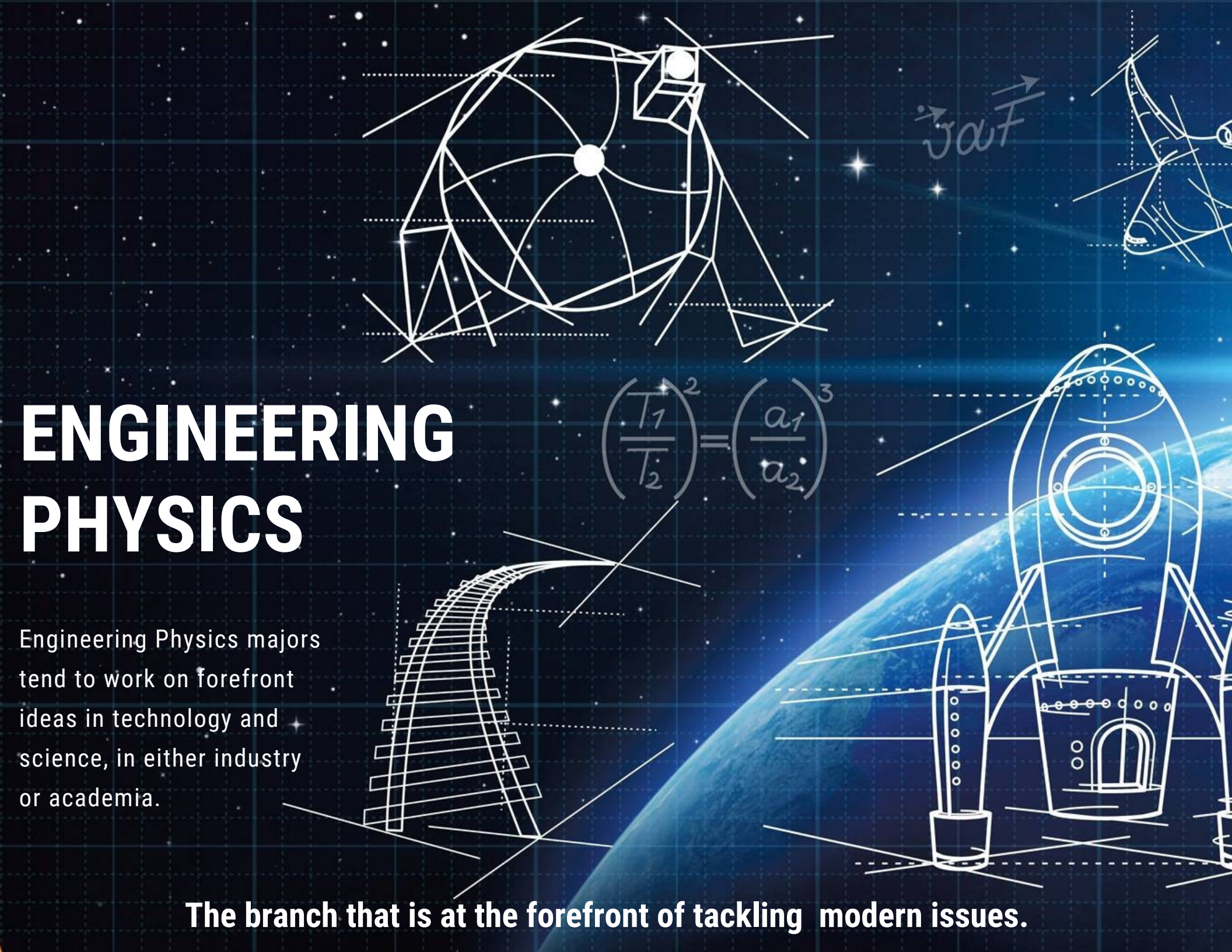

ENGINEERING PHYSICS

Engineering Physics majors tend to work on forefront ideas in technology and science, in either industry or academia.

The branch that is at the forefront of tackling modern issues.

Curriculum of Engineering Physics

PHYSICS/BASIC SCIENCE COURSES

- Symmetries in Quantum Mechanics
- Special function and differential equations
- Group Theory
- Scattering Theory
- Approx methods in Quantum Mechanics
- Relativistic Quantum Mechanics
- High Energy Physics
- Linear Vector Spaces
- Statistical Physics
- Photonics and Lasers
- Hydrogenic Atoms
- Particle Physics
- Nuclear Physics
- Spectroscopy

EE COURSES

- Electric Circuits
- Magnetic Circuits
- Digital System Design
- Applied Digital Logic Design
- Introduction to Drones
- Matrix Analysis
- Analog Electronics
- Power Electronics
- Analog System Design
- Electronic Devices & Circuits
- Basic Control Theory

CS COURSES

- Introduction to Programming
- Introduction to Data Structures
- Algorithm
- Data Structures

The courses offered allows us to have a firm hold upon the theoretical concepts and science behind the technologies in use today.

