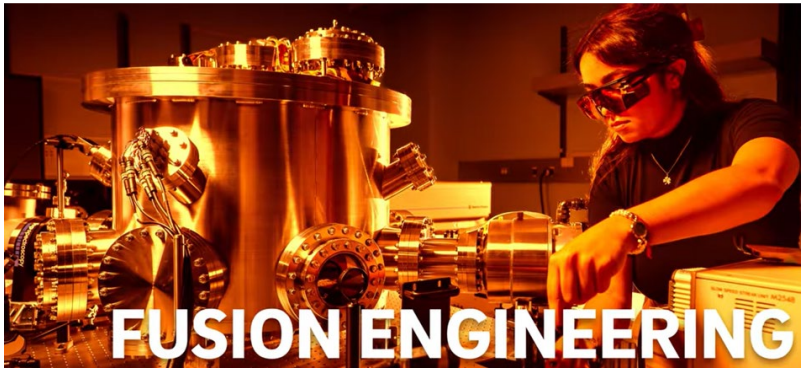

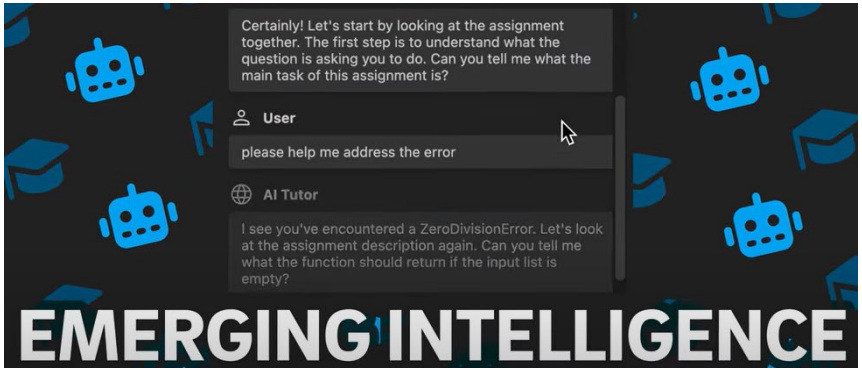

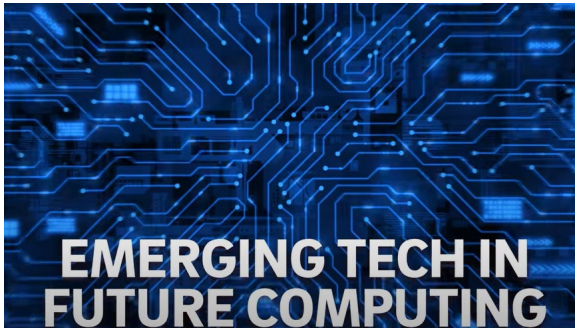

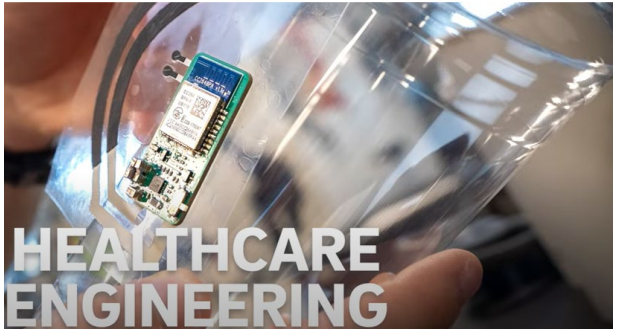

https://jacobsschool.ucsd.edu/emerging-industries

Welcomed Six New Faculty

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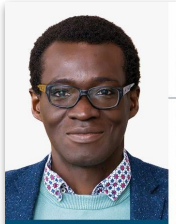


KOLADE ADEBOWALE
Assistant Professor
Ph.D. Stanford

BIOENGINEERING

Adebowale's lab seeks to integrate engineering design principles to cancer immunology to enable rational engineering and prediction of effective, next-generation immune cell therapies. Adebowale strives to understand how the complex functionality of the immune system arises from mechanical cues and simple biophysical principles.

