# ICT & Informatics

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# Indian Institute of Technology Hyderabad

भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

# Background & Progress

- IIT Hyderabad started functioning in the year 2008 with 3 Bachelor programs: Computer Science, Electrical and Mechanical Engineering (40 students in each).
- Today, IIT Hyderabad has Bachelors programs in 10 engineering disciplines and Masters and Doctoral Programs in 13 departments.
- Strong emphasis on interdisciplinary research
- Total of 2700 students of which 900 are PhD students

# Academic Departments

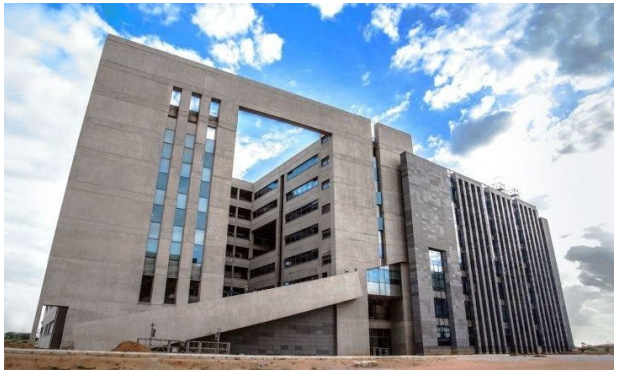
| Department | BTech | MTech | MSc | MPhil | MDes | PhD |
|---|---|---|---|---|---|---|
| Biomedical Engineering | | ✓ | | | | ✓ |
| Biotechnology | | ✓ | | | | ✓ |
| Chemical Engineering | ✓ | ✓ | | | | ✓ |
| Chemistry | | | ✓ | | | ✓ |
| Civil Engineering | ✓ | ✓ | | | | ✓ |
| Computer Science & Engineering | ✓ | ✓ | | | | ✓ |
| Design | | | | | ✓ | ✓ |
| Electrical Engineering | ✓ | ✓ | | | | ✓ |
| *Engineering Science* | ✓ | | | | | |
| Liberal Arts | | | | ✓ | | ✓ |
| Mat. Sci. & Metal. Engineering | ✓ | ✓ | | | | ✓ |
| Mathematics | ✓ | | ✓ | | | ✓ |
| Mechanical & Aero. Engineering | ✓ | ✓ | | | | ✓ |
| Physics | ✓ | | ✓ | | | ✓ |

# Academic Innovation

- Fractal Academic Program
- Digital Fabrication Lab (3D Printing)
- Double Major
- Executive MTech Program in Data Science
- Minor in Entrepreneurship
- Creative Arts in Academic Curriculum

# AI @ IITH

- Academics
  - Interdisciplinary: CSE, EE, MA come together to offer programs in AI
  - MTech programs in AI & ML: Started in 2017
  - BTech program in AI - first of its kind in India and among the first few in the world
- Center of Excellence in AI (CoEAI)
  - Dedicated to conducting cutting edge academic and industrial research
  - State-of-the-art hardware: NVIDIA DGX2, Fujitsu's Liquid Immersion Cooling (FLIC)
- Projects
  - Several projects: IoT, Communications, Computer Vision, Video Analytics, Speech Processing etc.
  - Projects with Japan in the area of crop management in the semi arid tropics
  - Autonomous Vehicles, Passenger Drones, IoT for Agriculture



# Team ICT @ IITH

- Wireless Communications:
  - Dr. G V V Sharma (Comm. Theory)
  - Dr. Abhinav Kumar (Autonomous Vehicles)
  - Dr. Lakshmi Prasad Natarajan (Information Theory)
- IoT and Cyber Physical Systems
  - Prof. Mohammad Zafar Ali Khan (Theoretical IoT)
  - Prof. Kiran Kumar Kuchi (5G)
  - Dr. P Rajalakshmi (WSN and IoT)
  - Dr. Antony Franklin (Cyber Security)
- Computer Networks & Cyber Security
  - Dr. Bheemarjuna Reddy (Computer Networks)
  - Dr. Kotaro Kataoka (Computer Networks)
  - Dr. Sathya Peri (Blockchain)
- Artificial Intelligence
  - Dr. Vineeth Balasubramanian (Machine Learning)
  - Prof. C Krishna Mohan (Computer Vision)
  - Dr. Sreejith (NLP)
  - Dr. Sumohana Channappayya (Image Processing)
  - Dr. Sowmya Jana (Immersive Multimedia)
  - Dr. K Sri Rama Murty (Speech Processing)
  - Dr. Maunendra (Text Mining)
  - Dr. Manish Singh (Big Data)

# List of Projects in ICT

- Development of 5G Test Bed for India, Department of Telecom, Rs. 65 Crores
- M2SMART Project: Smart Cities for Emerging Countries based on Sensing, Networking, and Big Data Analysis Multimodal Regional Transport System, Indo-Japan Collaborative Project, Rs.30 Crores
- DISANET: Information Network for Natural Disaster Mitigation and Recovery - Indo-Japan Collaborative Project, Rs. 25.0 Crores
- Converged Cloud Communication, Sponsored by MietY, Rs. 20.0 Crores
- Cyber Physical Systems, Sponsored by MietY, Rs. 17.0 Crores
- 5G Networks, MietY, Rs. 8.0 Crores
- Data Science-based Farming Support System for Sustainable Crop Production under Climatic Change, Indo-Japan Collaborative Project, Rs. 5.0 Crores
- IoT for Smart Healthcare, sponsored by MietY, Rs. 4.0 Crores

# IoT Initiatives

- IoT Enabled  Ultrasound Scanner for Remote Diagnostics
- Accelerated Crop Phenotyping Using UAVs
- LiDAR for Smart and Autonomous Vehicles
- Low Complex System Architecture for Brain Controlled IoT Enabled Environments
- LoRa based Emergency Alarming Device
- Modeling and Analysis of MAC Protocols for IoT Networks
- IITH-MOTE – Wireless Sensor Node
- Gas Sensor Development for Wireless Air Pollution Monitoring
- IoT Enabled Secure Power Monitor and Smart Metering
- Mobile Sensor Networks – KDDI & IITH Initiative

Thank You!