Samuel **Hinton**, PhD

Data Scientist | Software Engineer | Astrophysicist

Links

Website: CosmicCoding
LinkedIn: samuelreay
GitHub: samreay

Skills

Python, C, C++, Javascript, SQL, Java, Stan, Git
Machine learning
Numerical Optimisation
Visualisation
Bayesian Statistics
Model fitting

Awards

Nobel Laureate Delegate
UQ Future Superstar
ASA Bok Prize
Science Grad. of the Year
AIP Prize
University Medal (Science)
University Medal (Eng.)
AAO Honours Scholarship
A.W. Oakes Scholarship
Harriet Marks Bursary
Helen Thompson Prize
IET Student Prize
David Andrew Krnak Prize
UQ Future Leader
IEEE Student Prize
GroundProbe Prize
RWH Hawken Scholar
Alstom Prize
John Black Prize

Communication

Academic presentations in more than a dozen institutions and countries.

Science outreach appearances on multiple TV shows, radio channels and public events.

Publications

5 first author
30+ contributing author
Areas of software, statistics and astrophysics.

Experience

2020-Now **University of Queensland** Brisbane, Queensland, Australia
Postdoctoral Researcher
Continued research using Hierarchical Bayesian modelling to perform supernova cosmology. Created data pipelines and high-fidelity numerical simulations to quantify methodologies. Implemented machine learning classifiers to discriminate between supernova types. Applied model selection techniques to models of large-scale-structure in the universe.

2019-Now **SuperDataScience** Sunshine Coast, Queensland, Australia
Course Instructor
Created courses on statistical analysis and data manipulation in Python for students. Focused on applied statistics and utilisation of modern code packages, with attention given to visual output and workflows for continuous validation of methodology.

2017, 2016 **Lawrence Berkeley National Laboratory** Berkeley, California
Research Fellowship
Research fellowship to work on Bayesian Hierarchical Modelling and its applications to Supernova Cosmology. Specifically, investigating how to use high dimensional hierarchical models to model individual supernova instead of populations to provide better constraints on cosmology using supernova discovered by the Dark Energy Survey. Involved using numerous MCMC fitters, Stan, Gaussian processes and many numerical techniques.

2015–2016 **Gemini & Australian Astronomical Observatory** La Serena, Chile
Research Intern
Utilised photometric data of a nearby galaxy to determine globular cluster candidates and their properties. Utilised and created data reduction pipelines, automated analysis methods, and applied machine learning techniques to perform object classification.

2010–2014 **GBST** Brisbane, Queensland, Australia
Software Developer
Developed business intelligence reporting solutions, designing and developing server and client based web application code, creation of large scale SQL queries. Optimised queries, databases, and applications for network, processing, and memory constraints, developed back-end server code and front-end web applications, plus API's to connect the two.

Education

2016–2020 **Doctor of Philosophy** University of Queensland
Analysing supernovae in the Dark Energy Survey using Hierarchical Bayesian models to help constrain the nature of dark energy.

2010–2015 **Bachelor of Science** (Physics)(Hons, 1st) University of Queensland
Thesis: Analysed the Baryon Acoustic Oscillation signal imprinted in the large scale structure of the universe.

2010–2014 **Bachelor of Engineering** (Software)(Hons, 1st) University of Queensland
Thesis: Created the first online client-only web-application to compute redshifts from telescope spectra.