kadebowale@ucsd.edu

Previously: Postdoctoral Fellow Harvard University / Wyss Institute

ADAM FEIST
Assistant Professor
Ph.D. UC San Diego

BIOENGINEERING

Feist uses robotics, data and models to evolve and engineer microbes for biomanufacturing and biomedical discovery. His work builds smarter, faster ways to apply microbes in real-world industrial settings and to better understand their behavior.

afeist@ucsd.edu

Previously: Research Scientist, UC San Diego

YIORGOS MAKRIS
Professor
Ph.D. UC San Diego

ELECTRICAL & COMPUTER ENGINEERING

Makris' research focuses on applications of machine learning and formal methods in semiconductor design, manufacturing and testing. His work leverages domain-specific expertise, digital twin technology and the power of data to develop industrially-relevant solutions for optimizing quality, reliability, security and trust of integrated circuits.

ymakris@ucsd.edu

Previously: Professor, University of Texas at Dallas

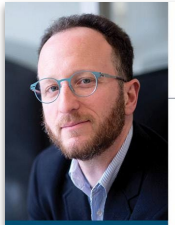
MARC NIETHAMMER
Professor
Ph.D. Georgia Tech

COMPUTER SCIENCE & ENGINEERING

Niethammer's work brings together computer vision, medical image computing, and machine learning. He focuses on methods for image separation and registration, shape analysis, and spatio-temporal and multimodal models. Applications include analysis approaches for neuroscience and neurodevelopment, as well as image analysis in the context of stroke, pediatrics, cancer, osteoarthritis and lupus.

mniethammer@ucsd.edu

Previously: Professor, University of North Carolina at Chapel Hill



HOVAV SHACHAM
Professor
Ph.D. Stanford

COMPUTER SCIENCE & ENGINEERING

Shacham looks for security problems in deployed systems — voting machines, cars, network appliances, airport body scanners, web browsers, and more — to help improve their replacements. His work has driven industry investment priorities, informed public-policy debates, and been recognized with multiple "test-of-time" awards.

hoshacham@ucsd.edu

Previously: Professor, University of Texas at Austin

THUY-DUONG "JUNE" VUONG
Assistant Professor
Ph.D. Stanford

COMPUTER SCIENCE & ENGINEERING

Vuong focuses on theoretical computer science. Her current research interests are classical and quantum Markov chains, diffusion models, and other stochastic processes.

thvuong@ucsd.edu

Previously: Postdoctoral Researcher, UC Berkeley

Launched a New AI Major

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148 enrolled students in the Bachelors of Science in Artificial Intelligence

…And so much more!

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Forging Ahead: 2026 and Beyond

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Jacobs School is Home to First GMP Facility at a University Designed for Implantable Medical Devices

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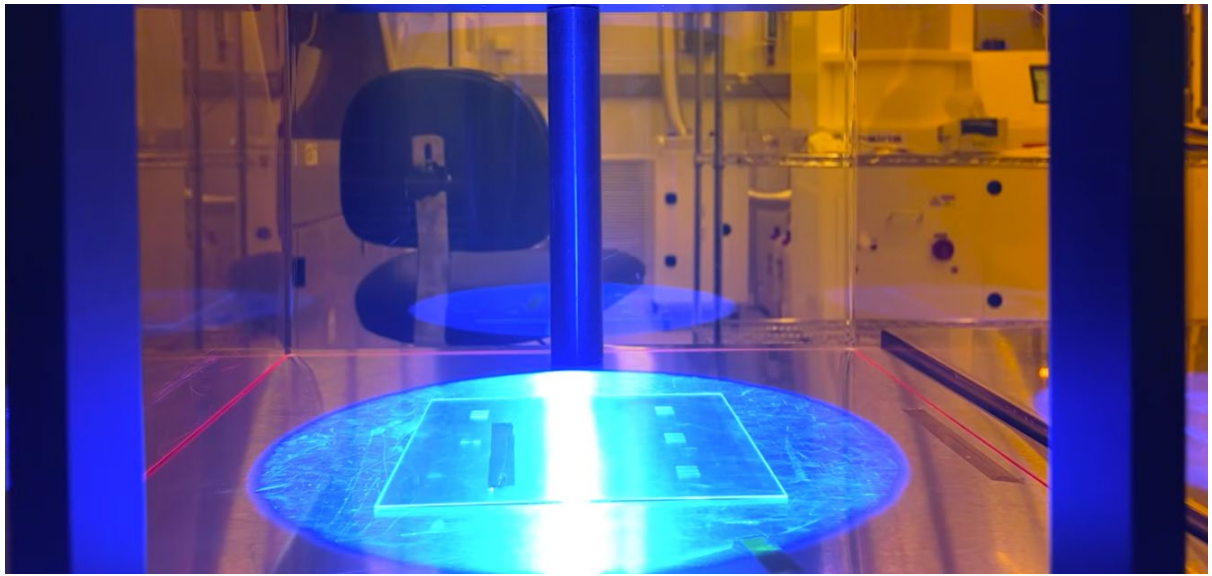

