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Imagining and Inventing the Future of Mechanical Engineering

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ABSTRACT:

Caltech engineer, scientist, inventor, and entrepreneur Theodore von Kármán said, "Engineers create the world that never was." Indeed, mechanical engineers are continually transforming and reshaping the world around us in ingenious ways for the benefit of society. Their contributions to technologies have resulted in applications ranging from MEMS to autonomous vehicles to energy systems. An interdisciplinary approach and the convergence of engineering science, sensing, information, systems, and artificial intelligence have enabled many recent innovations. Illustrative examples of such advances and what they foretell about the future are considered. Thoughts and observations regarding directions for research in mechanical engineering that can advance our knowledge and enable future innovations are presented. The evolution of education in mechanical engineering and curriculum development to meet future needs are discussed.

BIOGRAPHY:

Guruswami (Ravi) Ravichandran is the John E. Goode, Jr. Professor of Aerospace and Mechanical Engineering at the California Institute of Technology. He has served as the Otis Booth leadership Chair of the Division of Engineering and Applied Science and Director of the Graduate Aerospace Laboratories (GALCIT) at Caltech. He received his B.E. (Honors) in Mechanical Engineering from the University of Madras, Sc.M.s in Engineering and Applied Mathematics, and a Ph.D. in Engineering (Solid Mechanics and Structures) from Brown University. He is a member of the National Academy of Engineering and Academia Europaea. He was named Chevalier de l'ordre des Palmes Academiques by the Republic of France. His awards include the Timoshenko Medal from ASME, Eringen Medal from the Society of Engineering Science, and Murray Lecture Award from SEM. His research and teaching interests are in the mechanics of materials.