

I I T P A T N A

PLACEMENT BROCHURE

2020-21

M.TECH
MECHATRONICS



HOD'S MESSAGE

Dear Recruiters,

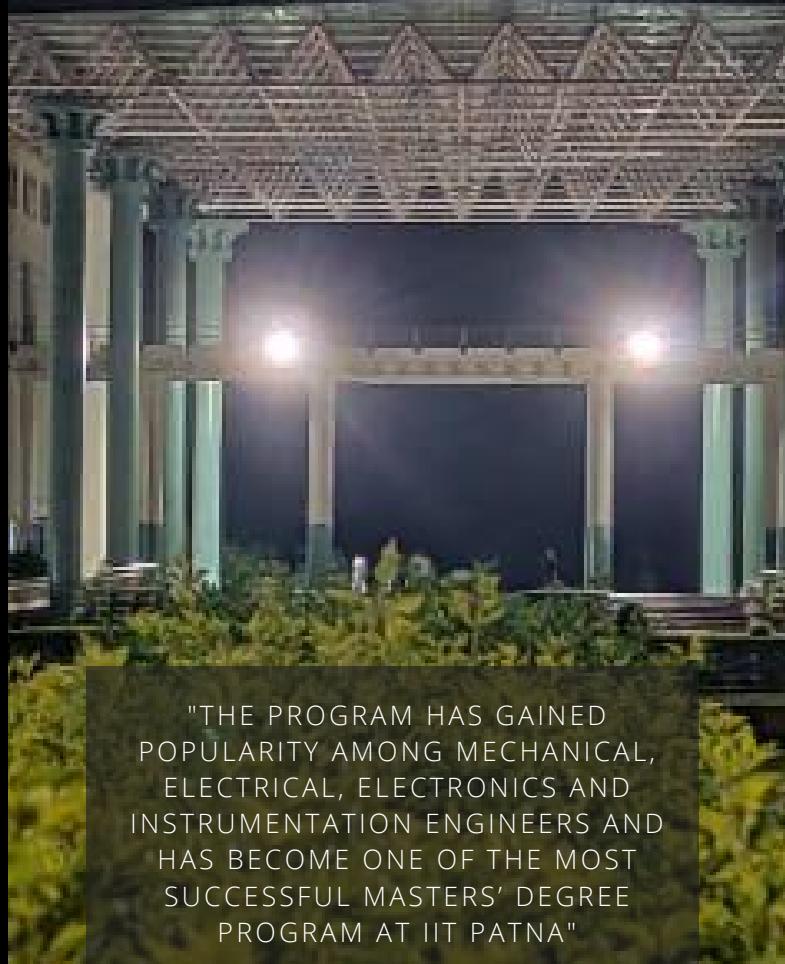
Department of Mechanical engineering in collaboration with Department of Electrical Engineering launched its first masters program M. Tech. in Mechatronics in the year 2012 with an aim to provide a platform for interdisciplinary research. Consequently, the program has gained popularity among mechanical, electrical, electronics and instrumentation engineers and has become one of the most successful masters' degree program at IIT Patna. Indian Railways has signed an MoU with IIT Patna, which allows its employees to register in this program every year. The curriculum is designed to inculcate in-depth knowledge of fundamentals of Mechatronics with 'learning by doing' pedagogical approach. The success of the program can be gauged from the placement offers received by our students from companies such as TVS, TCS, Tata Motors, L&T, Amazon, Google, IBM, Indian Navy, DRDO among others. In addition, our alumni are either pursuing or have completed their higher studies in world-class universities like IITs, NUS, Istituto Italiano di Tecnologia, and Cornell in the areas aligned with mechatronics and robotics.

Looking forward to see you at our campus.