An equitable distribution between Core and Non core courses can be seen.

12 Credits each are offered by the Computer Science and Engineering and Electrical Engineering departments, which cover the amount of credits required for a **minor in each of the departments respectively.**

Compulsory courses also includes 2 projects to be completed in guidance of a faculty at IITH.

Courses done as electives

As part of our curriculum, we are given the freedom to take on electives and additional courses from any department.

Courses involving theory behind **computational topics** and sub-fields of **Artificial Intelligence, Machine Learning and Data Science** along with courses based on various **sensor based technologies** compose the principal group of the electives.

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AI/ML/DS ELECTIVE

- Data Science & Analysis
- Image Processing
- Deep Learning
- Artificial Intelligence
- Pattern Recognition & Machine Learning
- Introduction to AI & ML
- Representation Learning

EE ELECTIVES

- Signals & Systems
- Electronic Devices & Circuits
- Internet Of Things
- AC Machines
- Control Systems
- Digital Signal Processing
- Analog System Design

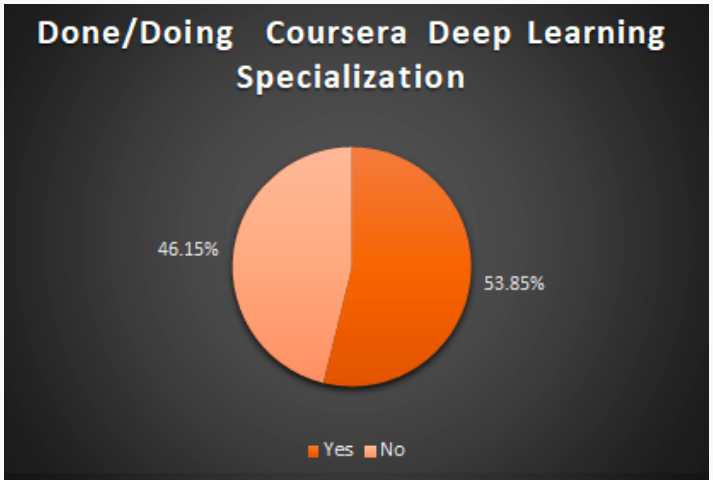
CS ELECTIVES

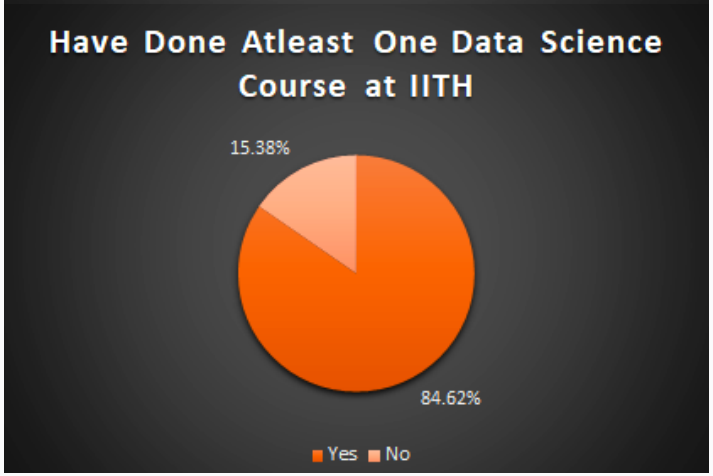
- Theory of Computation
- Introduction to Complexity Theory
- DBMS
- Combinatorics

