

Jesse Clark

+61 459 763 305 1/35 Fairlight Crescent, Fairlight, NSW 2094 Jesse.Clark@uts.edu.au

Eligible to work in Australia and in the United States.

Employment

University of Technology, Sydney, Ultimo, New South Wales

November 2014 – Present

Senior Researcher

Developed a content management system for data and publications at a research lab. Mentored PhD students in fully-reproducible research methods. Oversaw the release of several open-source software packages, and contributed code to ROS. Gave lectures on continuous integration, I.T. for entrepreneurs, and paper prototyping. Organized research hackathons. Traveled to Japan to meet with roboticists.

Sydney Programming School, Mosman, New South Wales

April 2015 – Present

Head of Teaching

Taught Scratch and HTML to students age 8–13 at an after-school program. Developed curriculum and automated evaluation.

Modus Ponens, LLC, Palo Alto, California

Self-owned Consulting Business

Started a business to develop web and mobile applications for Silicon Valley Startups. Applied many cutting-edge technologies to deliver maximum value to clients. Led teams of local and remote designers and developers. Had contact with prominent venture capitalists. Notable clients:

- **Maverick Poker** 2014
Implemented a data and permissions model in Firebase for an online Poker game. Trained staff in iOS development.
- **OneLessDesk** 2014
Built a message-queue-based tool for business process management.
- **Destination Software** 2013 – 2014
Principal Software Engineer
Developed a high-availability e-commerce web server for the travel and hospitality industry. Implemented automated deployment and zero-downtime updates of Node.js and Riak servers. Supported web-accessible map/reduce queries of combined domain data and analytics data. Trained new developers in MVC and Agile methodologies.
- **GoBoldly** 2013
Full-Stack Developer
Implemented a novel isomorphic web application engine that works even in javascript-disabled environments, and progressively enhances based on available functionality. Implemented an iOS frontend and Parse.com backend for a geo-social networking app.
- **Scanadu** 2012
Developed an iPhone application to capture images of flu test strips and interpret the results.
- **Noledgy** 2012
Developed infrastructure for remote update and disable of an iOS application.
- **SolarCity** 2012
Developed a Node.JS web application to display live sales metrics. Developed a C# Service Stack web application to display customer locations on a map.
- **Robot Panda Productions** 2011
Developed authentication process, remote procedure call API, and database schema for a political Facebook game.

- **Soundwave** 2011
iPad music education application development, business communication
- **Schmoooz** 2011
Developed a Node.js backend and an iPhone frontend for a geolocation-based chat service.
- **The Burn-Zone** 2011 – 2012
Realtime sports discussion game built with Backbone.js and Socket.io
- **wherU** 2011
Developed an iPhone frontend for a college campus check-in service.
- **Gabberface** 2010
Optimized network and database performance for a PHP/MySQL Facebook search engine. Improved site performance by 7x, resulting in over 25% more traffic.
- **WoWGen** 2008
Deployed a Ruby on Rails site to track and compare World of Warcraft player statistics, and associated administration tools. Developed an interpreter for dynamic character equipment formulas extracted from game data files.

NASA Ames Research Center, Moffett Field, California

July 2007 – April 2011

Computer Scientist

Worked with a Human-Computer Interaction research group to develop tools for mission control of the Space Shuttle, International Space Station, and Constellation programs. Acquired domain expertise and managed data-entry efforts to import legacy records. Implemented fulltext search, advanced relational search functionality, custom report formatting, and usability features for search interfaces. Deployed a continuous integration daemon. Established an automated testing framework.

NASA Goddard Space Flight Center, Greenbelt, Maryland

June 2004 – June 2007

Computer Engineer

Developed robotics and graphics software to simulate contact dynamics for Hubble Space Telescope Servicing Mission 4. Used a FANUC industrial robot and a computer running a physics simulation to mimic the behavior of a Canadarm, which is too lightweight to operate normally in Earth gravity. Used capacitive sensors to guide robotic orientation, and summarized those sensors in a congressional design review. Recovered legacy climate data from the Nimbus and TIROS projects. Wrote Perl scripts to correct for degradation and translate to modern formats. Visualized results in Mathematica.

Wheels of Zeus, Los Gatos, California

2003

Wrote PIC assembly code and laid out a printed circuitboard for a Segway key duplicator.

Institute for Computer Assisted Orthopaedic Surgery, Pittsburgh, Pennsylvania

May 2002 – July 2002

Intern

Designed and developed a graphical user interface for hospital patient database management and integration with in-house tools. In C and X-forms, developed a program to align x-rays with CT scans using a 6-dimensional BFGS search. Modified control hardware for use with computer systems in the operating room.

Refract Media, Los Gatos, California

1997 – 2000

Configured and maintained Linux servers for a web hosting company.

Open-Source Software Publications

Published a novel isomorphic web application engine, “Zodiac,” which uses asynchronous Dust.js templates to stream Backbone.js views as they are being rendered, marked up with enough information to reinstantiate the same views on the frontend. Automatically routes models to declared endpoints. Communicates vector

clocks for automatic conflict detection and resolution.

Published examples of best practices in several web frameworks, for use in instructional materials.

Published various small packages for format conversion, CP437 graphics, and forward finite differences.

Worked with the open-source community to discover areas for improvement in popular software packages, implement those improvements in the appropriate style, and publish the results. Notable contributions:

- Robot OS (ROS) — Preeminent Robot Operating System
- Docker — Application container engine
- Metalsmith — Static website generator
- Handlebars.js — Declarative template engine
- Dust.js — Asynchronous template engine
- Rivets.js — Frontend data binding library
- Bugzilla — Widely-used bug tracking system

Academic Publications

1. **Jesse Clark** & Lenore Blum (2004): *Reversible Cellular Automata on Infinite Configurations*
Presented at Wolfram New Kind of Science 2004.
2. **Jesse Clark** & Mary-Anne Williams (2015): *Building a Content Management System with Static Site Generation Technology* (in preparation)
Submitted to Australian Software Engineering Conference 2015
3. Xun Wang, **Jesse Clark** & Mary-Anne Williams (2015): *Human Interpretation of Robot Pointing* (in preparation)
Submitted to Human-Robot Interaction Conference 2016

Education

Carnegie Mellon University, Pittsburgh, Pennsylvania

May 2004

Bachelor of Science in Computer Science, Minor in Mathematical Sciences

Coursework in systems programming, artificial intelligence, machine learning, cryptography, computational linguistics, bioinformatics. Systems programming experience, including implementation of a TCP/IP network stack, context-switching kernel, memory manager. Developed a genetic algorithm to solve constrained optimization problems in Mathematica.