Pratyush Das

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Education

Institute of Engineering & Management, Kolkata 2017-2021(Expected)

Bachelor of Technology in Computer Science and Engineering. CGPA: 8.00/10

Don Bosco School, Park Circus 2016

High School

Experience

IRIS-HEP - Fellow June, 2020 - August, 2020

Supervisor - Dr. Jim Pivarski(Princeton University)

- Awkward Array: Library for nested, variable-sized data using NumPy-like idioms
  - Designed a source to source compiler to generate equivalent Python for a subset of C++.

IRIS-HEP - Fellow June, 2019 - September, 2019

Fermi National Accelerator Laboratory, USA - LHC Physics Centre

Supervisor - Dr. Jim Pivarski(Princeton University)

- uproot: Python implementation of ROOT, the open source file format storing the largest quantity of data in the world
  - Added functionality to write ROOT files with TTrees.
  - Played a major role in making uproot one of the most widely used High Energy Physics libraries. (500K+ downloads)

DIANA-HEP - Fellow June, 2018 - September, 2018

Fermi National Accelerator Laboratory, USA - LHC Physics Centre

Supervisor - Dr. Jim Pivarski(Princeton University)

- uproot
  - Examined ROOT serialization of objects.
  - Added functionality to write ROOT files with strings and histograms.

DIANA-HEP - Summer Student June, 2017 - August, 2017

Supervisors - Dr. Jim Pivarski(Princeton University), Dr. Viktor Khristenko(CERN)

- spark-root - Apache Spark datasource for ROOT
  - Separated spark bindings from TTree reading code.
- root4j - Java implementation of ROOT file reader
  - Optimized codebase to facilitate interoperability

Summer Schools

Computational and Data Science for High Energy Physics 2019

Princeton University

Programming Skills

Languages: Python, Java, C, C++

Libraries/Frameworks: numpy, ROOT, git, CUDA, *nix

Publications

- J.Pivarski, I.Osborne, **P.Das**, A.Biswas, P.Elmer, "Awkward Array: JSON-like data, NumPy-like idioms", Proceedings of the 19th Python in Science Conference. 2020
- N.Saha, **P.Das**, H.N.Saha, "Authorship Attribution of Short Texts using a Multi Layer Perceptron", International Journal of Applied Pattern Recognition, 2018 Vol. 5 No. 3, Pages 251-259, DOI: 10.1504/IJAPR.2018.10016100. 2018

Conference Talks

- Python in High Energy Physics.
  -PyCon USA (Remote) 2020
- Python in High Energy Physics
  -Scipy India (Indian Institute of Technology, Bombay) 2019
- The Scikit-HEP Project: Overview and Prospects - Eduardo Rodrigues et al.
  -24th International Conference on Computing in High Energy and Nuclear Physics (University of Adelaide) 2019
- Writing files with uproot
  -PyHEP (Abington, UK) 2019
- Writing files with uproot
  -ROOT Users' Workshop (Academy of Sciences and Arts of Bosnia and Herzegovina) 2018

Talks at Meetings

- PR 5297: Testing Facilities - Vassil Vassilev, Pratyush Das
  -ROOT Team Meeting(Vidyo) 2020
- Writing TTrees with uproot
  -IRIS-HEP Topical Meeting: Summer student project presentations(Vidyo) 2019

- Writing files with uproot
  -DIANA Meeting: Updates on ROOT I/O(Vidyo) 2018
- Separation of Concerns - Refactoring code between ROOT4J and Spark-Root
  -DIANA Meeting: Student Projects(Vidyo); CMS Big Data Science Projects(Vidyo) 2017

Academic Achievements

- Awarded the IRIS-HEP undergraduate fellowship. 2020
- Awarded travel grant to speak at PyCon USA 2020 in Pittsburgh, USA. 2020
- Awarded travel grant to attend PLMW and POPL 2020 in New Orleans, USA. 2019
- Awarded travel grant to attend CoDaS-HEP summer school at Princeton University. 2019
- Awarded the IRIS-HEP undergraduate fellowship. 2019
- Awarded travel grant to speak at ROOT Users' Workshop 2018 in Sarajevo, Bosnia and Herzegovina. 2018
- Awarded the DIANA-HEP undergaduate felowship. 2018

Extracurricular Achievements

- International Rated Chess Player (Federation Internationale des Echecs) 2016
- Adhyayan National Student Leadership Contest (Adhyayan India) - Third 2015
- IT Quiz (Computer Society of India) - Second 2014

Open Source Projects

- uproot (Core developer) - Designed ROOT file writing interface.
- Awkward Array - Designed transpilers from a subset of C++ to Python and parallelized CUDA.
- uproot-methods - Enabled support to recognize hook for multidimensional uproot histograms.
- root4j - Optimized interface for interoperability.
- spark-root - Separated spark bindings from TTree reading code.
- cling - Configured installer to build using LLVM binary.
- ROOT - Provided fixes to rootcling bugs.

Featured in Media

- *Princeton leads efforts to develop national data training framework for high energy physics* - Princeton University News 2019