

Pratyush Das

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Education

Institute of Engineering & Management, Kolkata <i>Bachelor of Technology in Computer Science and Engineering. CGPA: 8.43/10</i>	2017-2021 (Expected)
Don Bosco School, Park Circus, Kolkata <i>High School (Council For The Indian School Certificate Examinations)</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 property based testing framework.- Created a source to source compiler to generate equivalent parallel CUDA from specification (Python and type info).	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 (100K+ 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 (CoDaS-HEP) <i>Princeton University</i> <ul style="list-style-type: none">• Interviewed - <i>Princeton University News</i>	2019
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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/Majorsa-342d178e-00b. 2020
- E.Rodrigues, et al., “The Scikit HEP Project - overview and prospects”, Proceedings of the 24th International Conference on Computing in High Energy and Nuclear Physics (CHEP 2019), Adelaide, Australia, 2019. [Accepted] 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 - <i>PyHEP (Abington, UK)</i>	2019
• Writing files with uproot - <i>ROOT Users' Workshop (Academy of Sciences and Arts of Bosnia and Herzegovina)</i>	2018

Talks at Meetings

• Language Transformations for the Awkward Array library - <i>IRIS-HEP Fellow Presentations (Remote)</i>	2020
• CUDA backend for the Awkward Array project - <i>Princeton University Liberty Research Group Meeting (Remote)</i>	2020
• PR 5297: Testing Facilities - <u>Vassil Vassilev</u> , Pratyush Das - <i>ROOT Team Meeting (Remote)</i>	2020
• Writing TTrees with uproot - <i>IRIS-HEP Topical Meeting: Summer student project presentations (Remote)</i>	2019
• Writing files with uproot - <i>DIANA Meeting: Updates on ROOT I/O (Remote)</i>	2018
• Separation of Concerns - Refactoring code between ROOT4J and Spark-Root - <i>DIANA Meeting: Student Projects (Remote)</i>	2017
- <i>CMS Big Data Science Projects (Remote)</i>	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

• Cling - Configured installer to build using LLVM binary and revamped CI. [<i>with Dr. Vassil Vassilev (Princeton University)</i>]	
• ROOT - Added ROOTUnitTestSupport and improved performance of rootcling. [<i>with Dr. Vassil Vassilev (Princeton University)</i>]	
• Clang - Upstreaming patches from Cling. [<i>with Dr. Vassil Vassilev (Princeton University)</i>]	
• Awkward Array (Core developer) - Designed source to source compilers for the CUDA backend and created a test generator.	
• Uproot (Core developer) - Designed ROOT file writing interface.	
• 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.	

Programming Languages and Tools

Experienced: Python, C, CUDA, *nix

Familiar: C++, Java, ROOT, Haskell, Standard ML

Test scores

- **GRE:** Verbal Reasoning - 160, Quantitative Reasoning - 163, Analytical Writing - 4.5
- **TOEFL:** Reading - 29, Listening - 29, Speaking - 24, Writing - 30