Season's greetings and warm regards,



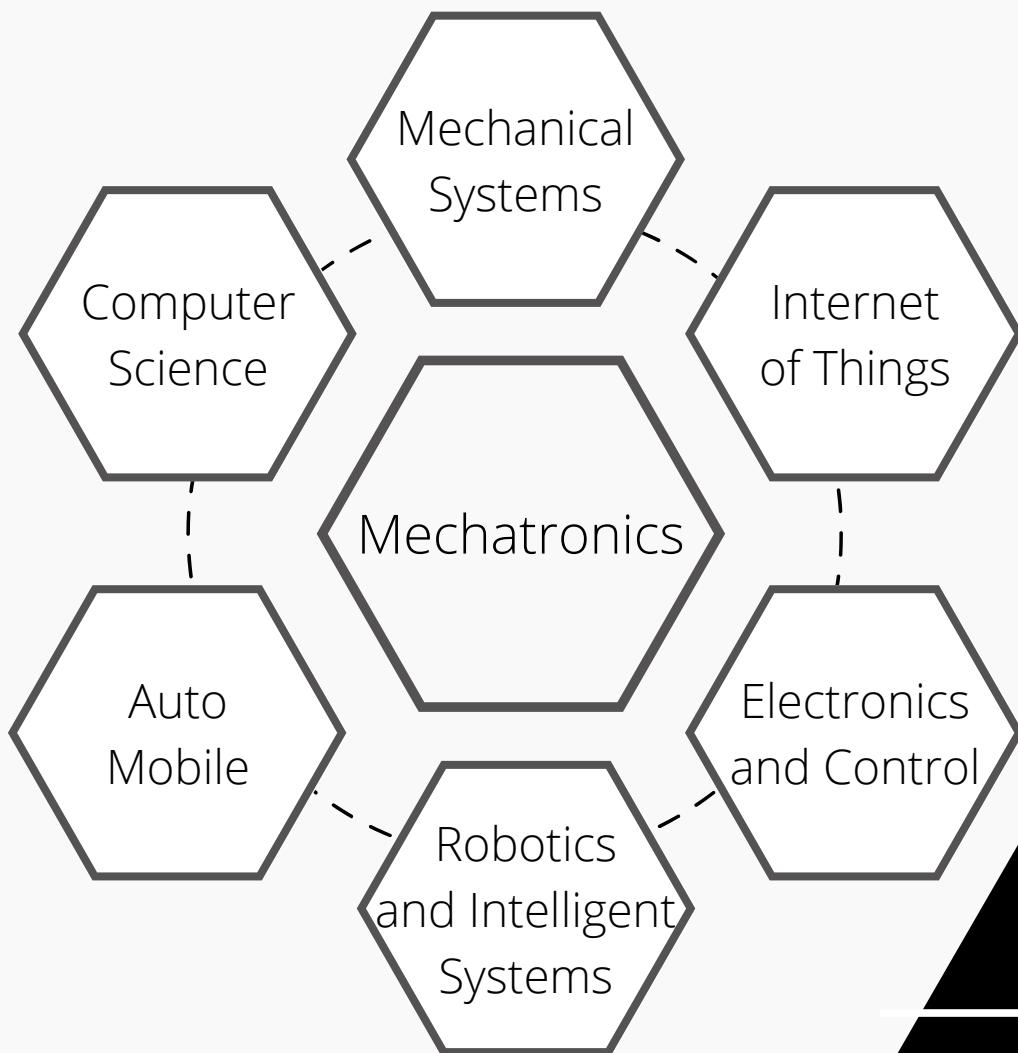
Dr. Mohd. Kaleem Khan
Head, Department of Mechanical
Engineering



"THE PROGRAM HAS GAINED POPULARITY AMONG MECHANICAL, ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERS AND HAS BECOME ONE OF THE MOST SUCCESSFUL MASTERS' DEGREE PROGRAM AT IIT PATNA"

Mechatronics at IIT Patna

This program, developed in direct response to industrial demand for engineers with multi-disciplinary skills, is a combination of mechanical, electronics, control, computer and systems design engineering streams



Students Achievements

- Start-up - Robo Bionics for PROSTHETIC HAND
- Shortlisted in Top 30 out of 640 ideas for Bosch
- Hackathon for Road Safety at IIT Guwahati.
- Students pursuing PhD at McMaster University, Italian Institute of Technology, NUS, and NTU.

course work

Core

- Fundamental of Mechatronics
- Sensors and Actuators
- Modelling and Simulation
- Advanced Engineering Mathematics

Electives

- Mobile Robotics
- Robotics: Advanced Concepts and Analysis
- Introduction of Deep Learning
- Fundamental of Machine Learning
- Power System Dynamics And Control
- Vehicle Dynamics
- Digital Image Processing
- Embedded Systems
- Renewable Sources of Energy

Lab

hands-on experience of working with

- Sensors
- Actuators
- PLC
- Pneumatic and Hydraulic
- Microprocessors
- Micro-controllers
- Data Acquisition System
- Computer Vision

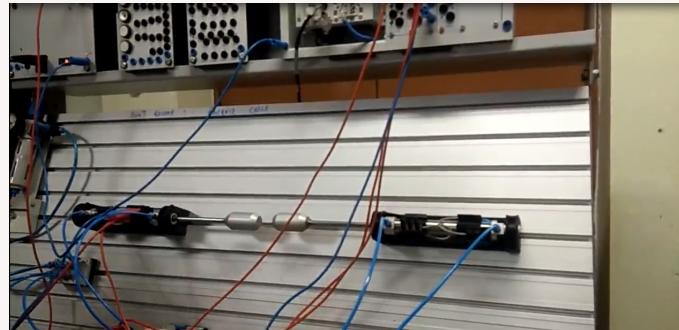
Softwares/ Languages

- MATLAB
- Python
- C
- ANSYS
- ADAMS
- CoppeliaSim
- 20-Sim
- Eagle
- Solidworks
- Catia

