

Curriculum Vitae - Benjamin Powley

Full Name Benjamin Thomas Powley
Position Ph.D. Student
Victoria University of Wellington
New Zealand
Contact *E-mail:* benjamin.powley(at)ecs.vuw.ac.nz

Personal Statement

My particular interests include Human Centred Computing, visualizing real world data to provide a greater understanding of science, user experience testing, immersive XR and emerging technologies such as Artificial Intelligence. I'm passionate about using my skills to enable better scientific understanding through developing visualizations.

During both my M.Sc. and Ph.D. research projects I enjoyed working with geospatial scientific data to make an impact through communicating environmental data. My Ph.D. research project involved applying Human Centered Computing throughout the design implementation and evaluation of an Immersive VR system for analysing ecosystem services data.

My qualifications include an M.Sc. in Computer Science with an A grade, a B.Sc. (Hons) in Computer Science and a B.Sc. in Computer Science and Mathematics. My experiences with Artificial Intelligence for image classification during a summer research scholarship, and completing my B.Sc. (Hons) encouraged my interest in research and motivated me to complete my M.Sc. and Ph.D. qualifications. I enjoy learning new skills, techniques, and research methods.

General Profile

- Excellent relevant qualifications and technical skills, both my M.Sc. and Ph.D. research involved software prototyping, implementation, and data visualization with real world geospatial environmental data.
- Excellent experience with Human Centred Computing, both my M.Sc and Ph.D. research incorporated real users into the development process for data visualization software.
- Good visual and oral presentation skills, I have presented over Zoom at EnvirVis: Workshop on Visualization in Environmental Sciences (June 2022), IEEE VR Doctoral Consortium (March 2022), VL/HCC 2020 Graduate Symposium (August 2020).
- Good experience presenting technology demonstrations to audiences with differing levels of expertise (VRST September 2023, Virtual Machu Picchu CAPE research project 2019).
- Good teamwork experience with the Agile development methodology.
- Good academic writing skills including research publications and the preparation of user facing documentation for commercial software.

Computer Skills

Area	Tools	Skill level	Experience
Programming	C#, C++	Excellent	Ph.D. research
	Java	Excellent	Industry programming University study
	Javascript	Excellent	M.Sc. research
	Python, HTML, CSS R	Good Good	M.Sc. research M.Sc. research Ph.D. data analysis
XR Technologies	VRTK, SteamVR	Excellent	Ph.D. research programming
	HTC Vive	Excellent	Ph.D. research
Game Development	Unity game engine	Excellent	Ph.D. research programming
	Unreal engine	Good	Summer research
	Blender	Basic	Ph.D. research prototyping

Geospatial	GDAL (C++/Python) QGIS	Good Basic	Ph.D. research Ph.D. research data checking data processing
Qualitative Research	Nvivo	Good	Ph.D. qualitative data analysis
Unit testing	JUnit	Excellent	Software testing in industry
Operating systems	Linux Windows	Excellent Excellent	Industry experience Ph.D. research
Office Software	Latex, Office	Excellent	Daily

Education

2020 - Present	PhD Student, Computer Science, Victoria University of Wellington Title: "Immersive Visualization for Ecosystem Services Analysis and Tradeoffs" Submitted: October 2023 Supervisors: Dr. Craig Anslow, A/Prof Mairéad de Róiste, Dr Stuart Marshall
2018 - 2019	M.Sc. Computer Science, Victoria University of Wellington Title: "AtmoVis: Visualisation of Air Quality Data" Supervisors : Dr. David Pearce, Dr. Craig Anslow
2014 - 2015	B.Sc. (Hons) Computer Science, Victoria University of Wellington Title: "Developing Control Software for a Model Railway" Supervisors : Dr. David Pearce, A/Prof Lindsay Groves
2010 - 2013	B.Sc. Computer Science and Mathematics, Victoria University of Wellington

Research Experience

Ph.D. Research "Immersive Visualization for Ecosystem Services Analysis and Tradeoffs"
The research followed a user centered design methodology to develop VR visualization software, Immersive ESS Visualizer, for ecosystem services data analysis. Development was informed by interviews and focus groups, a user study was performed to evaluate effectiveness of the VR software. Immersive ESS Visualizer was developed with C#, C++, HLSL (ShaderLab), Unity Game Engine, GDAL, VTK

Masters Thesis "AtmoVis: Visualization of Air Quality Data"
A web based data visualization system for analyzing air quality data was developed as part of the project. Qualitative and quantitative user tests were performed on domain experts with a background in GIS systems and air quality monitoring to measure the effectiveness of the system.

Scholarships and Awards

2020 - Present	Victoria Doctoral Scholarship, Victoria University of Wellington
2020	Summer Research Scholarship, Victoria University of Wellington Project Title: "Virtual Wetlands - VR Programming" (using Unreal Engine, Blueprints) Supervisor : A/Prof Mairéad de Róiste
2012	Summer Research Scholarship, Victoria University of Wellington Project Title: "Evolving Recursion Structures in Genetic Programming using TGP" Supervisor : Prof Mengjie Zhang
2012	Inaugural Deans List, Academic Excellence, (Faculty of Science, VUW)

Work Experience

2019	Virtual Reality Research Assistant – CAPE Research Project, VUW Role: Provided support/troubleshooted VR hardware and software issues in secondary schools; provided students with orientation and instruction for using VR equipment during a user study evaluating the application for teaching. Link: https://cape.org.nz/virtual-machu-picchu/
2016 - 2018	Graduate Software Engineer, Metaswitch Metaswitch is a medium sized international company producing telecommunications products and software for network operators. Role: Worked in an Agile team to produce features for the VOLTE TAS system; used an integration testing framework to write automated tests for features in the system; wrote documentation for features.

2011 - 2015, University Tutor, Computer Science, Victoria University Of Wellington
2018 - 2020 Papers: COMP102 Introduction to Computer Program Design, SWEN102 Introduction to Software Modeling, SWEN221 Software Development, SWEN224 Formal Foundations of Programming, COMP307 Introduction to Artificial Intelligence, SWEN 325 Software Development for Mobile Platforms, SWEN324 Software Correctness.
Role: Explained the requirements to students, answer questions, tutored students, marked labs/assignments giving feedback, provided feedback about laboratories to the course lecturer. Assisted with pilot testing assignments for suitability.

Publications

- Powley, B. T., Anslow, C., De Róiste, M. & Marshall, S. (2023). Immersive visualization for ecosystem services analysis. In 29th ACM Symposium on Virtual Reality Software and Technology (VRST 2023), October 09–11, 2023, Christchurch, New Zealand. ACM, New York, NY, USA 2 Pages. <https://doi.org/10.1145/3611659.3617197> - (Demo Paper)
- Powley, B. T., Anslow, C., & Pearce, D. J. (2022). AtmoVis: Web Based Visualization of Air Quality Data with Interconnected Windows. In S. Dutta, K. Feige, K. Rink, & D. Zeckzer (Eds.), *Workshop on Visualisation in Environmental Sciences (EnvirVis)*. The Eurographics Association. <https://doi.org/10.2312/envirvis.20221055> - (Paper)
- Powley, B. T. (2022). [DC] Immersive Analytics for Understanding Ecosystem Services Tradeoffs. *2022 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, 936–937. <https://doi.org/10.1109/VRW55335.2022.00319> - (Doctoral Consortium paper)
- Powley, B. T. (2020). Exploring Immersive and Non-Immersive Techniques for Geographic Data Visualization. *2020 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC)*, 1–2. <https://doi.org/10.1109/VL/HCC50065.2020.9127197> - (Graduate Consortium paper)

Referees

Referees can be supplied on request.