

# Shivangi Prasad

[sprasad6@illinois.edu](mailto:sprasad6@illinois.edu)

[github.com/shivangiphy](https://github.com/shivangiphy)

[linkedin.com/in/shivangiphy](https://linkedin.com/in/shivangiphy)

## Education

**University of Illinois, Urbana-Champaign**

Aug 2012 - present

Ph.D, Nuclear physics. GPA 3.83/4.00

Expected graduation: May 2020

Advised by Prof. Jen-Chieh Peng

**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 Courses

- Pattern discovery in Data Mining
- Cluster analysis in Data Mining
- Data visualization
- Introduction to statistics
- Introduction to Data Science in Python
- Object-oriented data structures in C++

## Research Experience

**University of Illinois, Urbana-Champaign, *Research Assistant***

Aug 2013 - present

- Collaborating on the FermiLab experiment, SeaQuest, alongside 50+ members from 17 institutions and 3 countries.
- Performed large scale data collection for the experiment over a period of 2 years.
- 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.
- Performed regression analysis and improved the simulation accuracy by 40%.
- 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

## Relevant course projects

### 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.

## Mining frequent location categories

- Implemented Apriori algorithm in Python for mining frequent category sets across 77K locations in the USA.

## Leadership Experience

University of Illinois, Urbana-Champaign, *Teaching Assistant*

Aug 2012 - Jul 2014

- Assisted in teaching undergraduate courses with 90+ students.
- Led weekly laboratory and discussion classes.
- Supervised students with weekly assignments and graded exam.
- Selected in the list of excellent TA's in Fall 2012 and Spring 2013.

## Technical Skills

- **Proficient:** Linux, MySQL, CERN-ROOT, FORTRAN, LaTeX, MS Office, Excel, Powerpoint.
- **Intermediate level:** Python, C++, Git, MatLab, and Gephi.

## Awards/Prizes

- **Felix T Adler fellowship (2017):** Outstanding graduate student in nuclear physics.
- **Institute silver medal & department gold medal (2012):** Securing highest GPA at the end of 10<sup>th</sup> semester and best student in laboratory practices and project work.
- **3<sup>rd</sup> prize PuzzleBang (2018):** Team in week long university-wide puzzle contest.

## Talks & poster 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., "*Extraction of  $\underline{u}(x) + \underline{d}(x)$  from  $p+d$  Drell-Yan measurement at SeaQuest*", poster presentation at the National Science Foundation review meeting, Urbana-Champaign, Illinois, Jan 2018.
- Prasad S. and Peng J. P., "*Dark Photon Search with Drell-Yan-Like Process*", talk at Hampton University Graduate Studies (HUGS) Program, Jefferson Lab, Virginia, Jun 2016.
- 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.
- Prasad S. and Peng J. P., "*Dark photon search at SeaQuest*", poster presentation at the National Science Foundation review meeting, Urbana-Champaign, Illinois, Jan 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>