James Barnes

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github.com/jimbxb

Summary

I am a graduate of the degree of Master of Computer Science and Bachelor of Science at The University of Melbourne with a vast array of experience in academic teaching. My research project in the Master of Computer Science degree related to the design and implementation of a higher-order extension to a programming language, Wybe, and features various novel compiler optimisations. This research degree and my studies developed my passion for compilers and code optimisation.

Skills

Programming Languages:
Haskell, Python, C, C++, Java, JavaScript, Prolog, MATLAB, LaTeX, HTML5, CSS.

Software:
Visual Studio Code, GitHub, Eclipse, Microsoft Word, Microsoft Excel, Microsoft PowerPoint.

Natural Languages:
Native English, introductory-level Chinese (Mandarin).

References

Bach Le
The University of Melbourne
Honorary Senior Research Fellow
bach.le@unimelb.edu.au

Professor Timothy Baldwin
The University of Melbourne
Melbourne Laureate Professor
tb@ldwin.net

Michael Broeks
WorkSafe Victoria
Workers' Compensation (Premium) — Product Owner
michael_broeks@worksafe.vic.gov.au

Les Kitchen
The University of Melbourne
Honorary Senior Research Fellow
jebref@po.ljk.id.au

Education

Master of Computer Science — The University of Melbourne
2020 – 2022
Thesis: Higher-Order Programming in Wybe
Grade: First Class Honours (87.800 WAM)

Bachelor of Science — The University of Melbourne
2017 – 2019
Major: Computing and Software Systems
Grade: First Class Honours (83.000 WAM)

Belmont High School
2011 – 2016
Select-Entry Accelerated Learning Program

Work Experience

Summer Vacation Intern — Telstra
Summer 2020 – 2021
- Synthesised and maintained quality assurance tests for the MyTelstra Android and iOS apps and web app,
- Devops responsibilities relating to the MyTelstra apps, including deployments,
- Developed novel features for the MyTelstra Android and iOS apps and web app,
- Constructed onboarding and walkthrough materials for future employees

Head Tutor — The University of Melbourne
2022, Semester 2 — Models of Computation
- Primary point of contact for cohort of over 600 students,
- Developed of weekly tutorial exercises and problem sheets,
- Created assessment materials, including two assignments and the final and supplementary exams,
- Delivered weekly consultation sessions

Academic Tutor — The University of Melbourne
2022, Semester 2 — Foundations of Computing, Models of Computation, Declarative Programming;
2022, Semester 1 — Foundations of Computing, Declarative Programming
2021, Semester 1 — Foundations of Computing
- Delivered tutorial content to classes of 20 students of varying levels, including introductory first-year course, final year undergraduate, and postgraduate levels
- Graded assignments, projects, and exams of over 1500 students,
- Developed tools to ease the process of online materials, including custom tools for automatically grading certain exam and assignment questions,
- Refactored existing build tools for the creation of subject materials for weekly lectures and discussion lectures, allowing for streamlined maintenance and future development of novel material for both students and staff members

Academic Demonstrator — The University of Melbourne
2020, Semester 1 — Foundations of Computing;
2019, Semester 1 — Foundations of Computing
- Delivered hands-on, one-on-one demonstration sessions, where students ask questions relating to the course content, assigned weekly workshop tasks, and assessed project work

Data Analyst — WorkSafe Victoria
Summer 2019 – 2020
- Validated and cleaned confidential and public company records,
- Developed automation tools for the validation of said records

Kitchen Hand — Soft Cafe
2015 – 2022

Projects

Higher-Order Programming in Wybe — Master's Research Project

2021 – 2022

Postgraduate degree research project, developing a higher-order extension to a novel programming language, Wybe. This required the development of novel syntactic constructs, low-level code generation, and novel optimisation methods. The language also features novel features, such as resources (a declarative alternative to global variables), which required consideration in the design and optimisation of higher-order code.

The result of this year of work was a thesis detailing my research in the development of this extension, and benchmark results for the language's performance with the use of the novel optimisations. This work can be found on my GitHub.

Scalr.io — UniHack'21 1st Place

March 2021

First-prize winning UniHack'21 submission built with my team over the course of 48 hours. Scalr.io offers a platform where users can upload and utilise machine learning models through a simple-to-use web interface or API, allowing users with little technical knowledge to utilise machine learning.

Airloom – B.S. Capstone Project

2019, Semester 2

Undergraduate degree capstone project, built over the course of a semester. The project involved rigorous software modelling, planning, design and implementation of a web-based family heirloom register, making use of various technologies. I was responsible for work across all facets of the software, including the implementation of the front-end, and the design and implementation of the back-end.

Volunteering

Student Representative — The University of Melbourne

2022, Semester 1 – Master of Computer Science

2021, Semester 1 – Distributed Algorithms (COMP90020)

2020, Semester 2 – Advanced Theoretical Computer Science (COMP90057)

- Student-teacher liaison responsibilities.

Awards

Undergraduate Excellence in Computing and Information Systems Scholarship — Runner-up

2018

Awarded to an undergraduate student in the Computing and Software Systems major for excellent academic achievements.