CCBM NSF-CREST CENTER FOR CELLULAR AND BIOMOLECULAR MACHINES

The NSF-CREST Center for Cellular and Biomolecular Machines uses an interdisciplinary approach combining physical, biological and engineering methods to understand and control the functioning of multi-scale assemblies of biomolecules and cells, and to design and develop novel bio-inspired functioning machines ranging from designer cells and tissue to diagnostic and therapeutic devices. The center also focuses on enhancing biophysics, biochemistry and bioengineering graduate and undergraduate education; leading STEM outreach activities in the Merced area for teachers, students, and the community; and broadening participation in STEM fields.

Hosted by the NSF-CREST Center for Cellular and Biomolecular Machines at the University of California, Merced

Science for Humanity Series

Ritu Raman, Ph.D.

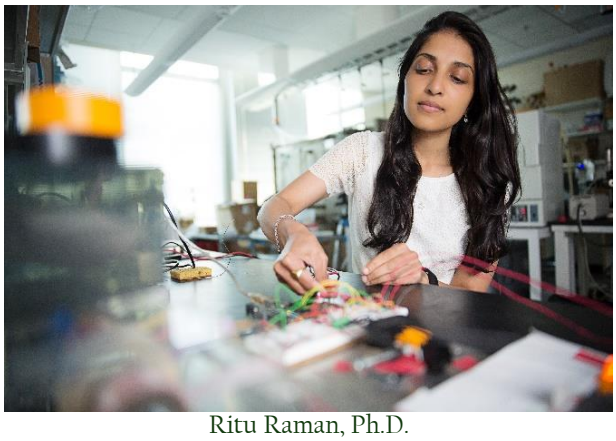
"Bio-Bots: The Future of Robotics?"

Wednesday, May 6, 2020

1:00 – 1:45 pm PST (Pacific)

Via Zoom

Biological materials dynamically sense and adapt their form and function to changing environments. We know this because we live it! When you exercise, you get stronger. When you cut your skin, you heal. But the built environment and the machines that surround us don't do this… why not? Because they aren't made out of biological materials, like we are! My research focuses on finding out whether building machines using biological materials, instead of just metals or plastics or ceramics, could help make them more responsive to their surroundings. In this talk, I will focus on a specific class of machines: robots that move and walk around. Instead of using a synthetic actuator to generate force and produce motion, I use living skeletal muscle that we engineer in the lab to accomplish this function. These part-biological part-synthetic, or "biohybrid" robots (bio-bots), can do things that traditional robots can't do – like get stronger in response to exercise and heal completely from damage! Bio-bots have a range of potential future applications in medicine, energy, and beyond. They showcase how important it is to leverage the best of our natural biological world in the machines we build to tackle global grand challenges.



Ritu Raman, Ph.D.

All are welcome to attend.

REGISTER

Ritu Raman, Ph.D. is an engineer, writer, and educator with a passion for introducing biohybrid materials into the toolbox of every inventor. Her research focuses on using biohybrid design to build implantable devices that dynamically sense and adapt to the body. She grew up in India, Kenya, and the United States where she learned to appreciate and thrive in diverse and dynamic environments. Her life experiences have forged the belief that technical innovation can drive positive social change, and this inspires her work to democratize and diversify STEM education around the world. Ritu is currently a postdoctoral fellow in the renowned Langer Lab at MIT. She holds many awards and honors, including being named to the Forbes 30 Under 30 Science list and the MIT Technology Review 35 Innovators Under 35 list. Ritu is passionate about increasing diversity in STEM and has championed many initiatives to empower women in science, including being named a AAAS IF/THEN ambassador and founding the Women in Innovation and STEM Database at MIT (WISDM). Ritu received her B.S. *magna cum laude* from Cornell University in 2012, and her M.S. (2013) and Ph.D. (2016) as an NSF Fellow at the University of Illinois at Urbana-Champaign. Website: RituRaman.com | Twitter: @DrRituRaman

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