Sneha Vireshwar Dixit

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EDUCATION: Washington College (2020-2023) (Early graduation) | B.S., Physics + Mathematics | GPA : 4.00

RESEARCH EXPERIENCE:

US ATLAS Student Researcher **October 2022-Present**

Advisor : Dr. Suyog Shrestha

- Working collaboratively to build and setup optimal software + hardware for a new particle physics lab suited for computer-based particle physics analysis at Washington College.
- Contributing towards search for new di-Higgs decay channels at ATLAS, CERN using ROOT and C++.

Exploring Dark Matter Interactions w. SM Particles **March 2022-Present**

Advisor : Dr. Digesh Raut

- Exploring properties of WIMP dark matter and its interactions with standard model particles.
- Using Wolfram Mathematica and the FeynCalc package to build and solve a freeze-out model of dark matter.
- Won competitive grants from Cater Society of Junior Fellows and John S. Toll Science Fellows Program.
- Links to : Presentation Slides

US CMS Student Researcher | Fermilab **May-August 2022**

Advisors : Dr. Nick Smith, Dr. Oksana Shadura

- Contributed to CMS Software ver. 10.6.X as a USCMS PURSUE intern at Fermilab.
- Developed computer program to convert CMS OpenData from before 2016 to the new NanoAOD datatype.
- Used C++, ROOT, Python for developing + debugging config files.
- Generated output files that make CMS OpenData accessible to researchers without technical difficulties.
- Links to : GitHub Repository, Pull Request on CMSSW 10.6.X, Presentation Slides

Modelling Top-Quark Background for Di-Higgs search @ LHC **May-July 2022**

Advisor : Dr. Suyog Shrestha

- Worked with CERN physicist Dr. Suyog Shrestha as a student contributor to the ATLAS Project @ CERN.
- Simulated top-quark background signals using ROOT and C++ on a Linux system.
- Used real Higgs Boson data from LHC @ CERN, Geneva to check simulations using statistical methods.

SKILLS:

Programming: Python, ROOT, C++, HTML, CSS, Wolfram Mathematica, Linux, Bash/Shell, Virtual Machines with Docker, Git and Github, design and analysis of algorithms.
Research: Literature review, scientific modelling, grant writing, scientific report writing, advanced lab skills.

TEACHING EXPERIENCE:

Curriculum Design | Washington College **May-August 2022**

- Ideated math bridge course to help students with weak math backgrounds adjust to intro-level STEM courses.
- Prepared curriculum and teaching materials from scratch + delivered course, resulting in STEM professors saving upto 2 hours of class time in the first 3 weeks of classes.

Physics+Math tutor | Washington College **October 2021-Present**

- Led tutor training as senior tutor at Washington College's Quantitative Skills Centre.

OUTREACH:

Particle physics outreach in Bengaluru, India **August 2022-Present**

- Developed upon work at Fermilab to create particle physics outreach program for high school students in Bengaluru, India. Used python instead of ROOT and Linux to improve accessibility in low-income schools.
- Won competitive grants from Cater Society of Junior Fellows to support project.

Improving science education in public schools in Bengaluru, India **July 2022-Present**

- Working with non-profit Curiouscity to improve science education among public school students in my home city, Bengaluru, India.
- Designed simple, thought provoking, cost-effective experiments that can be repeated by students at home to explore scientific concepts.

Last updated : November 2022