

Robotic Systems Modeling and Control

Overview

Robotics is a multidisciplinary field that instituted upon contributions and advancements in diverse areas of science and technology. Robots appear prospective and expected to play inevitable roles in the design and manufacture of tools for humans in forthcoming generation. Apart from well-known industrial relevance, significant breakthroughs in robotics offered great benefits to non-industrial applications like, rehabilitation, agriculture, surgery, entertainment etc., Spurt of R & D activities around the globe is focusing mainly on human welfare encamping restoration of motion of the arms or legs of elderly and disabled persons, robotic needle insertion for cancer treatment and humanoid robotics to perform home duties.

This course will facilitate the participants to grasp the fundamentals and underlying principles with the interdisciplinary dimensions, and promote them to appreciate, understand and apply their unique fields of expertise to conduct research with full potentialities and contribute towards development and innovation in the field of systems engineering, control and robotics, to direct and foster the engineering solutions in new and unfamiliar environments, linking creativity, innovation and transfer of technology with due care and responsibility.

The course aims to take both the beginner and the seasoned researcher, a step forward to explore the frontiers in Robotics.

Contents

- Hardware and Structural Analysis of Humanoid Robots
- Modified Featherstone Dynamics
- Balancing and Walking Control of Humanoid Robots
- Human Hand Biomechanics
- Design and Control of Hand Exoskeleton
- Image-Guided Percutaneous Intervention in Medical Robotics

Dates	Dec 11 - Dec 15, 2017 Number of participants for the course will be limited to fifty.
You Should Attend If...	<ul style="list-style-type: none">▪ You are an electrical engineer or computer engineer or research scientist interested in robotics and biomechanics.▪ You are students at all levels (BTech/MTech/MS/MSc/PhD)▪ You are faculty from reputed academic institutions and scientists from robotics research laboratories.
Fees	The participation fees for taking the course is as follows: Participants from abroad : US \$500 Industry/ Research Organizations: INR 20000 Academic Institutions: Faculty: INR 10000 & Student: INR 8000 The above fee include instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hour free internet facility. The participants will be provided with accommodation on payment basis.

The Faculty



Prof. Doik Kim is the faculty of University of Science and Technology (UST) and is a Principle Researcher in the Center of Robotics Research, Korea Institute of Science and Technology (KIST), Seoul, South Korea. His research interests include Mechanism/Interface Design and Operation of legged robots including humanoid, Multi-robot Interaction, and Software Architecture for human-robot interactive operation.



Dr. Felix Orlando Maria Joseph is a faculty in the Department of Electrical Engineering at Indian Institute of Technology Roorkee (IITR). He took his PhD from Indian Institute of Technology Kanpur (IITK) and did his postdoctoral research at Case Western Reserve University, Ohio, USA. His research interests include but not limited to Robotics, Image-Guided Percutaneous Interventions for Medical Surgery, and Human Biomechanics.

ABOUT ROORKEE

Roorkee is a part of the State of Uttarakhand and is located at the foothills of Himalayas. The nearest Airports are – Jolly Grant Airport in Dehradun and New Delhi International Airport in Delhi. The place is also within easy reach by road from Delhi (200 km) and Dehradun (70 km). Roorkee Railway Station is on the main line of Northern Railways having direct links to Delhi, Mumbai, Calcutta, Amritsar, Jodhpur and Shri Ganganagar. The place is also within easy reach by road from Delhi (200 km) and DChandigarh (180 km). It is located on Delhi – Haridwar and Delhi – Dehradun bus routes. Roorkee is ideally located near several tourist places, like Dehradun (70 km), Mussorie (100 km), Haridwar (32 km) and Rishikesh (50 km).



Course Coordinator

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