

# Tom Manderson

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## Work Experience

### Wattwatchers

Consulting Software Developer

Dec 2018–Present

- Freelance position – backend infrastructure for IoT energy monitoring
- Time-series PostgreSQL query and schema optimisation yielding a 70% read/30% write performance improvement
- Implementing asynchronous concurrent patterns in a Python socket server yielding 1.5x throughput increase

### Polymathian

Developer

Dec 2015–Mar 2019

- Diverse role including full stack web dev, system administration/DevOps, data science, client-facing consulting
- Solely responsible for company-wide transition to deployment with Docker
- Developed a transparent API for running tasks asynchronously in a distributed and concurrent environment
- One of two developers on rearchitecture of core internal tooling to microservices

### University of Queensland

Tutor, Introduction to Software Engineering

Feb–Nov 2015

- Modified Python's `unittest` to provide student-friendly test results and automated marking features
- Awarded a prize due to high performance evaluation from students

## Volunteering

### UQ Computing Society (UQCS)

President

2015–2017

- Doubled membership year on year throughout presidency
- Ran annual hackathon with >100 attendees in both 2016 and 2017

### Robocup Junior Australia

Soccer Referee 2014, 2017, Head Referee 2015, 2016 Aug 2014–Sep 2017

- Responsible for technical and safety audit of robotic soccer robots
- Contributor to development, maintenance, and system administration of competition management system

## Projects

### UQCS Projects and Infrastructure

Development, Operations, Python, Ruby, JavaScript,  $\LaTeX$  2015–2018

- Developed and maintained 6 public-facing, 1 infrastructure project for UQCS including build and deployment automation
- Sole developer on three Python/Flask based projects
- Lead contributor to development of a Python slack bot framework

### Stable Matching for Dynamic Ride-Sharing Systems

Development, Mathematics, Python, Operations Research

2017

- Took an existing Operations Research paper and successfully increased performance more than 3x
- Improved both mathematical formulation and software characteristics
- Included linear programming, integer programming, dynamic programming, mathematical problem decomposition

### mypy Type Checker

Development, Python

2017

- Open source project: official type-checker for Python
- One of two contributors to metaclass type-checking capabilities

## Education

### University of Queensland

BE (Software)/BS (Mathematics)

2014–2019

- Awarded the "ICT Excellence Scholarship" 2014
- Software focus in distributed and concurrent programming, program verification
- Mathematics focus in operations research and abstract algebra
- Thesis: "Proving Consistency of an Abstract Algebra for Verification of Concurrent Programs"

## Skills

- Python
- Haskell
- Java
- JavaScript
- C/C++
- Bash
- Linux/Unix
- AWS
- Build systems
- CI/CD
- Operations research
- Program verification
- Abstract algebra
- System administration
- VCS (Git/SVN/Mercurial)
- Configuration management

## Presentations

### PyCon Australia 2017:

Gradual Typing in Python

### PyCon Australia 2018:

Task Queues: A Celery Story

## Interests

- Type theory
- Cooking
- Rogaining
- Meditation
- Operations Research
- Functional programming

References available on request