

# 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   | <b>University of Queensland</b><br><i>Postdoctoral Researcher</i><br>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.  | Brisbane, Queensland, Australia       |
| 2019-Now   | <b>SuperDataScience</b><br><i>Course Instructor</i><br>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.   | Sunshine Coast, Queensland, Australia |
| 2017, 2016 | <b>Lawrence Berkeley National Laboratory</b><br><i>Research Fellowship</i><br>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. | Berkeley, California                  |
| 2015-2016  | <b>Gemini &amp; Australian Astronomical Observatory</b><br><i>Research Intern</i><br>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.   | La Serena, Chile                      |
| 2010-2014  | <b>GBST</b><br><i>Software Developer</i><br>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.  | Brisbane, Queensland, Australia       |

## Education

- |           |   |                          |
|-----------|---|--------------------------|
| 2016-2020 | <b>Doctor of Philosophy</b><br>Analysing supernovae in the Dark Energy Survey using Hierarchical Bayesian models to help constrain the nature of dark energy.                 | University of Queensland |
| 2010-2015 | <b>Bachelor of Science (Physics)(Hons, 1<sup>st</sup>)</b><br>Thesis: Analysed the Baryon Acoustic Oscillation signal imprinted in the large scale structure of the universe. | University of Queensland |
| 2010-2014 | <b>Bachelor of Engineering (Software)(Hons, 1<sup>st</sup>)</b><br>Thesis: Created the first online client-only web-application to compute red-shifts from telescope spectra. | University of Queensland |