Pratyush Das

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Education

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

Bachelor of Technology in Computer Science and Engineering. CGPA: 8.04/10

Experience

IRIS-HEP - Fellow June, 2020 - September, 2020

Awarded the IRIS-HEP Fellowship by Princeton University

Supervisor: Dr. Jim Pivarski(Princeton University)

- Awkward Array: Library for nested, variable-sized data using NumPy-like idioms
  - Created source to source compilers to generate equivalent Python and parallel CUDA from a subset of C++.
  - Created a property based testing framework.

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

Awarded the IRIS-HEP Fellowship by Princeton University

Supervisor: Dr. Jim Pivarski(Princeton University); *Location:* Fermi National Accelerator Laboratory, USA

- uproot: Python implementation of ROOT I/O, an open source file format storing over an exabyte of HEP data
  - Completed ROOT file writing interface by adding functionality to write ROOT files with TTrees.
  - uproot has become one of the most widely used High Energy Physics libraries (100K+ downloads).

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

Awarded the DIANA-HEP Undergraduate Fellowship by Princeton University

Supervisor: Dr. Jim Pivarski(Princeton University); *Location:* Fermi National Accelerator Laboratory, USA

- uproot:
  - Co-developed the uproot library with Jim Pivarski; authored the first ever ROOT file writing interface in Python.

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

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

- spark-root and root4j: Set of libraries to read ROOT files into Apache Spark dataframes
  - Refactored Apache Spark bindings from ROOT TTree reading code in spark-root for interoperability with root4j.

Summer Schools

Computational and Data Science for High Energy Physics 2019

Princeton University

- Interviewed - *Princeton University News* 2019

Programming Languages and Tools

• Python • C • C++ • Java • CUDA • *nix • 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
- 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. 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

Select Talks

- Language Transformations for the Awkward Array library
  -IRIS-HEP Fellow Presentations (Remote) 2020
- CUDA backend for the Awkward Array project
  -Princeton University Liberty Research Group Meeting (Remote) 2020
- Python in High Energy Physics
  -PyCon USA (Remote) 2020
  -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 TTrees with uproot
  -IRIS-HEP Topical Meeting: Summer student project presentations (Remote) 2019
- Writing files with uproot
  -PyHEP (Abington, UK) 2019
  -ROOT Users' Workshop (Academy of Sciences and Arts of Bosnia and Herzegovina) 2018
- Separation of Concerns - Refactoring code between ROOT4J and Spark-Root
  -CMS Big Data Science Projects (Remote) 2017

Other Achievements

- Awarded travel grant and selected to attend PLMW and POPL 2020 in New Orleans, USA. 2019
- 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

Other Major Open Source Contributions

- 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 - Upstreaming patches from Cling.[Supervised by Dr. Vassil Vassilev(Princeton University)]