IN DIGITAL HEALTH
We make bold transitions to data-driven preventive health care possible. With strengths in clinical-grade wearable biometric sensing, Artificial Intelligence, cybersecurity, and human-centered engineering and computer science, we partner with researchers and clinicians in UC San Diego's forward-thinking Health System. Our collaboration is unique in the world – and we are improving health outcomes across San Diego and well beyond.

IN ADVANCED MICROELECTRONICS
We are creating a bold new national resource for the U.S. microelectronics industry by way of a powerful Southern California collaboration. With CHIPS and Science Act of 2022 funding, California DREAMS (Defense Ready Electronics And Microdevices Superhub) is creating an easy-access platform to design and manufacture prototypes of advanced electronic modules such as heterogeneous semiconductors.

IN FUSION ENGINEERING
We are advancing fusion engineering and driving collaborations across UC San Diego, the UC System, the U.S. National Labs, academia and industry. Our bold move is to solve the engineering challenges needed to realize fusion science's promise of nearly limitless low-carbon energy.

IN LOW-CARBON MANUFACTURING
We are engineering a new era of scalable, low-carbon and zero-carbon manufacturing. We are combining our expertise in engineered microbial systems, renewable energy, electro-chemistry and more to harness carbon and nitrogen in the air and oceans. Our broad teams of bioengineers, genome engineers, chemical engineers, nano engineers, Artificial Intelligence pioneers and roboticists are poised to move the needle in bold ways.

A BOLD PLATFORM
We built a school-wide process to identify, evaluate and accelerate bold, cross disciplinary projects that address society's pressing challenges.

Learn more: JacobsSchool.ucsd.edu
ACADEMIC DEPARTMENTS

SHU CHIEN-GENE LAY DEPARTMENT OF BIOENGINEERING
- autodigestion
- bioinformatics
- biomaterials / biomechanics
- cell / tissue mechanics
- biophotonics / biosensors
- cardiac mechanics / cardiovascular eng and imaging
- cartilage / tissue engineering
- genomic engineering
- metabolic bioengineering
- microcirculation
- molecular / cellular bioengineering
- nanotechnology
- neuroengineering
- regenerative med / stem cells
- systems bioengineering
- translational bioengineering

COMPUTER SCIENCE & ENGINEERING
- artificial intelligence / machine learning
- bioinformatics
- computer architecture
- computer science pedagogy
- databases and info mgmt.
- embedded systems, VLSI/CAD
- graphics and vision
- human-computer interaction
- programming languages
- robotics
- security and cryptography
- software engineering
- systems and networking
- theoretical computer science

ELECTRICAL & COMPUTER ENGINEERING
- applied electromagnetics
- bioinformatics / bionanotech
- brain imaging / mapping
- communications systems
- cyber-physical systems security
- electronic circuits / systems
- embedded systems
- intelligent systems / robotics
- machine learning, AI and data science
- magnetic and optical storage
- medical devices and systems
- nanoelectronics
- network infrastructure
- neural interfaces
- photonics / nanophotonics
- power engineering
- signal/image/video processing
- systems energy engineering
- wearable sensors

MECHANICAL & AEROSPACE ENGINEERING
- aerospace technologies
- biomaterials, bio-inspired tech
- cell / membrane mechanics
- control and optimization
- combustion
- high-energy materials processing
- materials for extremes
- medical device technologies
- MEMS for extremes
- networked control systems
- renewable and carbon-neutral energy technologies
- robotics and design
- solid and soft matter mechanics of metamaterials
- thermo-physics, heat and mass transfer
- tribology for memory storage
- turbulence, geophysical flows, macro/microfluidic flows

AIISO YUFENG LI FAMILY DEPARTMENT OF CHEMICAL AND NANO ENGINEERING
- advanced nanomaterials
- computational materials science
- nanobiotechnology
- nanomanufacturing
- nanomedicine
- nanophotonics
- nanorobotics
- nanosensors
- nanotechnologies for energy storage and conversion
- stretchable, flexible electronics
- sustainable nanoengineering
- wearable devices

STRUCTURAL ENGINEERING
- aerospace structures / aviation safety
- biomechanics
- composites / nanomaterials
- computational fluid-structure interaction analysis
- computational mechanics for extreme events damage prediction
- earthquake engineering and infrastructure renewal
- geotechnical engineering / geomechanics
- large-scale experimental research
- multi-hazard mitigation for earthquakes, blasts and more
- risk analysis / visualization / optimization
- structural health monitoring / nondestructive evaluation