Pranav Page

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Education

Indian Institute of Technology Bombay **B.Tech + M.Tech**
Electrical Engineering *2018-2023*

- Currently in the Third Year with a specialization in **Communication and Signal Processing** and a CGPA of **8.84**
- Also pursuing a **Minor** degree in **Computer Science**.

Projects and Workshops

GRB Search Algorithm **Research Project**
Prof. Varun Bhalerao, Department of Physics, IIT Bombay *2020-present*

- Studied and implemented a new **Bayesian Blocks** algorithm for detection of **Gamma Ray Bursts** in **ASTROSAT** data in Python 3, with $\mathcal{O}(N^2)$ complexity.
- The algorithm looks at **local variability** in the light curves and generates custom time-bins (with priors). It eliminates the need for excluding the off-time of the satellite as the fitness function chosen is **block-additive**
- Tested the performance of this algorithm on known GRBs, with lesser false positives than the **N-sigma** method
- Working towards **integration** of this algorithm into the **pipeline** for GRB search and the **Flask** interface.
- Starting to implement the GRB search algorithms on an **FPGA** board. *(as of August 2020)*

Doctor Pi **Institute Technical Summer Project**
Institute Technical Council, IIT Bombay *2019*

- Helped to build an **autonomous ground based bot** along with three fellow students which had a robotic arm and a camera attached to its end.
- Programmed the bot using Raspberry Pi to execute a **predefined path** through rows of crops in fields.
- **Imaged the leaves** of the crops, then used **opencv** for Image Processing to detect whether the crop is diseased.
- Surveyed farmers close to Palghar to better understand problems faced by them due to **late detection** of diseases.

Speed Measurement of a DC motor **Course Project**
Prof. Subhananda Chakraborty, Department of Electrical Engineering, IIT Bombay *2019*

- Used **BCD counters** and **BCD-to-seven segment display chips** to measure the speed of the shaft of a DC motor and display it onto a **seven segment display**, with the speed ranging from 10 to 999 rpm.

RC Plane Competition
Aeromodelling Club, IIT Bombay *2018*

- Built and flew a **remote controlled plane** with Depron foam, wood and servo motors.
- Designed the plane and did a **barrel roll** with the plane with a few minutes of steady flight.

Reducing Carbon Footprint **Action Research Project**
Bombay Science Teachers Association *2015*

- **Experimented** with mixtures of different compositions of **waste products from local industries** like bagasse, sawdust, cowdung, charcoal, molasses to create a cylindrical **briquette** which had **lesser carbon emissions than deadwood** which is normally used in rural areas for fuel.
- Applied for a **joint patent** along with Mr. Shekhar Jeurkar under the name **Bifel** (BIoFuEL) which is now **open for re-examination**. *(as of July 2020)*

Sustainability in Food **Action Research Project**
Bombay Science Teachers Association *2012*

- Built a **basic solar dehydrator** to address the issue of **loss of nutrients** caused by **direct sun-drying** which works by passing heated air over the target and successfully demonstrated **retention of Vitamin C** in lemons and amlas.
- Conducted **field trials** with local farmers and received positive inputs for drying tomatoes, which proves useful due to fluctuating prices in the market. The dried tomatoes are pulverised and stored for **2-3 months** in airtight bags.

Positions of Responsibility

Department Academic Mentor
D-AMP, Department of Electrical Engineering, IITB *2020-present*

- Part of a 35 member team selected from the EE department through **interviews** and **peer reviews**.
- Responsible for **mentoring 6 sophomores** in their academic and extracurricular life, especially providing help to students who struggle with their studies.
- Functioning as the **first point-of-contact** for students and the department.

Teaching Assistant
PH108: Basics of Electricity and Magnetism, Department of Physics, IITB *2020*

- Conducted **weekly classes** for a batch of 40+ students.
- Resolved doubts, cleared concepts and **graded** the quizzes and the mid-semester examinations.

SoS Mentor
Summer of Science, Maths and Physics Club, IITB *2020*

- Mentored students over the summer aiming to learn more about **General Astronomy**.
- Provided them with textbooks and research papers pertaining to their field of interest.

Convener
Krittika-The Astronomy Club, IITB *2019-2020*

- **One out of six** conveners responsible for organizing technical events and competitions on an **institute level** to increase awareness and inculcate enthusiasm and passion for astronomy among students.
- Entrusted with **maintaining the telescopes** and improving the proficiency of telescope handling of astronomy enthusiasts, and **organizing trips** to dark sites for **night sky observations**.

Academic Achievements

- **AP** in Physical Chemistry, awarded to **11** students out of **1023** for **Advanced Performance** in the course.
- Selected in the **top 1%** nationwide in **INPhO** and **INChO** conducted for selection to International Olympiads.
- Engineering Entrance Exams
  - **All India Rank** of **275** out of **165,000** students appearing for **JEE Advanced 2018**.
  - **All India Rank** of **250** out of **1.05 million** students appearing for **JEE Main 2018**.
- Selected for the **KVPY** fellowship in both **SA**(2017) and **SX**(2018) streams after the written test and an interview with an **All India Rank** of **318** in 2017 and **402** in 2018 conducted by **IISc, Bangalore**
- Awarded the prestigious **NTSE** scholarship of offered by **NCERT** given to **1000** students nationwide.
- **State Rank 1** in **MTSE** in **2016, 2015, 2014** among students appearing from **Maharashtra and Goa**.
- Awarded **Gold Medals** and one-time scholarships of Rs. 3000 in the Dr.Homi Bhabha Young Scientist Competition **in 2015 and 2012** for a three-stage state-wide competition, which involved a written test, a practical examination (selected **top 7.5 %** from the written test appear for this round) and an Action Research Project and an interview based on this as the third round (**top 10%** from the second round selected for this round).
- **State Rank 10** among **550,000** students in the state-wide High School Scholarship Exam.
- **State Rank 1** among **45,000** students appearing for the National Science Olympiad (SOF) in 2013 and in 2012.

Technical Skills

Languages: C++, Python, Bash, VHDL, SQLite*, ArduinoCode*, HTML*

Packages: numpy, matplotlib, astropy, opencv, Flask, AutoCAD, Solidworks, LaTeX

Operating Systems: Windows, Linux

*basic proficiency

Important Courses

Computer Science: Logic for CS, Computer Programming and Utilization, Data Structures and Algorithms, Computer Networks[†]

Electrical: Signals and Systems, Digital Systems, Network Theory, Digital Signal Processing[†], Microprocessors[†], Communication Systems[†]

Statistics: Data Analysis and Interpretation, Fundamentals of Statistics[‡].

Physics: Electricity and Magnetism, Electromagnetic Waves[†], Quantum Physics and Applications, Astrophysics.

Miscellaneous

- Achieved **Special Mention in Technical Awards** for an Inter-Hostel competition in **Observational Astronomy.**
- - Learned **Abacus** upto the last level G8 (Ideal Play Abacus) and received certification for the same by the **GuangXi Zhusuan Association, China**.
  - Passed the **International Standard Of Abacus Mental Arithmetic Proficiency Examination** and bagged the **fourth** place in the **National Abacus and Mental Arithmetic Competition** in **Chennai** in **2008**.
- Enrolled in **NSO Tennis 2018-19**, and continued playing **tennis**
- Proficient in English, Hindi, Marathi, Sanskrit[*], French[*].

[†]to be completed by November 2020

[‡]offered by MITx, to be completed by September 2020.