- The first good manufacturing practices (gmp) facility at a university dedicated to building devices that can be implanted in the human body
- Facility meets **standards and regulations needed for FDA approvals** for devices implanted in the human body
- Full pipeline from invention and prototyping to manufacturing for FDA approval
- **PI: Shadi Dayeh, Professor, ECE**

Addressing Liver Transplant Shortage with $25.8M ARPA-H Grant

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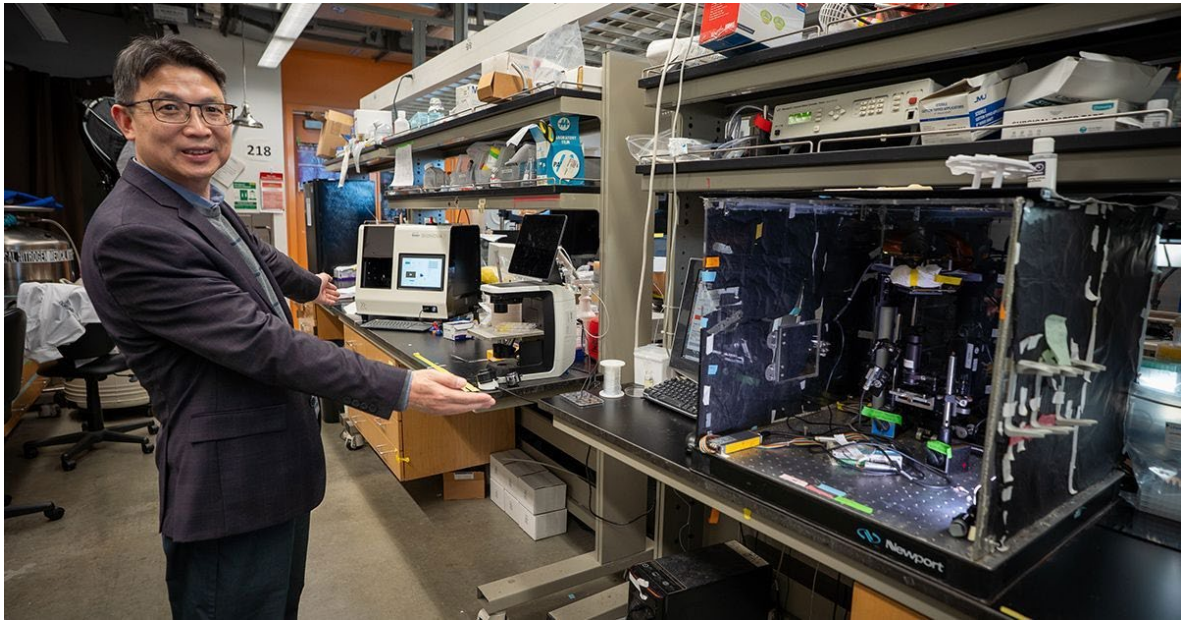

- $25.8 million research project funded by the Advanced Research Projects Agency for Health (ARPA-H), aims to **develop fully functional, patient-specific, 3D bioprinted liver.**
- Technology capable of rapidly fabricating high-resolution biological tissues with complex, multicellular structures in just seconds rather than hours.
- Uses digitally controlled light patterns to solidify cell-laden materials layer by layer
- **PI: Shaochen Chen, Professor, Chemical & Nano Engineering**

