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Vijay Kumar

UPS Foundation Professor
Mechanical Engineering and Applied Mechanics (MEAM)
Computer and Information Science (CIS)
Electrical and Systems Engineering (ESE)

[Email](#) | [Personal Webpage](#) | [Research Webpage](#)

Honors and Awards: Fellow of the Institute for Electrical and Electronics Engineers - 2005, Fellow of the American Society of Mechanical Engineers- 2003, Lindback Award for Distinguished Teaching - 1996, NSF Presidential Young Investigator Award - 1991

Research Expertise: [Control Systems](#) | [Robotics](#) | [Mechanical Systems](#)

Vijay studies collective behaviors in biological and robotic systems. He and his group design novel architectures, create abstractions for systems of interacting individuals, and develop new algorithms for cooperating robots. The overarching themes in his research include modeling nature and developing bio-inspired architectures and algorithms, understanding group/individual dynamics, and the design and composition of controllers for robust, scaleable autonomous systems. Vijay's key challenges include operation in unstructured, dynamic environments, integration of control, communication and perception, and scaling down to smaller sizes with limited actuation, sensing, and computational resources.

Member of:

- [General Robotics, Automation, Sensing and Perception \(GRASP\)](#)
- [Penn Genome Frontiers Institute \(PGFI\)](#)
- [Institute for Research in Cognitive Science \(IRCS\)](#)

Education:

Ph.D. Mechanical Engineering - The Ohio State University - 1987

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