Husni Almoubayyed | Résumé

+1 (412) 345 1875 • halmouba@andrew.cmu.edu
www.husni.space • husnialmoubayyed • GitHub hsnee

Education

Carnegie Mellon University — **Pittsburgh, PA**
PhD, Physics, Mellon College of Science — *Aug 2016–May 2021*
MS, Physics, Mellon College of Science — *Aug 2016–May 2018*

University of Glasgow — **Glasgow, UK**
BSc (Hons), Physics & Astrophysics, with Honours of the First Class — *Sep 2012–Jun 2016*

Experience

Carnegie Mellon University — **Pittsburgh, PA**
Graduate Researcher — *Jan 2017–present*
As a member of the Dark Energy Science Collaboration for the Large Synoptic Survey Telescope, I:
- currently use deep learning (generative adversarial neural networks) to model and correct for systematics and biases that the telescope induces in galaxy images.
- led efforts to design an optimal 10-year telescope strategy to minimize uncertainties related to weak gravitational lensing and measuring cosmological parameters.
- Co-developed numerically-validated python library named the Core Cosmology Library.

Teaching Assistant — *Aug 2016–Dec 2017*
Won best teaching assistant award, for leading recitations for intro and intermediate physics courses, designing computational physics labs, and integrating active-learning and tech-assisted teaching in physics courses.

University of Glasgow — **Glasgow, UK**
Undergraduate Researcher — *Aug 2015–Jun 2016*
As part of 2017 Nobel Prize-winning project, LIGO, used bayesian statistics to set upper limits on gravitational-wave signal from the sun, using 1.5 years of time-series data.

Durham University — **Durham, UK**
Undergraduate Researcher — *May 2015–Aug 2015*
Developed highly-parallelized python and C code to mitigate the bias on cosmological parameters induced due to inevitable constraints on placement of fibers in the largest spectroscopic instrument in the world, DESI.

Skills

Programming

Python: NumPy, SciPy, Pandas, Sklearn, Tensorflow, Keras, Jupyter, Seaborn *–3.5 yrs of experience*

Javascript: Processing.js, Node.js, D3.js • **Unix/Bash** • **Matlab** • LaTeX • **C/C++**

Communication

Excellent communication skills to technical and non-technical audiences with
- 2 peer-reviewed academic journal publications with 35 citations
- 6 talks at conferences, colloquia, and outreach events in US, UK, Germany & S. Korea
- 4 poster presentations
- 2 years of weekly group presentations

Leadership

- Founded and currently organize CMU/Pitt Hack Hour, a biweekly seminar series since 2017, where graduate students in the physical sciences peer-teach advanced scientific programming.
- Organized the inaugural physics hackathon at Carnegie Mellon in 2018.

Relevant Coursework

Machine Learning & Statistics

Classes taken at the CMU School of Computer Science at the PhD level:

- Introduction to Machine Learning
- Probability and Mathematical Statistics

Mathematical Finance

Audited classes from MS in Computational Finance program:

- Fixed Income and
- MSCF Investments

Side Projects

miniLIGO

Build18, CMU's Electrical & Computer Engineering Department, 2018

- Built a physical model of 2017 Nobel prize winning experiment, LIGO, from scratch, using 3d printers, laser cutters, lasers, and beam splitters.
- Captured the model's signal using sensors and a Raspberry-Pi, visualizing the calibrated signal in real-time.

Optipik

Hack-A-Startup 2018 Runner-up, Carnegie Mellon University, Tepper School of Business

- Built Convolutional Neural Network models for photo optimization targeted towards the housing industry
- Created comprehensive business plan using the SaaS model to turn Optipik into a startup

ParrotBot

Grand Prize winner, Oath/Verizon Chatbot Hackathon

Built a responsive chatbot incorporating machine learning methods including Natural Language Processing and Multi-Layer Perceptrons to make personalized recommendations, using the Oath/Verizon API

Citadel LLC/Correlation One Datathon

In <7 hours, I used big datasets to create a Bayesian model to predict probability of cancer from DNA expressions

Certificates

Bloomberg, LP: Bloomberg Market Concepts

CFA Institute: Investment Foundations Certificate

Interests

Retail Investing: Including using options, futures, and short selling

Music: I play piano and drums, and create electronic music, most recently using deep learning (LSTM)