

Contact

www.linkedin.com/in/justincliffordsmith (LinkedIn)

Top Skills

Physics
Mathematica
Scientific Computing

Languages

English (Native or Bilingual)

Certifications

Basic Mediation Training

Honors-Awards

Graduate Research Fellowship
Program Fellow
Graduate Research Fellowship
Program Honorable Mention
Regents' Fellowship
Summa Cum Laude

Publications

Thermal stitching: Combining the advantages of different quantum fermion solvers

Using Public Data to Generate Industrial Classification Codes

Linear bands, zero-momentum Weyl semimetal, and topological transition in skutterudite-structure pnictides

The Hubbard dimer: a density functional case study of a many-body problem

Exact conditions on the temperature dependence of density functionals

Justin Clifford Smith

Data Scientist at Optum | Physicist
Orange County, California Area

Summary

Physicist turned data scientist working on machine learning and NLP for medical risk and quality at Optum.

Experience

Optum
Data Scientist
November 2019 - Present (5 months)
Orange County, California Area

U.S. Census Bureau
Data Scientist
August 2018 - November 2019 (1 year 4 months)
Suitland, MD

Data scientist (official title: mathematician) focusing on natural language processing (NLP) problems. I was brought on to bring data science expertise to the new Center for Optimization and Data Science.

- Developed statistical models using natural language processing (NLP) and machine learning for a 1000+ class hierarchical classification system. Improved accuracy by 10% compared to production system and received additional funding to go into production. Predominantly using pandas, NLTK, gensim, spaCy, scikit-learn, and xgboost.
- Submitted one conference proceedings with a follow up publication in preparation.
- Cleaned and record linked data sets including official records, scraped websites, and queried API data.
- Formed collaborations across divisions and brought research developments to other organization business cases.
- Developed Python parser and ETL procedure in SQL that doubled upload speeds.
- Mentored colleagues in data science techniques and best practices.
- Awarded 2018-2019 AAAS Science and Technology Policy Fellowship.

TubeScience

Data Analysis Consultant

May 2018 - August 2018 (4 months)

Greater Los Angeles Area

Predictive analytics pertaining to Facebook advertising with a dash of data engineering on the side.

University of California, Los Angeles

Postdoctoral Scholar

September 2017 - August 2018 (1 year)

Greater Los Angeles Area

I worked with Professor Christian Ratsch, one of the associate directors of the Institute of Pure and Applied Mathematics, studying quantum dots on semiconductor surfaces.

- Modeled Germanium quantum dot growth using electronic structure methods.
- Collaborated with experimentalists to bolster experimental techniques for developing new technologies.
- Maintained an open-source Python module used with an electronic structure software.
- Developed a suite of Python scripts for use with the same electronic structure software.
- Led neural network affinity group at the UCLA Institute of Pure and Applied Mathematics.

UC Irvine

5 years

Graduate Student Researcher

June 2013 - August 2017 (4 years 3 months)

Irvine, CA

I worked with Professor Kieron Burke on developing and understanding the formal properties of thermal density functional theory (thDFT) using the asymmetric two-site Hubbard model as a test case. Using this knowledge I developed a new theory to combine together thDFT and quantum Monte Carlo calculations for applications in the study of warm dense matter. This work was accomplished via pencil and paper mathematics and computations in Mathematica.

Accomplishments:

- Published four peer-reviewed papers, one book chapter, and a book review.

- Results include the first ever exact thDFT calculation and new exact conditions for future approximations.
- Received National Science Foundation Graduate Research Fellowship.
- Gave 6 poster presentations, 6 podium talks (including one prize), and 9 general audience talks (including two prizes).
- Formed the Science Policy Group at UCI and grew it to 40 members.
- Organized a 60 person symposium about science policy and related careers for PhD students.

Teaching Assistant

September 2012 - June 2013 (10 months)

Irvine, CA

Undergraduate Courses:

- Introduction to Experimental Physics - Optics, (Fall 2012).
- Introduction to Experimental Physics - Circuits, (Winter 2013).
- Physics for Life Sciences, (Spring 2013).

Graduate Courses:

- Mathematics for Chemists, (Summer 2013, 2014).
- Introduction to Density Functional Theory, (Fall 2014).
- Science Communication with radio host Sandra Tsing Loh, (Winter 2017, Spring 2017).

UC Davis

Undergraduate Researcher

September 2009 - August 2012 (3 years)

Davis, CA

I worked in Professor Warren Pickett's research group performing electronic structure calculations using FPLO, ELK, and in-house code. I primarily studied the strain-induced topological phase in CoSb₃ and the effects of a Hydrogen defect in Germanium.

Accomplishments:

- Published two peer-reviewed papers.
- Presented two podium talks.

Spherical Cow Company

Videographer

June 2010 - September 2010 (4 months)

Davis, CA

I helped created the concept and edited a video on the Cosmic Microwave Background in conjunction with Professor Lloyd Knox, another undergraduate, and a graduate student.

Education

University of California, Irvine

Doctor of Philosophy - PhD, Condensed Matter Physics · (2012 - 2017)

UC Davis

Bachelor of Science, Physics · (2008 - 2012)