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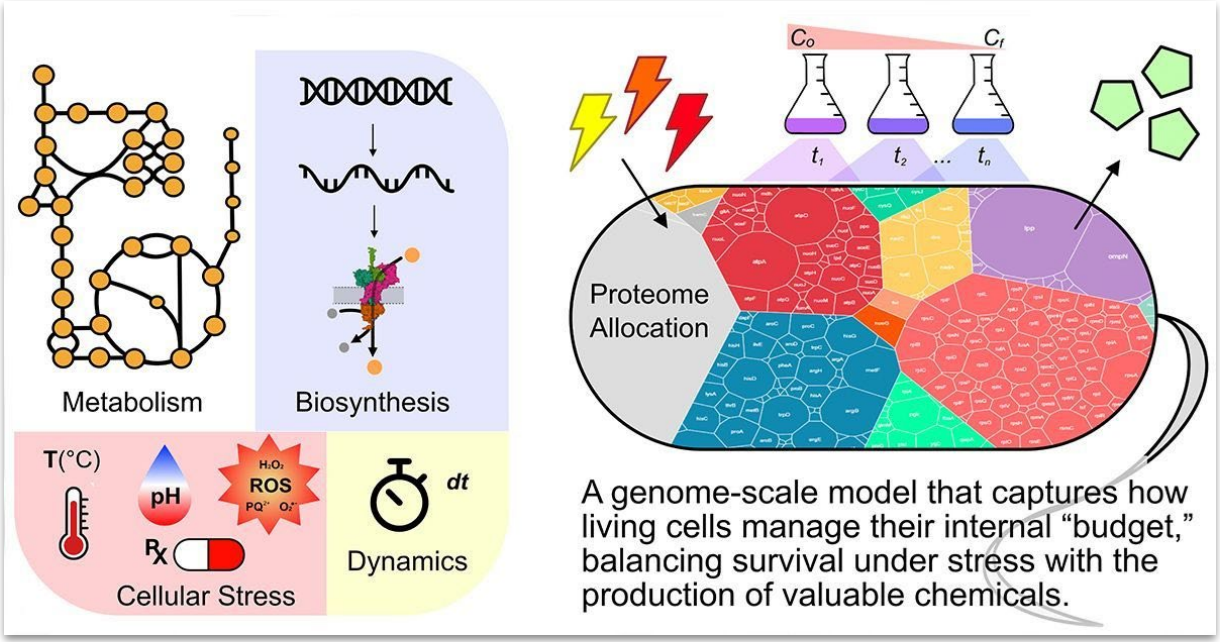
Designing Better Microbes and Drugs

$4.1M DARPA Project Involves Future Biomanufacturing Center



- Building comprehensive digital twins of bacterial cells
- Example: designing E. coli strains that could lead to renewable chemical manufacturing processes and guide the design of new drugs.
- This could significantly reduce the time and cost of discovery
- **PI: Bernhard Paulsson, Professor and Y.C. Fung Endowed Chair in Bioengineering**

