Aryan Roy | Resume

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Education

Manipal Institute of Technology — **Manipal, Karnataka**
Computer and Communication Engineering, B.Tech — *July, 2019 - July, 2023*
- **CGPA** : 8.52

Publications

- Roy, A., Pivarski, J. and Freer, C.W., 2023, February. "**An array-oriented Python interface for FastJet.**" In *Journal of Physics: Conference Series* (Vol. 2438, No. 1, p. 012011). IOP Publishing.
- Roy, A. and Pivarski, J., 2023. "**Using a DSL to read ROOT TTrees faster in Uproot.**" *arXiv preprint arXiv:2303.02202.* (under review)

Experience

Oracle — **Hyderabad, India**
Associate Software Developer — *25.07.2023 – Present*
- Developing concepts for products leveraging Machine Learning and AI as part of cloud offerings for the Food and Beverages Industry.
- Leading the design and development of a completely new product using enterprise grade tools and technologies.

Oracle — **Remote**
Project Intern — *11.01.2023 – 07.07.2023*
- Worked on writing bench marking scripts to asses the load response of web applications.
- Developed an internal tool for monitoring API usage and reporting the data.

Fermi National Accelerator Laboratory — **Batavia, Illinois**
Research Intern, Computing — *26.05.2022 – 22.07.2022*
- Accelerated a widely used Python file I/O library using a lightweight experimental DSL.
- Gathered requirements from existing and prospective users to understand the use case.
- Participated in design discussions for the library.
- Achieved a 400x gain in performance when reading specific data types of interest.

Princeton University — **Remote**
Research Intern — *04.04.2021 – 30.08.2021*
- Developed a library to perform sequential recombination clustering for particle physics data.
- Participated in API design discussions with stakeholders to improve the design.
- Achieved a 25x throughput increase over the fastest alternative Python clustering solution.

Project MANAS — **Manipal, Karnataka**
AI Perception Head — *2020 – 2022*
- Served as a member of the official AI and Robotics club of the University.
- Worked on several modules for an autonomous drone ranging from perception to path planning.
- Mentored juniors and helped them on challenging problems in AI, Robotics and Software Development.

Projects

pywhy-graphs — **Remote**
Open Source Contributor — *April, 2023 – Present*
- Implementing fundamental theorems and functionalities in statistical causality under the mentorship of Dr. Adam Li.
- Identifying and solving bugs and issues in the said library.

Awards

- **IRIS-HEP Fellow 2022** : Awarded the Fellowship to work on accelerating file readers for a commonly used HEP file format.
- **MITACS GRI 2022** : Awarded the fully funded scholarship to work on utilising brain signals as future authentication tools at Lakehead University.
- **IRIS-HEP Fellow 2021** : Awarded the Fellowship to implement a fast Jet clustering solution for HEP.
- **Mahindra Rise Prize** : Part of the only Undergraduate team to qualify for the top 13.

Talks, Presentations and Posters

- **Using a DSL to read ROOT TTrees faster in Uproot (Oral Presentation)** : At the 21st International Workshop on Advanced Computing and Analysis Techniques in Physics Research. Duration : 20 minutes, Type : Oral
- **An array-oriented Python interface for FastJet (Poster)** : At the 20th International Workshop on Advanced Computing and Analysis Techniques in Physics Research. Type : Poster
- **Fastjet: Vectorizing Jet Finding (Lightning Talk)** : At PyHEP 2021 (virtual) workshop. Duration : 10 minutes.

Key Skills

- **Programming Languages** : Python, C/C++, Java, Forth
- **Libraries and Frameworks** : Pytorch, Tensorflow, pywhy-graphs, scikit-learn, sktime
- **Academic Coursework** : Data Structures - A, Object Oriented Programming - B, Data Mining and Predictive Analysis - A, Social Network Analysis - A, Pattern Recognition - A
- **Online Courses** : Reinforcement Learning Specialisation - Coursera (2020), Convolutional Neural Networks - Coursera (2019)
- **Soft Skills** : Public Speaking, Technical Writing, Leadership