New Faculty

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Animashree (Anima) Anandkumar

Bren Professor of Computing and Mathematical Sciences

Anima Anandkumar's research interests are in the areas of large-scale machine learning, non-convex optimization, and high-dimensional statistics. She has spearheaded the development and analysis of tensor algorithms for machine learning. Tensors are multi-dimensional extensions of matrices and can encode higher-order relationships in data. More generally, she has investigated efficient techniques to speed up non-convex optimization in high dimensions. At Amazon, she has worked on the practical aspects of deploying machine learning at scale on the cloud infrastructure.

Anandkumar received her BTech in electrical engineering from Indian Institute of Technology Madras and her PhD from Cornell University. She was a postdoctoral researcher at the Massachusetts Institute of Technology, an assistant professor at the University of California, Irvine, a visiting researcher at Microsoft Research New England, and a principal scientist at Amazon Web Services.

Wei Gao

Assistant Professor of Medical Engineering

Wei Gao's primary research interest is in the development of novel bioelectronic devices for personalized and precision medicine. These devices include wearable and flexible biosensors that can analyze the various biomarkers in body fluids for real-time, continuous health monitoring and early diagnosis; wearable therapeutic devices for self-administered treatment through closed-loop sensing and therapeutic systems; and synthetic nanorobots for rapid drug delivery and precision surgery inside the human body. His research thrusts include fundamental materials innovations as well as practical device and system-level applications in translational medicine.

Gao received his BS in mechanical engineering from Huazhong University of Science and Technology and his MS in precision instruments from Tsinghua University, China. He obtained his PhD in chemical engineering from the University of California, San Diego. He was a postdoctoral fellow in the Department of Electrical Engineering and Computer Sciences at the University of California, Berkeley, before joining the Caltech medical engineering faculty.

Moore Scholars

The Moore Distinguished Scholar program was established by Gordon and Betty Moore to invite researchers of exceptional quality who are distinguished at both the national and international levels to visit the California Institute of Technology for three to six months. There are no teaching or other obligations during the appointment, allowing Moore Scholars to focus on research. Visit *eas.caltech.edu/people/moorescholars*.

Basile Audoly

Research Director at the French National Center for Scientific Research (CNRS) and Associate Professor at École Polytechnique

Basile Audoly's research focuses on non-linear mechanics—in particular, on the mathematical and numerical analysis of structures undergoing large displacement. Currently, he is developing one-dimensional models to analyze phenomena such as the buckling of viscous jets, pattern selection in biological structures, and the sudden collapse of thin elastic structures. For various systems, his mathematical analyses have offered original explanations for intriguing behaviors reported in experiments, and he has developed widely adopted efficient numerical methods for slender deformable objects.

He graduated in mathematics and physics from École Normale Supérieure in Paris and obtained his PhD from the statistical physics laboratory at École Normale. He holds a senior researcher position at CNRS and is a member of d'Alembert Institute of mechanics at the Université Pierre et Marie Curie and the laboratory of solid mechanics at École Polytechnique.

Vahid Tarokh

Perkins Professor of Applied Mathematics and Vinton Hayes Senior Research Fellow of Electrical Engineering, Harvard University

Vahid Tarokh's research focuses on statistical signal processing, pseudo-randomness, free probability, aspects of model matching, prediction of multi-regime processes, rare events prediction, and limits of learning. He also has interests in limited communications control, signal processing for biology, applications of extreme value theory to scheduling, radar, sequence design, and applications of number theory to the design of distributed interferometric arrays. He obtained his MS in mathematics from the University of Windsor in Canada and his PhD in electrical engineering from the University of Waterloo in Canada. He has worked at AT&T Labs–Research as a principal member of technical staff and as the head of the Department of Wireless Communications and Signal Processing. He was an associate professor of electrical engineering at the Massachusetts Institute of Technology before joining the Harvard University faculty.