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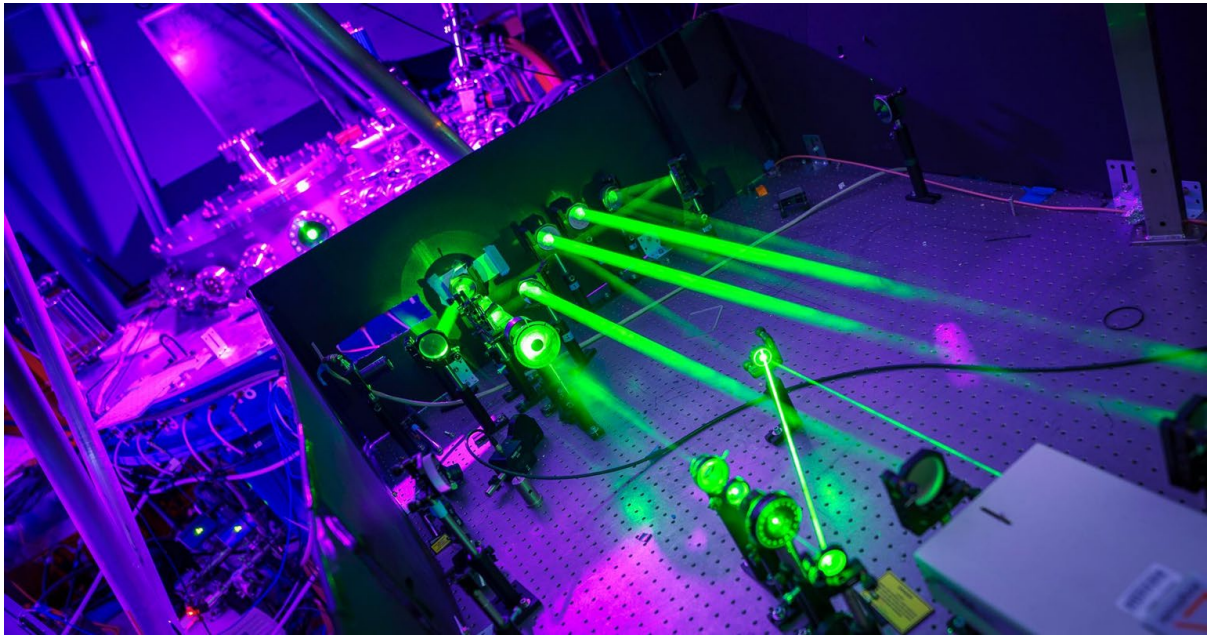
Building a U.S. Fusion Strategy

L.A. Times opinion article on current and future fusion energy needs



- Fusion Engineering Institute (FEI) faculty are building a national fusion strategy
- U.S. must capitalize on momentum and build and fund a coherent national plan for fusion energy
- Strengthen public/private partnerships where the government directly supports the research at private companies in collaboration with universities
- **Faculty: Farhat Beg, Professor, MAE and Mike Campbell, Professor of Practice, MAE**

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New Venture Fund supports Institute for the Global Entrepreneur (IGE)

- **ReefHaven Ventures** is a **seed-stage medtech venture fund partnered with the Jacobs School**, specifically IGE and the MedTech Accelerator. Led by **Garrett Smith, Ph.D, Managing Partner and Bioengineering alumnus**.
- Invested in **KatoMed, an IGE portfolio company.**
- ReefHaven Ventures are experienced serial entrepreneurs and investors with a **recent exit via $14.5B acquisition of Penumbra** by Boston Scientific.
- Plan to make **15 investments of $500k for 5-10% of company** over the next 18 months to grow the portfolio
- **Contact Garrett directly** to invest in the fund (target close end of February)

REEFHAVEN
VENTURES

- garrett@reefhavenventures.com
- 858-736-4400
- www.reefhavenventures.com

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My Priority: Supporting the Excellence & Innovation Funds of each Department

- Shu Chien-Gene Lay Department of Bioengineering
- Aiiso Yufeng Li Family Department of Chemical and Nano Engineering
- Computer Science and Engineering
- Electrical and Computer Engineering
- Mechanical and Aerospace Engineering
- Structural Engineering

What Keeps Me Up at Night

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Despite the forward momentum, we must prepare for a major, strategic pivot

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The Case for Making the Pivot: Revisioning Engineering for the Next Decade

1. Market forces that are reshaping engineering
2. External challenges to engineering education
3. Enhanced innovation to demonstrate relevance
4. Getting it done: time, ideas and resources

Faculty Presentation

Steve Swanson

Professor & Chair
Computer Science & Engineering

Computer Science & Engineering AI Strategy

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Computer Science and Engineering AI Strategy

Dr. Steven Swanson

Department Chair

Department Scope & Educational Mission

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- Educational reach and employee production
  - >1600 undergrads -> ~500 BS/year
  - >1000 MS students -> ~350 MS/year
  - >300 Ph.D. students -> ~44 Ph.D./year
  - ***Each year*** 20% of all UC San Diego students take at least one course in Computer Science & Engineering
- Our teaching mission is to prepare students for their careers
  - Fundamental knowledge
  - Applying it with modern tools
  - Hands-on experience

