

# Christina Van Heer

COMPUTATIONAL COGNITIVE SCIENTIST



christinavanheer@gmail.com



<https://github.com/cvanheer>



Melbourne, Australia



I am a driven and enthusiastic computational scientist with 8 years' experience working with complex statistical models. I am particularly interested in generative modelling, which seeks to not only describe, but explain underlying causal mechanisms in our behaviours and in more applied problems such as healthcare, well-being, and the environment. I am deeply committed to working on projects which can provide benefit to decision makers working in fields that benefit society.



## EDUCATION

### PhD Candidate (Part Time)

2015 – 2020, 2023 – 2024

*The University of Melbourne*

### Post Graduate Diploma Psychology

2012

*Swinburne University of Technology*

### Graduate Diploma of Psychology

2010 – 2011

*The University of Melbourne*

### Bachelor of Science

*Monash University*



## INTERESTS

### Swimming

I train three times a week with the Yarra Roughies Swimming Club based at Fitzroy Pool in Melbourne. I also swam the 2024 1.2km Pier-to-Pub Open water event in Lorne.

### Soccer

I train twice a week with the Darebin Falcons Soccer Club, an all-Women's soccer club based in Preston, Melbourne.

### Long Distance Running

I have completed events such as the Melbourne Marathon (Half Marathon) and Run Melbourne.



## MY WORK

### PhD Candidate 2015 – Present

**Expected Completion mid-late 2024 (leave of absence between 2021-2023)**

- I am a Part Time PhD candidate in the School of Psychological Sciences. I research how humans process information when they are uncertain and when their environment changes and develop mathematical models that can help explain this behaviour. I am currently in the last 6 months of my PhD, preparing two sets of studies for publication.

#### Key achievements

- Selected for a two-week mathematical modelling training workshop in France (2018) and delivered invited talks at two universities in Paris.
- Secretary of Graduate Students Society.
- Panel on School's research and training committee.
- Volunteered on coding and modelling workshops training new students.

### Statistical Consultant – South Cape York Catchments (December 2023)

#### Key responsibilities

- South Cape York Catchments are not-for-profit resource management organisation which helps manage land in the South Cape York Area working with traditional landowners and local government.
- I provided modelling to help the lead Hydrologist (Dr Jeff Shellberg) ascertain which method of erosion prevention they monitored over a period of 2022-23 was the most effective in preventing erosion into The Great Barrier Reef.

#### Key achievements

- The results of this analysis helped the organisation work with the local council to provide the most effective erosion prevention that mitigates erosion into The Great Barrier Reef.

### Senior Analyst (Part Time) and Senior Policy Analyst (Part Time) – Victorian Department of Health (Feb 2021 – July 2023)

#### Key responsibilities

- Providing strategic advice and modelling around the risk factors for hospitalisation/mortality, isolation, testing, travel, public events.
- Reporting to the Public Health, Secretary and Health Minister's teams in a time sensitive manner for cabinet meetings and press conferences.

#### Key achievements

- Modelling associated with travel and public events used to provide informed advice to the broader COVID-19 response.
- Modelling of risk factors associated with hospitalisation was used in conjunction with clinical information to help triage patients in Victorian hospitals during the pandemic.
- Modelling of the antiviral effectiveness published as a first author paper in The Lancet, Western Pacific, and provided crucial early information on the real-world effectiveness of antiviral medications in an older population (70+) at greater risk of severe outcomes such as hospitalisation and death.

# Christina Van Heer

## COMPUTATIONAL COGNITIVE SCIENTIST



### REFERENCES

Professor Robert Hester  
Department Head - School of  
Psychological Sciences  
The University of Melbourne  
[hesterr@unimelb.edu.au](mailto:hesterr@unimelb.edu.au)

Professor Andrew Perfors  
Deputy Head – Complex Human  
Data Hub  
The University of Melbourne  
[andrew.perfors@unimelb.edu.au](mailto:andrew.perfors@unimelb.edu.au)

#### Technical Officer, Monash Biomedical Imaging, Monash University (2017 – 2021)

##### Key responsibilities

- Setup and troubleshooting of human neuroimaging, behavioural and genetic projects in mental illness, neurological disorders, and health (exercise) research areas.
- Programming (MATLAB, Python) and technical support for researchers
- Writing risk, compliance, and SOP documentation for researchers
- Training of all new users in human neuroimaging equipment (EEG, MRI, MR-PET, eye tracking).
- On-call troubleshooting and coding support.

##### Key achievements

- Overseen (30+) research projects to completion with national and international research partners.
- Over 500 jobs logged and resolved as part of a support team of 2 staff.

#### Senior Statistics Tutor, The University of Melbourne (2015 – 2020)

##### Key responsibilities

- Teaching weekly 1-hour tutorials to third year students using R.
- Content development (slides and code).
- Marking of assignments.

##### Key achievements:

- Nominated for a teaching award.
- Many of my students have gone on to further study in psychology (honours, masters, PhD).

#### Research Assistant – Vision and Attention Laboratory, The University of Melbourne (2016)

##### Key responsibilities

- Coding and supervision of experiments for an honours student project
- Developing and coding experiments.
- Computational modelling and data analysis using MATLAB and R.

##### Key achievements:

- My work resulted in 1 peer reviewed publication in Psychonomic Bulletin and Review.

#### Research Assistant / Lab Manager – Decision Neuroscience Lab, The University of Melbourne (2014-2015)

##### Key responsibilities

- Used machine learning methods and statistical analyses to predict human brain activity and behaviour, developed, coded, and ran human behavioral experiments.
- Dealing with grant bodies, other collaborators, and stakeholders, maintaining financial and data records.

##### Key achievements:

- My work in the lab resulted in 1 peer reviewed publication in Social Cognitive and Affective Neuroscience
- Ran a brain imaging study (budget, \$30 K)



### PUBLICATIONS

Effectiveness of community-based oral antiviral treatments against severe COVID-19 outcomes in people 70 years and over in Victoria, Australia, 2022: an observational study  
The Lancet Regional Health–Western Pacific 41

Combining error-driven models of associative learning with evidence accumulation models of decision-making Psychonomic Bulletin & Review 26, 868-893

To err is (perfectly) human: behavioural and neural correlates of error processing and perfectionism, Social cognitive and affective neuroscience 12 (10), 1647-1657

Orientation and spatial frequency selective surround suppression impairment in high autistic tendency