Faculty Development Program  
On  
Theory and Simulations in Robotics  

Under the banner of  
Electronics and ICT academy at National Institute of  
Technology Patna  

01st June to 07th June, 2020  

Patron  
Prof. P. K. Jain  
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Organized by  
Electronics and ICT Academy, National Institute of  
Technology Patna, Patna- 800005. India.  
www.nitp.ac.in/ict/  

Supported by  
Ministry of Electronics and Information Technology,  
MeitY, Govt. of India.  

About NIT Patna  
National Institute of Technology Patna is the 18th  
National Institute of Technology created by the  
Ministry of H.R.D. Government of India after  
rechristening the erstwhile Bihar College of  
Engineering Patna on 28.01.2004. NIT Patna marked  
its humble beginning in 1886 with the establishment  
of pleaders survey training school which was  
subsequently promoted to Bihar College of  
Engineering Patna in 1924. This made this institute  
the 6th oldest Engineering Institute of India. The  
Institute is situated on the south bank of holy river  
Ganges behind Gandhi Ghat (where the ash of  
father of the Nation, Mahatma Gandhi was offered  
in the river Ganges). The campus has a picturesque  
river view with historic buildings presenting a  
spectacle of architectural delight and natural beauty.  
The Institute imparts high level education training,  
research and development in science, engineering  
technology and humanities along with high quality  
education and values at UG, PG and Ph.D. level. At  
present the Institute offers courses in six major  
technical disciplines viz. Architecture, Civil  
Engineering, Computer Science & Engg., Electrical  
Engg., Electronics & Communication Engg. And  
Mechanical Engg. It also consists of well-established  
departments of Physics, Chemistry, Mathematics  
and Humanities and Social Sciences.  

Electronics and ICT Academy  
The Ministry of Electronics and Information  
Technology, Government of India has instituted seven  
Electronics and Information & Communications  
Technology (ICT) Academies of which, the academy of  
NIT Patna is one. The Academy at NIT Patna aims to  
design and organize basic as well as specialized  
training programmes in niche areas of electronics and  
ICT for the development of required knowledge base,  
skills and tools to equip the teaching community with  
better knowledge and understanding.  

Objective and Scope  
The FDP on “Theory and Simulations in Robotics”  
brings an opportunity for all enthusiasts from  
different disciplines who like to learn and explore  
this interdisciplinary field of robotics. This course will  
help participants  
- to get a concrete grasp on the various  
thories and concepts of robots  
- Understanding the design and  
implementation across industries  
Robotics is a field that mixes disciplines like  
dynamical system modelling, physics, mathematics,  
biology, electrical and electronics engineering,  
mechanical engineering, computer science and  
engineering and automation (sensors, control and  
actuators) technology. This is our attempt to get  
experts in all these domains from premier institutes  
of India to give participants a good experience for an  
introductory course on robotics.  

Objectives of the Program  
- To impart knowledge at an introductory level  
for the engineering academicians who are  
interested in robotics  
- To promote the use of open source modeling  
and analysis softwares for robotics  
- To introduce with a few cutting edge  
research in the field of robotics  
- To motivate the participant’s interest in the  
field so more quality research can be generated  

Topics to be covered  
- Introduction to robot manipulators  
- configuration space, task space, rigid body  
transformations  
- Forward and inverse kinematics, velocity  
kineatics, Robot kinematics made easy using  
RoboAnalyzer
Kinematic notations, DH Parameters, Kinematic parameters identification using geometric approach
Motion Planning, Vision based control, Control design
Multibody dynamics using ReDySim
Wheeled Robots, Vision based control, legged robots
Dynamic modelling of a serial robot, Force control algorithms

Resource Persons
For Expert lecture, and virtual lab sessions on open source softwares:
1. Prof. S. K. Saha, IIT Delhi
2. Dr. Suril Shah, IIT Jodhpur
3. Dr. Shishir N. Y. Kolathaya, IISc Bangalore
4. Dr. Arun Dayal Udaia, IIT(ISM) Dhanbad
5. Dr. Aamir Hayat, SUTD Singapore
6. Dr. Gagan Deep Meena, NIT Patna

One-week FDP includes
Seven Days Training will be taken by a group of experts from IISc, IITs, NITs with the experience ranging from several years to several decades in delivering sessions in India and abroad. The training hour is 5-6 hours/ each day. Mode of training is Instructor-led live online.

- 40 Hours Instructor-led live online Hands-on based learning & Interactive Query Session.
- Soft copy of study material, Training PPTs & Projects code
- Participants will get recorded sessions after completion of training

Who Can Participate
Faculty members of UGC/AICTE recognized Universities and Engineering colleges all over India, Research scholars (PhD only), students and Industry personals, however priority will be given to the faculty members.

Registration Fee
- Faculty/ Research Scholar (PhD): Rs. 500/-
- Students: Rs. 500/-
- Industry and others: Rs. 1000/-

Registration Process
1. Registration fee will be paid through online mode, the account details for this purpose is

   Account Name: NIT Patna
   Account No.: 50380476798
   IFSC Code: ALLA0212286

2. Registration link:
   https://forms.gle/5zAN8woD5HaR2vQTA

3. The brochure of the program may be downloaded from the Institute website www.nitp.ac.in.

4. Last date of registration: 29 May 2020

Total -100 seats and the selection will be done on first-cum-first-serve basis. A PDF file of an online filled registration form with proof of registration fee paid will be sent through email to Dr. Gagan Deep Meena. (email: gagandeep.ee@nitp.ac.in)

http://www.nitp.ac.in/ict/