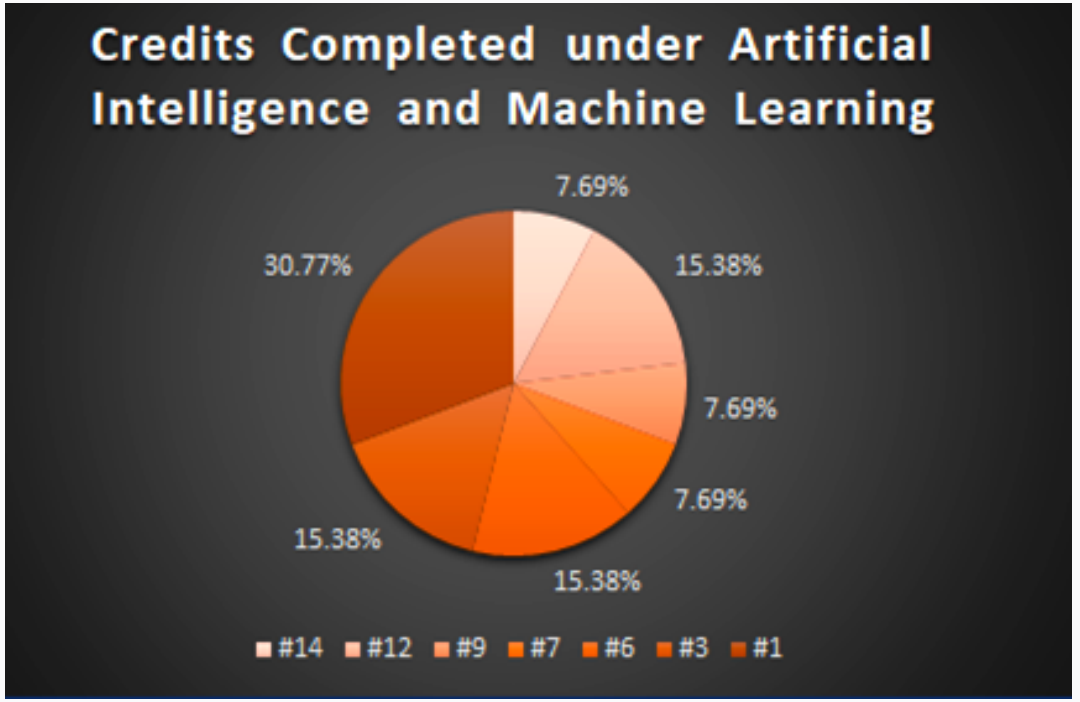
As a result of which we have knowledge about additional realms of engineering which supplement our core skills.

- The branch has ample exposure to the field of data sciences, which is augmented by our other courses which rely heavily on data obtained from various scientific phenomena.

- Experimental simulations are a key aspect of our learning, the experiences from which are easily carried over to data sciences.