LABORATORY

Mechatronics, Instrumentation and Control Lab

THIS RESEARCH LAB IS FOCUSED ON PATH-PLANNING AND CONTROL OF VARIOUS STATIONARY AND MOBILE ROBOTS SUCH AS QUADRUPED, AQUATICS, ROBOTICS ARM, MICRO-BOTS AND HAPTICS



THE LAB IS EQUIPPED WITH

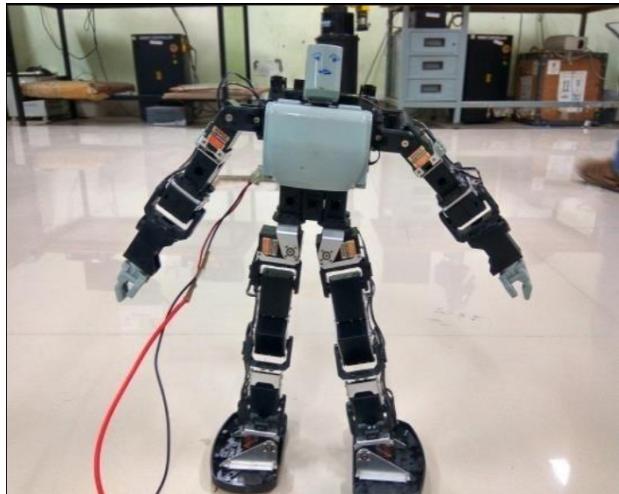
- KUKA KR3 R50
- 2.5 AXIS CNC MACHINE
- LASER CUTTING MACHINE
- PCB RAPID PROTOTYPING
- FESTO INDUSTRIAL AUTOMATION KIT
- NIKON INVERTED MICROSCOPE
- DATA ACQUISITION SYSTEM BY NATIONAL INSTRUMENTS



LABORATORY

Robotics and Automation Lab

THIS RESEARCH LAB IS FOCUSED ON ARTIFICIAL SKIN, SOFT ROBOTICS, FISH INSPIRED ROBOTS, INDIGENOUS BI-AXIAL TESTING MACHINE FOR SOFT MATERIALS AND CRYOGENIC SETUPS



THE LAB IS EQUIPPED WITH

- 6 AXIS ARISTO ROBOT
- 4 AXIS SCARA ROBOT
- 5 AXIS SCORBOT ROBOT
- FIRE BIRD XI
- SMART MATERIALS TESTING EQUIPMENT



LABORATORY

Dynamics of Machinery

RESEARCH IN THIS LAB IS FOCUSED ON TOPICS LIKE FAULT SIMULATION IN BEARINGS AND GEAR BOX, MOTOR, STATOR AND ROTOR, VISCO-ELASTIC MATERIALS AND MATHEMATICAL MODELING OF SOFT-BIO MECHANICAL TISSUES



THE LAB IS EQUIPPED WITH

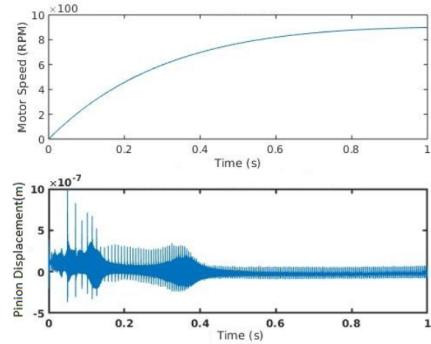
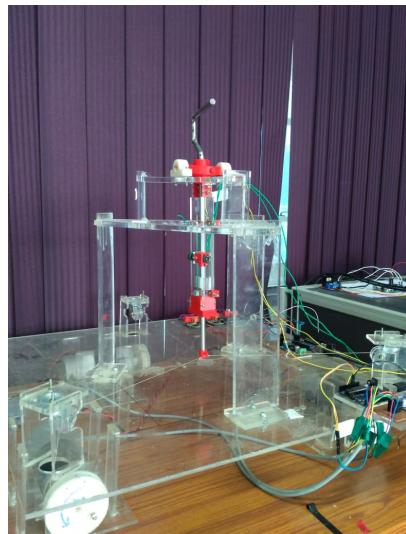
- MOTORIZED GYROSCOPE
- CENTRIFUGAL (WATT) GOVERNOR
- ACTIVE MASS SUSPENSION SYSTEM
- MACHINERY FAULT SIMULATOR



