Jacob Hughes

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Summary

I am a physics PhD candidate at the Australia National University, working in experimental physics. At undergraduate level, I studied both physics and applied Mathematics (double major) at the University of Auckland, and at the Australian National University. In addition to these areas, I also took several courses in computer science. Physical and computer sciences are my chief interest, I enjoy solving the difficult problems presented by these fields, and finding one of the many possible paths to a solution.

In parallel to more academic studies, I have a keen interest in cooking and food, and have pursued that by working in hospitality. In that area I have worked most back-of-house positions, starting with Kitchen Porter at age 16, and in my most recent back-of-house role as Head Chef. I have been lucky enough to work in different restaurants in many countries, including the award winning Matterhorn in Wellington, New Zealand.

Education

Doctor of Philosophy in Physics (PhD), Australian National University 2013 – 2016

Thesis Title: "Characterization of polyimides damaged with space relevant plasmas through positron annihilation"

Supervisor: Associate Professor James Sullivan

- Awarded Australian National University PhD Scholarship
- Experimental design: Concept, design, costing, and implementation
- Improvement of experiment facilities including optimisation and calibration
- Experimental measurements and analysis for external collaborators
- Development in C/C++, C#, Python, MATLAB, LabView, LaTeX, and Excel
- Version control and documentation: Trac, Git, SVN, and Trello
- Object oriented design, parallelisation, optimisation
- Data analysis: Simulation, acquisition, compression, regression, statistical testing, and interpretation of results
- Writing and contribution to material for publication in high impact scientific journals
- Presented at conferences: Australian Institute of Physics Congress 2012 (Sydney, Australia) & 2014 (Canberra, Australia), International Conference on Positron Annihilation 2015 (Wuhan, China)
- Presentation of results into succinct elements: Posters, graphs, diagrams, and figures
- Regular internal presentation to the group and research school

Honours Physics, Australian National University 2012 – 2013

Grade: 2:1

- Coursework covering fundamentals of physics at an advanced level
- 50% of final grade from dissertation: *"Electron Scattering Within a Strong Magnetic Field"*
- Awarded Science Honours Scholarship
- Student representative for the year group
- Post graduate officer at UniLodge residential college

Bachelor of Science, University of Auckland 2008 – 2011

Physics and Applied Mathematics double major

- Majority of courses taken in Physics and Pure and Applied Mathematics
- Remaining courses taken in Computer Science
- Summer research scholarship working with CERN (2009)
- Class representative for many courses

Experience

Laboratory Demonstrator, Australian National University July 2013 – Present

- Teaching and technical demonstration of physics experiments
- Marking and critical feedback from laboratory reports, extended assignments, and final exam scripts
- Contribution to development of laboratory content and student experiment content

Head Chef, ASK Italian (UK) May 2011 - Feb 2012

- Food and hygiene standards compliance (audit scores: 94% food standards; 97% hygiene and health and safety)
- Sales forecasting, overhead management, staffing
- Turned loss making branch to 2nd highest profit making within the region, during period of overall recession

Laboratory Lead Demonstrator, University of Auckland July 2009 - Nov 2010

- Teaching and marking of physics experiments
- Responsible for all demonstrators in the session

Personal Projects

Guild Wars 2 Dungeon Tracker Published May 2015

Android application available at Google play store, com.gw2.dungeontracker

- Designed with efficient user interface to track progress through the 25+ dungeons available in Guild Wars 2, a large online multiplayer video game
- Functionality was not present in-game (at time of writing)
- Developed using Android tools available from Google, using Java and XML

Development in Unreal Engine

Hobby development in Epic Games Unreal Engine

- Development using C++ and Unreal Engine Blueprint Scripting system
- Authored tutorials for completed development segments, published online
- Interaction and collaboration with development community on various Unreal Engine forums

Organisations

Member of the Australian Institute of Physics (MAIP), Canberra Dev Community, Epic Games collaborative development (GitHub)

Languages

Spanish

- Advance Subsidiary Level in Spanish (2006)
- Current basic competency in speech, reading, and writing

Personal Interests

Multiplayer game design and development for computers, pen and paper, and augmented reality. I play guitar, saxophone, drums, and piano. Food and cooking continues to be an area I really enjoy and a great creative outlet.