

Pratyush Das

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Education

Institute of Engineering & Management, Kolkata <i>Bachelor of Technology in Computer Science and Engineering. CGPA: 8.00/10</i>	2017-2021(Expected)
Don Bosco School, Park Circus, Kolkata <i>High School</i>	2016

Experience

IRIS-HEP - Fellow Supervisor - Dr. Jim Pivarski(Princeton University) <ul style="list-style-type: none">• Awkward Array: Library for nested, variable-sized data using NumPy-like idioms<ul style="list-style-type: none">- Created a source to source compiler to generate equivalent Python for a subset of C++.- Created a specification based test generation framework.- Created a source to source compiler to generate equivalent parallel CUDA from specification(Python and type information).	June, 2020 - September, 2020
IRIS-HEP - Fellow Location: Fermi National Accelerator Laboratory, USA - LHC Physics Centre Supervisor - Dr. Jim Pivarski(Princeton University) <ul style="list-style-type: none">• uproot: Python implementation of ROOT I/O, an open source file format storing over an exabyte of HEP data<ul style="list-style-type: none">- Completed ROOT file writing interface by adding functionality to write ROOT files with TTrees.- uproot has become one of the most widely used Physics libraries (500K+ downloads)	June, 2019 - September, 2019
DIANA-HEP - Fellow Location: Fermi National Accelerator Laboratory, USA - LHC Physics Centre Supervisor - Dr. Jim Pivarski(Princeton University) <ul style="list-style-type: none">• uproot<ul style="list-style-type: none">- Co-developed the uproot library with Jim Pivarski; authored the ROOT file writing interface.- Examined ROOT serialization of objects and added functionality to write ROOT files with strings and histograms.	June, 2018 - September, 2018
DIANA-HEP - Summer Student Supervisors - Dr. Jim Pivarski(Princeton University), Dr. Viktor Khristenko(CERN) <ul style="list-style-type: none">• spark-root - Apache Spark datasource for ROOT<ul style="list-style-type: none">- Separated spark bindings from TTree reading code.• root4j - Java implementation of ROOT file reader<ul style="list-style-type: none">- Optimized codebase to facilitate interoperability	June, 2017 - August, 2017

Summer Schools

Computational and Data Science for High Energy Physics <i>Princeton University</i>	2019
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Programming Languages and Tools

Experienced: Python, CUDA, *nix

Familiar: C, C++, Java, ROOT

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 (SciPy, USA), 2020, Pages 68-74, DOI: 10.25080/Majora-342d178e-00b. 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

Talks at Conferences

- 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 (DOI: 10.5281/zenodo.3959734)
-*PyHEP (Abington, UK)* 2019
- Writing files with uproot
-*ROOT Users' Workshop (Academy of Sciences and Arts of Bosnia and Herzegovina)* 2018

Talks at Meetings

- CUDA backend for the Awkward Array project
-*Princeton University Liberty Research Group Meeting (Remote)* 2020

- PR 5297: Testing Facilities - Vassil Vassilev, Pratyush Das
-*ROOT Team Meeting(Remote)* 2020
- Writing TTrees with uproot
-*IRIS-HEP Topical Meeting: Summer student project presentations(Remote)* 2019
- Writing files with uproot
-*DIANA Meeting: Updates on ROOT I/O(Remote)* 2018
- Separation of Concerns - Refactoring code between ROOT4J and Spark-Root
-*DIANA Meeting: Student Projects(Remote); CMS Big Data Science Projects(Remote)* 2017

Academic Achievements

- Awarded the IRIS-HEP undergraduate fellowship by Princeton University. 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 by Princeton University. 2019
- Awarded travel grant to speak at ROOT Users' Workshop 2018 in Sarajevo, Bosnia and Herzegovina. 2018
- Awarded the DIANA-HEP undergraduate fellowship by Princeton University. 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

Major Open Source Contributions

- uproot (Core developer) - Designed ROOT file writing interface.
- Awkward Array - Designed transpilers from a subset of C++ to Python and parallel CUDA, and an automatic test generator.
- 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.[Supervised by Dr. Vassil Vassilev(Princeton University)]
- ROOT - Added ROOTUnitTestSupport and fixed several rootcling bugs.[Supervised by Dr. Vassil Vassilev(Princeton University)]
- Clang - Upstreamed patches from Cling.[Supervised by Dr. Vassil Vassilev(Princeton University)]

Featured in Media

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