PREVIOUS PROJECTS AND OTHER

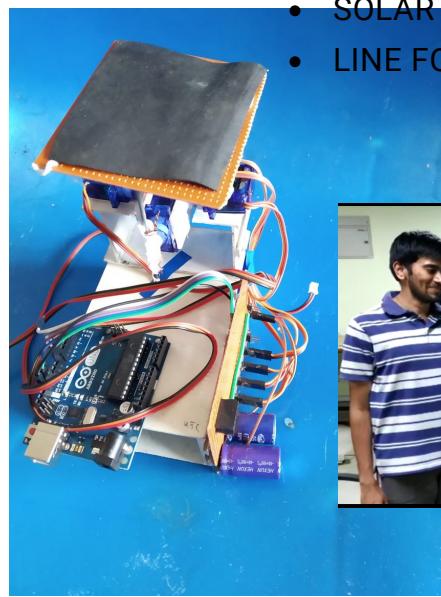
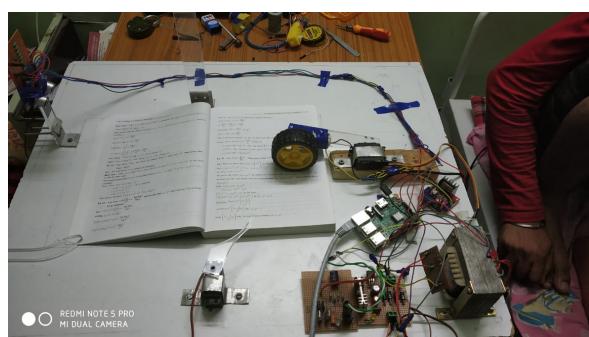
PREV PROJECTS

- HYBRID VEHICLE
- BEARING FAULT DETECTION
- GEAR BOX FAULT DETECTION
- HUMAN ROBOT INTERACTION
- VR BASED HAPTIC FEEDBACK
- FABRICATION OF PRESSURE SENSOR
- VIDEO BASED CONTEXT EXTRACTION USING DL
- REINFORCEMENT LEARNING BASED PATH PLANNING
- IMAGE PROCESSING BASED GESTURE RECOGNITION
- RL BASED DIGITAL TWIN PARAMETER OPTIMIZATION FOR QUADRUPED LOCOMOTION
- MODEL BASED BACKSTEPPING LEADER-FOLLOWER FORMATION CONTROL OF UNMANNED SURFACE VEHICLES



MINI PROJECTS

- 3D SCANNER
- MAZE SOLVER
- SELF BALANCING ROBOT
- AUTOMATIC BOOK SCANNER
- GESTURE CONTROL ROBOT CAR
- AUTOMATIC DOOR OPENING AND CLOSING SYSTEM
- CAMERA STABILIZER
- SOLAR TRACKER
- LINE FOLLOWER



CURRENT RESEARCH PROJECTS

- Under Water Robotics in cluttered environment for stochastic flow
- Deep learning based classification of recyclable materials from waste using hyperspectral imaging
- ADRC based advanced control strategic for underwater robots
- Robotic arm control with electroencephalography based brain computer interface
- Develop a deep learning technique for cancer prediction
- Hybrid electric vehicle
- Micro cyber physical machine tool monitoring and maintenance
- Condition monitoring of Gear Box
- Condition monitoring of Bearing
- Design and fabrication of wind bot/ornithopter
- Microcontroller-Based sensor less brushless DC (BLDC) motor drive for automotive applications
- Noise induced resonance based image and signal processing application

PROJECTS FROM

- DEPARTMENT OF SCIENCE AND TECHNOLOGY
- CENTER FOR ENERGY AND ENVIRONMENT, IIT PATNA
- DMSRDE, DRDO
- MINISTRY OF DEFENSE
- SCIENCE AND ENGINEERING RESEARCH BOARD, DST
- BRNS
- ATOMIC ENERGY REGULATORY BOARD, DAE
- ISRO
- AERONAUTICS R&D BOARD
- TIFAC,DST
- GOVERNMENT OF BIHAR
- UDYOG MITRA, DIC, BIHAR GOVT.

PREVIOUS RECRUITERS



SIEMENS



Cognizant



Mercedes-Benz



CURRENT BATCH



Mr. Abhishek Kumar
B.Tech (ME)



Ms. Jyoti Kumari
B.Tech (EE)



Mr. Aishwarya Archit Pandey
B.Tech (EE)



Mr. P Bharath Raja Bhoopal
B.Tech (ME)



Ms. Archana Kumari
B.Tech (EEE)



Mr. Prakash Kumar
B.Tech (ME)



Mr. Chandan P U
B.Tech (ME)



Mr. Pramod Kumar Modi
B.Tech (ME)



Mr. Faraz Haider
B.Tech (EE)



Mr. Rahul Kumar
B.Tech (ME)



Mr. Akshay Y Darekar
B.Tech (ME)



Mr. Suraj Singh Patwal
B.Tech (ME)

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