

# Jack Dunn

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## KEY SKILLS

### Decision Making and Judgement

- Exceptional problem solving skills through experience with modelling and programming tasks.
- High level of strategic thinking developed as a result of involvement in wargaming hobby.

### Mathematical Ability

- Excellent grades in mathematics, modelling and operations research papers.
- Outstanding Scholarships in Calculus and Statistics & Modelling (top 0.3% of NZ students).

### Technical Experience

- Successes experienced developing software at a commercial level for Google and Derceto.
- Skilled with a variety of languages (C++, Python, JavaScript, GAMS, AMPL, Matlab).
- Very fast to pick up new skills and languages and implement them effectively.

### Teamwork

- Seamless integration into teams at Google and Derceto.
- Excellent marks received for all group projects within Engineering Science degree.

### Communication

- Working successfully as a private tutor with many individual students (including ESOL students) requiring clarity and depth while explaining concepts.
- Joint Winner of ORSNZ Young Practitioner's Prize, judged on quality of paper submission and presentation at conference.

## EDUCATION

### Massachusetts Institute of Technology (2014–2018 expected)

*Ph.D. in Operations Research* – Beginning in September 2014

Honours and awards:

- 2014–15: William Asbjornsen Albert Memorial Fellowship

### University of Auckland (2010–2013)

*Bachelor of Engineering in Engineering Science (First Class Honours)* - GPA of 9.000 (A+ in every paper taken)

Honours and awards:

- 2013: Senior Scholar Award, Engineering Science — Graduated top of class
- 2013: Operations Research Society of NZ Young Practitioner's Prize — Joint First Undergraduate
- 2011–13: First in Paper Awards - Achieved highest score in 19 out of 23 papers taken
- 2010–13: Dean's Honours List - Top 5% of Engineering cohort
- 2011: Statistics New Zealand Undergraduate Prize for Excellence in Statistics
- 2011: Department of Statistics – Certificate of Distinction in Theoretical Statistics
- 2010: Faculty of Engineering Undergraduate Scholarship
- 2010: Faculty of Engineering Kick-Start Scholarship

Awards not accepted:

- 2013: Stanford Graduate Fellowship (2014–17)
- 2013: UC Berkeley Fellowship for Graduate Study (2014–18)
- 2013: Georgia Institute of Technology William S. Green Fellowship (2014–18)
- 2013: Fulbright Science and Innovation Graduate Award

## **Wellington College (2006–2009)**

*NCEA Levels 1, 2, and 3 achieved with Excellence*

New Zealand Scholarship (2009):

- NZQA Premier Award (awarded to top 8 students in New Zealand)
- Outstanding Scholarship (top 0.3% in New Zealand) in Chemistry, Calculus, History, Statistics and Physics

## **WORK EXPERIENCE**

### **Google — Software Engineering Intern, Related Entities (2013–2014)**

Improved the quality of the Related Entities recommendation service within the Knowledge Graph:

- Design of a system for collecting evaluation data from a pool of distributed workers (crowd-sourced human input).
- Creation of a mixed-integer optimization approach for improving the service using the collected data.

### **Google — Software Engineering Intern, Network Software (2012–2013)**

Development of an extensible network visualisation tool for use by Network Operations personnel:

- Complex aggregation of data regarding the Google network and presentation of data to users.
- Construction of layout algorithms for displaying network topologies on-screen.

### **Derceto — Optimisation Assistant (2011–2012)**

Assisted staff in Operations Team with delivering Derceto Aquadapt optimisation software to clients.

Notable projects:

- Developed simulation of a water distribution network in Matlab to test the effects of proposed changes to the system's control scheme.
- Developed database query tool to be integrated within Excel (using VBA and Firebird ODBC) to aid clients in data analysis.
- Responsibility for upgrade and deployment of company-wide intranet.

## **TEACHING EXPERIENCE**

### **University of Auckland — Teaching Assistant (2013–14)**

- Provide support to academic staff within the Department of Engineering Science.

### **See the Solutions — Tutor (2013–14)**

- Provide pre-recorded video tuition to students via [SeeTheSolutions.net](http://SeeTheSolutions.net).

### **Private Tuition (2008–14)**

- Responsibility for planning and implementing a tuition programme for individual students within the community, primarily in Mathematics, Chemistry and Physics.
- Testimonials available at [www.jackdunn.org](http://www.jackdunn.org).

### **Flying Note — English Tutor (2012–13)**

- Delivered online English tuition to students in South Korea, providing assistance to the students by assisting with their writing, and demonstrating correct English speech in presentations.

### **University of Auckland — Part I Assistance Mentor (2011–12)**

- Provided academic support for first year engineering students through individual tutoring.

## RESEARCH EXPERIENCE

### University of Auckland — Research Assistant (2014)

- Continuation of Honours research regarding pricing problems in mixed-integer programs.

### University of Auckland — Honours Thesis, Engineering Science (2013)

*Binary Interruptible Load Optimisation (for Transpower NZ):*

- Tasked with resolving an issue with generation reserve procurement in the New Zealand electricity network.
- Conducted in-depth analysis of duality in mixed-integer programming for pricing purposes.
- Joint winner of the ORSNZ Undergraduate Young Practitioner's Prize, 2013.
- Open source implementation of algorithm used in pricing process available on [Github](#).
- Publications available:
  - [Thesis, 2013](#)
  - [ORSNZ Conference Proceedings, 2013](#)

## COMMUNITY INVOLVEMENT

### Wellington Warlords Wargaming Club (2000-14)

Voluntary Services:

- Developed a national rankings system for the international wargaming community running on Google App Engine. Currently operating in five countries (NZ, Australia, UK, USA and Canada).
- Responsible for organising and running tournaments.
- Administration of both web forums and club websites.
- Writing for a gaming blog that attracts around 1000 visitors per day.

Achievements:

- Overall Champion at New Zealand Masters Invitational, Warhammer 40k (2011).
- National Champion, Warhammer 40k (2007).
- Top three finishes at the New Zealand Masters Invitational in 2008 and 2009.
- Top three finishes in both 2009 and both 2010 New Zealand Grand Tournaments.
- Participant in invitation-only tournament in Australia (2006–08).
- Numerous awards for sportsmanship and for painting ability.

### Google Student Ambassador (2013)

- Plan and host events on behalf of Google on campus at the University of Auckland.
- Promote Google products on campus, and act as a contact at the University for Google teams.

### University of Auckland — Operations Research Students Association (2011)

- Member of the Executive Committee.
- Responsible for maintaining the Association's website and for all communication between the Executive Committee and the Part II students, including organisation of events for these students.