Four-part Approach to AI Education

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- AI-for-all - Laboratory for Emerging Intelligence (Professor Mohan Paturi)
- GenAI in CS Education Consortium (Professor Leo Porter)
- New AI Major
- AI-aware CS Majors

New AI Major:
How to Build AI/ML Systems

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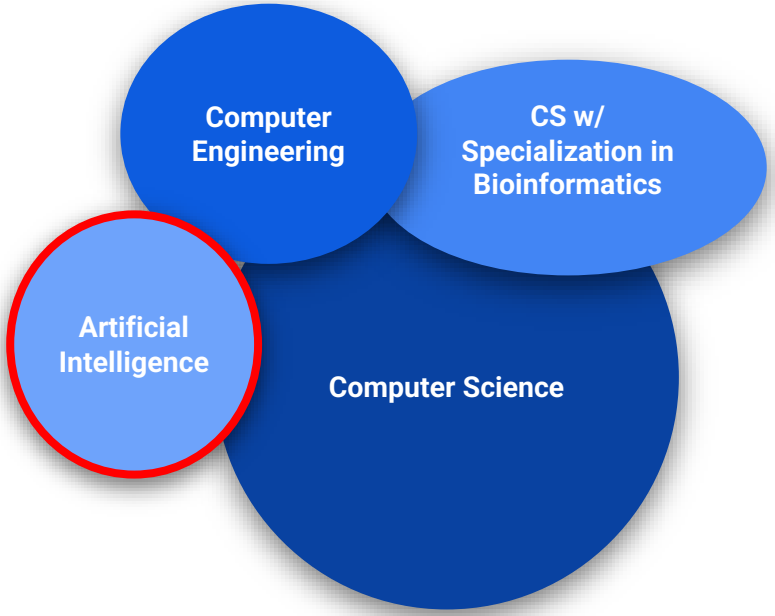
- Among the first in the country
- Address employer needs
- Meet student demand
- Capitalize on CSE department strength in AI and CS education



CS Core + Deep AI/ML Skills

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Foundational Knowledge for AI

CS fundamentals for AI

Mathematical foundations of AI

Core AI Concepts

- Reasoning & Search
- Reasoning under uncertainty
- Knowledge representations

Building AI and ML Systems

Apply TensorFlow, PyTorch, etc.

Apply supervised, unsupervised, and reinforcement learning

Implement AI systems

- data pipelines
- HW + Software
- Applications

Professional Responsibility

Communication skills

Ethics and leadership

- Bias/Fairness
- Accountability
- Transparency

AI Major Coursework

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- Core CS
  - Programming, Data structures & Algorithms, Machine org., Software engineering
- Core AI
  - Intro to AI (new), Foundations of AI (new)
  - Prob. & Stats
  - Probabilistic Models, Search & Reasoning
  - Learning Algorithm & Deep Learning
  - Data Ethics
- Electives
  - 3 AI electives
  - 2 electives each of systems, theory, and applications

AI Electives

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CSE 153: Machine Learning for Music
This course will introduce students to the application of machine learning to understand and generate music.

CSE 154: Introduction to Generative Artificial Intelligence
This course covers techniques for generating complex, creative content, including textual outputs (with Large Language Models), dynamic videos and graphics. Students will learn the fundamentals of generative AI and how to leverage these technologies in various innovative contexts

CSE 157: Large Language Models
This course covers language models and their foundational underpinnings

CSE 161: Systems and Architectures for Machine Learning
This course focuses on how the progression of ML algorithms has guided the design of specialized architectures and systems that power and accelerate these algorithms.

CSE 176B: Introduction to Computational Robotics
This course provides an introduction to robotics from a computational perspective. This includes using popular software for interacting with and simulating robots, such as the Robot Operating System (ROS).

CSE 186: AI for Biology
This course covers how AI can be applied to biological data to draw novel insights. Students will learn how to use supervised methods with convolutional neural networks, graph neural networks and unsupervised methods to understand core genomics, single cell genomics, structural biology and drug design.

