Shivangi Prasad

sprasad6@illinois.edu   github.com/shivangiphy   linkedin.com/in/shivangiphy

Education

University of Illinois, Urbana-Champaign   Aug 2012 - present
Ph.D, Nuclear physics. GPA 3.83/4.00
Advised by Prof. Jen-Chieh Peng   Defended: May 2020

Indian Institute of Technology, Kharagpur   Aug 2007 - Jul 2012
B.Sc & M.Sc dual degree, Physics, GPA 8.53/10.00
Institute Silver medal & Physics department Gold medal recipient

Relevant skills

- Computing/Programming: Linux, Python , C++, Git, Cern-ROOT, MySQL, Fortran
- Libraries: TensorFlow, Keras, scikit-learn, pandas, NumPy, SciPy, ROOT
- Presentation: Latex, MS Office, Excel, Powerpoint

Research Experience

University of Illinois, Urbana-Champaign;FermiLab, *ResearchAssistant*   Aug 2013 - present
- Thesis: "*Measurement of high-mass dimuon production for p+p and p+d collisions with 120 GeV proton beam at Fermilab*"
- Conducted data extraction, transformation, loading (ETL), and quantitative analysis using MySQL, CERN-ROOT (C++) and FORTRAN.
- Enhanced and supported C++ codebase for Monte Carlo simulation which is utilized in modeling signal and background.
- Improved the simulation which resulted in developing a reliable method to separate signal from background.
- Presented our work at various national and international conferences.

University of Massachusetts, Dartmouth, *Research Intern*   Jun 2011 - Aug 2011
- Utilized FORTRAN 90 codebase to conduct simulations for understanding the hydrodynamics of astrophysical systems (giant molecular clouds) [acknowledged in the group's publication]

Raman Research Institute, Bangalore, *Research Intern*   May 2010 - Jul 2010
- Implemented MATLAB code to replicate findings of an astrophysics research paper on non-thermal Sunyaev–Zel'dovich effect in clusters of galaxies

Selected projects

Pneumonia detection from chest x-rays using Deep Neural Networks

- Processed NIH chest x-ray dataset consisting of dicom x-ray files and radiological report attributes.
- Implemented Deep Neural network by fine-tuning VGG-16 architecture to classify x-rays.

Statistical analysis of housing prices and recession across US locations

- Performed cleaning, transformation, and merging of Zillow's housing data, university towns from Wikipedia, and GDP data from the US department of commerce using Pandas.
- Conducted hypothesis testing via t-test to verify the lower effect of recession in housing prices in university towns.

K-means clustering of location data

- Implemented K-means clustering algorithm in Python for clustering geographic locations.

Teaching Experience

University of Illinois, Urbana-Champaign, *Teaching Assistant*   Aug 2012 - Jul 2014
- Led weekly laboratory and discussion classes.
- Selected in the list of excellent TA's in Fall 2012 and Spring 2013.

Selected Awards/Prizes

- **Felix T Adler fellowship (2017)**: Outstanding graduate student in nuclear physics, UIUC
- **Institute silver medal & department gold medal (2012)**: Securing highest GPA at the end of 10th semester and best student in laboratory practices and project work.
- **INSPIRE scholarship (2008-12)**: awarded by Department of Science and Technology, Govt. of India.
- **3rd prize PuzzleBang (2018)**: Reflections & Projections, Computer Science department, UIUC.

Selected Research Presentations

- Prasad S. (on behalf of SeaQuest collaboration), *"Probing the parton structure in nucleon and nuclei at SeaQuest"*, Invited talk at Gordon Research Conference, Holderness, New Hampshire, Aug 2018.
- Prasad S. and Peng J. P., *"Dark Photon Search with Drell-Yan-Like Process"*, talk at American Physics Society (Division of Nuclear Physics), Santa Fe, New Mexico, Oct 2015.

Publications

- SeaQuest Collaboration, *"The SeaQuest spectrometer at Fermilab"*, Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment (930) 49-63 http://doi.org/10.1016/j.nima.2019.03.039
- SeaQuest Collaboration, *"Asymmetry of antimatter in proton"*, submitted.
- Prasad, S. *et. al.,"Transverse momentum dependence of σ(p+d)/σ(p+p) Drell-Yan cross section ratios",* in progress.
- Prasad, S. *et. al., "Features of kinematic dependence of mean transverse momentum from analysis of existing Drell-Yan data"*, in progress
- Mishra, S., Prasad, S., Mishra, S, *"Multilingual Joint Fine-tuning of Transformer models for identifying Trolling, Aggression and Cyberbullying at TRAC 2020."* In Proceedings of the Second Workshop on Trolling, Aggression and Cyberbullying (TRAC-2020).