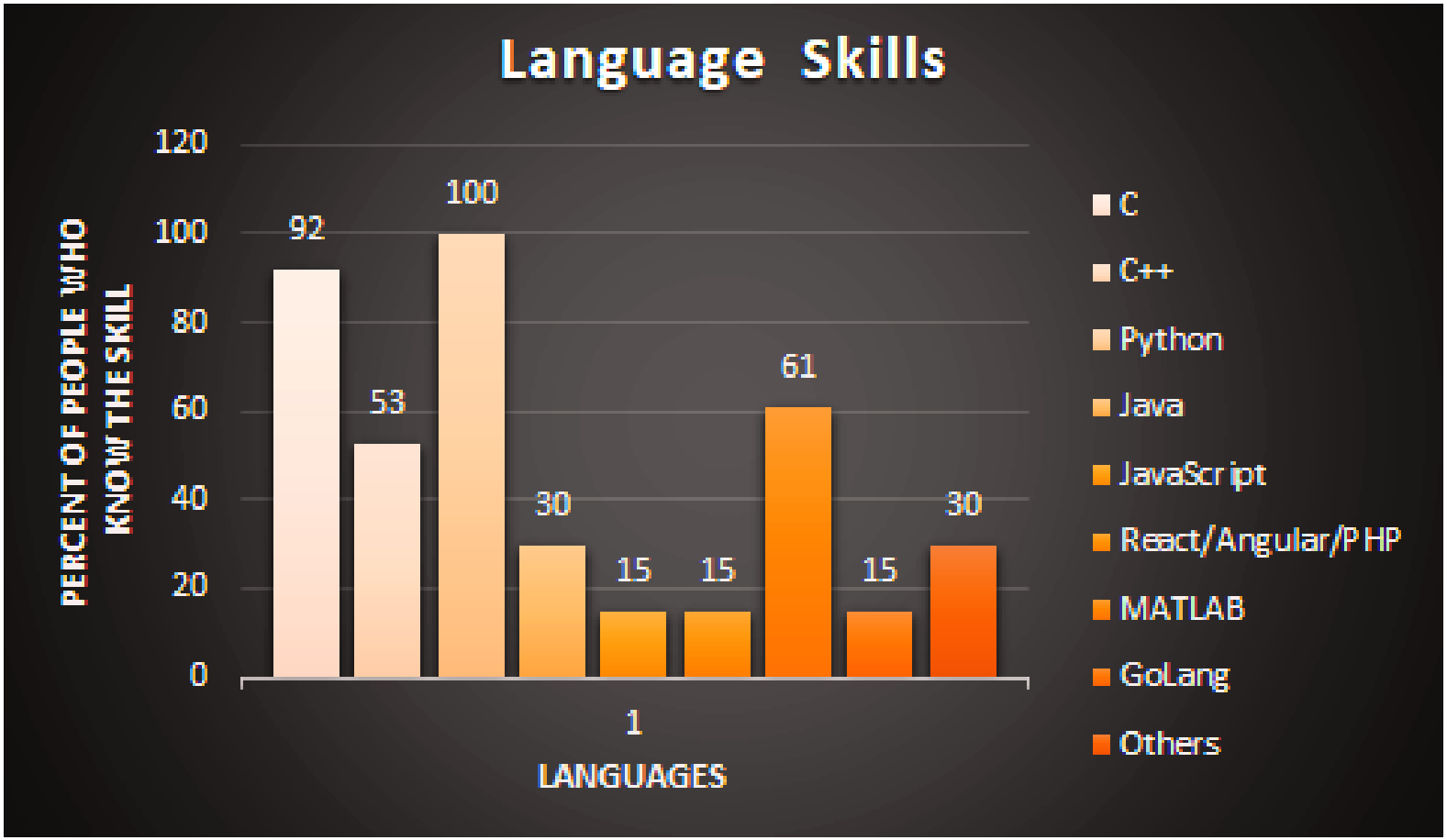




- Nearly one-third of the branch has done at least 9 credits worth of **AI/ML courses.**

- Over 50% of Engineering Physics students have done/are doing the **Deep Learning Specialization** Course offered by Deeplearning.ai on Coursera.

- Almost 85 % of the batch has taken and completed at least one **Data Science course** offered at IIITH.



- The graph displays the relative familiarity with working with various software languages. **Everyone in branch has knowledge of C/C++ and Python.**

- Fluency in such skills allow us to be at par with students from computer science engineering in terms of formulating quick solutions to problems. It complements the **data science** and **machine learning** skills, as software development allows us to present the solutions developed.

Internships

Few Organizations where Engineering Physics students have worked as an intern :

- **UST Global** as a Software Intern (**DevOps**)
- **Deloitte** as Business Technology Analyst (**BTA**)
- **YUKAI Engineering Inc.** as a Software Development Intern (**SDE**)
- **NTT-AT** as Operation Support Software System for ROME (**Robotic Optical Management System**)
- **NTT-AT** as a Software Engineer (**SDE**)
- **I'm Beside You** as Data Science Intern (**DS**)
- **I'm Beside You** as WEB/APP Developer Intern (**WEB/APP**)
- **Honeywell** as a Software Developer Intern (**SDE**)
- **Paninian** as Computer Vision Intern (**DS**)

- **IIT Indore Research Intern**, Supervisor Dr. Surya Prakash, HoD, dept. of CSE, IIT Indore
- **MITACS Globalink Research Internship,** Canada. (Canceled due to the COVID-19 travel ban)
- **Curie Institute**, Paris, France - Research Intern. (Canceled due to the COVID-19 travel ban)
- Summer Internship under the guidance of Prof. Subha Majumdar, TIFR Mumbai

Some of Past Recruiters include :

Some of Past Recruiters include :

Other Students are pursuing higher studies at :

UC San Diego

TEXAS STATE UNIVERSITY

THE OHIO STATE UNIVERSITY

The University of Texas Rio Grande Valley

and many more...

Projects :

- Auto Suggestion and Auto Completion - **Implementation of Trie**
- Personalized Spotify Playlist using **K-means Clustering** based on song metrics.
- Facial emotion recognition **- Implementation of different DL models** and to compare the accuracy and performance.
- Search for **Lorentz Invariance Violation** from stacked Gamma-Ray Burst spectral Lag data under supervision of Dr. Shantanu Desai.
- **Machine Learned** Phase Transition in a system of Anisotropic particles on a Square Lattice under supervision of Dr. Joyjit Kundu.
- **Deep Learning** based Cancer Prediction under supervision of Dr. Sumohana Channappayya
- Optimizing collective field axis of swarming agents through **reinforcement learning.**
- Under Prof. Srijith PK. : Using **python, tensor flow for rumor detection** using external methods Project
- Under Dr. Shantanu Desai : used **Markov Chain Monte Carlo, Gaussian Process Regression and Bayesian Model Comparison.**
- **GRB data analysis project** under supervision of Dr. Shantanu Desai at IIT Hyderabad.
- Used **python** and **keras** to develop **object detection algorithms** to detect objects in thermal and aerial images.
- Wrote an **algorithm for Hamiltonian Monte Carlo**, a course in Parallel Computing.
- **Sentiment Analysis** on Twitter Data of 140 million tweets using Word2Vec embeddings and Bi-directional LSTM based RNNs. Also, made a simple content based recommender system using the **NLP** concept of TF-IDF vectorization.
- **INTER - IIT TECH MEET**: Bosch Traffic Sign Recognition

CONTACT US

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