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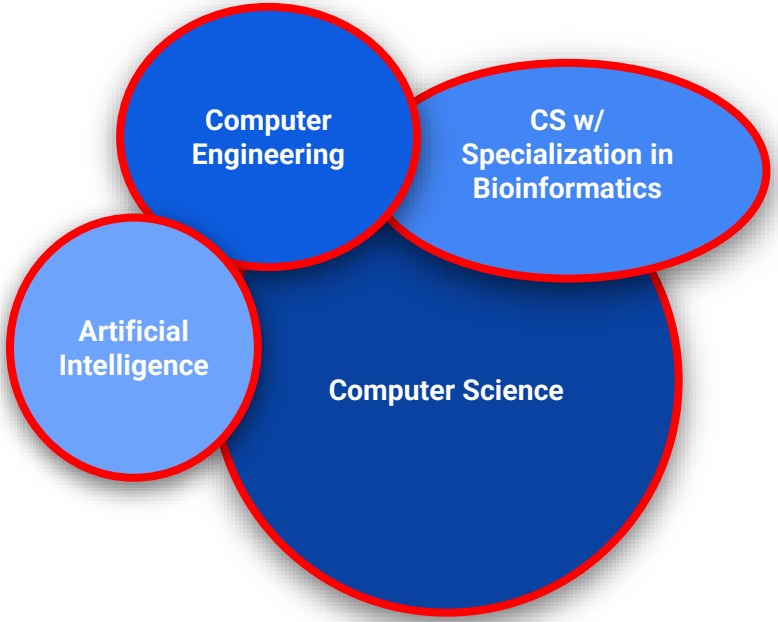
AI Major Launched Fall 2025

- 148 students in the first cohort
- Steady-state – roughly 1000 students
- First graduates – Spring 2029

Core CS Education:
How to *Use* AI to Build Computer Systems



Preparing Students for Today's Jobs

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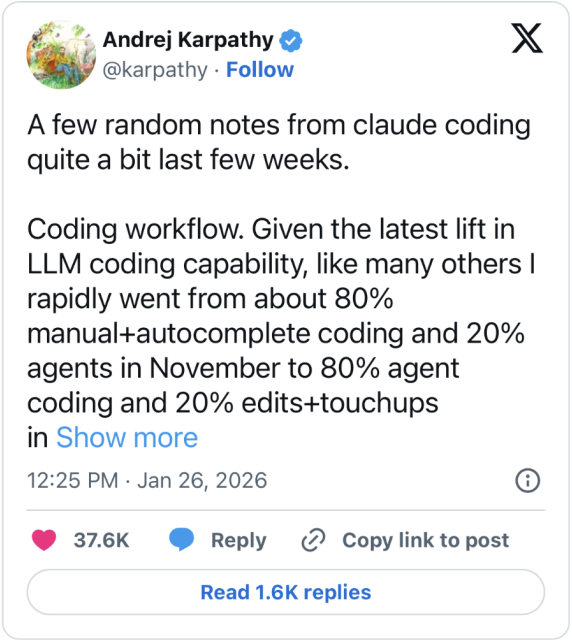
- Observations
  - AI coding tools are useful but imperfect
  - Best practices are not yet clear
  - The field is moving very quickly
- Principles
  1. Preserve and strengthen CS foundations
  2. Make CS courses AI-friendly
  3. Train students to apply, critique, and adapt to new AI tools
  4. Develop an agile, adaptive approach to training for AI tools
  5. AI-aware student assessment



Thanks!
Questions/Comments?

CAP Executive Board Input

- Over the next 3–5 years, in what ways do you expect artificial intelligence to change the work performed by engineers in your organization?
- How do you expect engineers' responsibilities to evolve as AI becomes more prevalent?
- What skills do you believe should be added, or reinforced, in engineering education, regardless of advances in artificial intelligence?
- If you could create a sustainable AI curriculum, what would be the most critical skills that would be taught?
- Does your industry/company value a BS alone, or do MS degrees hold more value?

CAP Business

Wil Dyer

Director
Corporate Affiliates Program

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CAP Updates

Jacobs School Corporate Affiliates Program

UC San Diego

CAP Talent Programs: Recruiting Continues!

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Send us the description(s) and we'll take care of the rest!

- Team Internship Program (TIP)
- Cooperative Education (Co-op)
- Individual Internships
- Full-time/Part-time jobs
- Alumni for experienced roles

Students meet engineers & tour Intuit

Contact Julie Choi, jchoi@ucsd.edu

CAP Talent Programs: Customized Engagement

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- Tailored & exclusive events for your company
- Info Sessions, Tech Talks, Resume Reviews
- Micro Career Fair / Targeted Networking
- Mock Interviews or On-Campus Interviews
- Speed Recruiting
- Site tours at your company

Contact Julie Choi, jchoi@ucsd.edu; Learn more at jacobsschool.ucsd.edu/talent

Senior (Capstone) Design Projects

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Why Senior Design Projects?

- Team of 3-6 students
- Student skills & fresh ideas in action on your technology
- Mentor students
- IP assigned to sponsor

Contact Julie Choi, jchoi@ucsd.edu

Department	Format	Deadline to Submit Proposal
Bioengineering	1 year project	May 1, 2026
Chemical Engineering	Winter & Spring Quarters (consecutive)	Dec 2, 2025
Electrical & Computer Engineering	Winter Quarter & Spring Quarter	Dec 2, 2025
Mechanical & Aerospace Engineering	November - March or February - June	Oct 15, 2025 (Fall/Winter) Jan 15, 2025 (Winter/Spring)
NanoEngineering	Winter & Spring Quarters (consecutive)	Jan 6, 2026


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RESEARCH EXPO 2026
April 15, 2026
✓ CAP Executive Judges
✓ CAP Sponsorships
✓ Ph.D Recruiting
https://jacobsschool.ucsd.edu/research-expo/judges

Bridging the Future Series

The Geometry of Reasoning and Learning in the Age of Agentic AI

with Stefano Soatto

Vice President of Applied Science
Amazon Web Services

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KYOTO PRIZE
SYMPOSIUM | 25 YEARS

amazon
web services

March 12, 2026 **Atkinson Auditorium** ***REGISTER HERE***

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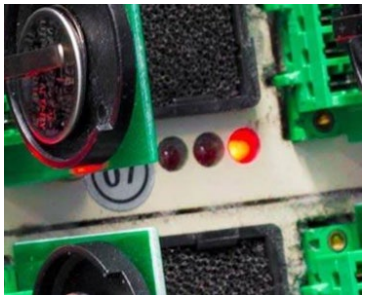
CAP Executive Guest Invitations to Research Programming

Information Theory & Applications Workshop
February 8-13, 2026
ita.ucsd.edu

CIMM
2026 March 11 | La Jolla California

Microbiome Innovation International Microbiome Meeting
March 11, 2026
cmi.ucsd.edu/cimm

Visual Computing Research Retreat
May 27, 2026



Sustainable Power & Energy Research Summit
June 17, 2026

Contact: Wil Dyer, wdyer@ucsd.edu

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Call for CAP Executive Panelists: Experience Engineering Workshop

- Wednesday, February 25, 2026, Jacobs School of Engineering – ASML Conference Center
- Seeking CAP executives to speak about the importance of hands-on engineering experience
- Students participating during Engineers Week showcasing experiential engineering resources

Contact: Hortense Gerardo, hgerardo@ucsd.edu

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Current Slate of Important Dates

February 8-13, 2026	Information Theory & Applications Workshop
February 12, 2026	CalIT2 Symposium on Disaster Resilience: Data Driven Insurability
March 11, 2026	Center for Microbiome Innovation International Microbiome Meeting
March 12, 2026	Kyoto Prize Symposium: Bridging the Future Series with Stefano Soatto
March 25, 2026	Engineers Week Experience Engineering Workshop
April 15, 2026	Annual Jacobs School Research Expo
May 27, 2026	Center for Visual Computing Research Retreat
June 4, 2026	**Spring CAP Executive Board Meeting**
June 17, 2026	Sustainable Power & Energy Center Research Summit
June 22-23, 2026	Power Management Integration Center Research Review

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Thank you!
Next CAP Executive Board Meeting:
June 4, 2026