

Last updated: October 24, 2020

Original copy (in case broken): <https://mullikine.github.io/cv/>

1 Shane Mulligan; BSc (Computer Science)

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Platform Engineering · Software Engineering · Test Automation · Natural Language Processing

1.1 Shane Mulligan [Cover Letter]

Dear Hiring Manager,

Please consider me for this role.

I'm passionate about developing tooling and automating software development processes.

In 2020 I contracted for FMG in Australia developing CI/CD infrastructure their vehicle autonomy team on AWS. I enjoyed creating productivity tools for the developers, working with GitLab CI and AWS EC2. I have returned to New Zealand since and been involved with my friend's project in realistic avatars (URL: <http://otagoai.com/>). I've also been through the Facebook interview process for a platform engineering job, so have completed this primer <https://github.com/donnemartin/system-design-primer>.

In 2019 I automated a pipeline to scale a platform for automating pull requests to GitHub. The pipeline scripts I made touched on everything from GCP, kubernetes, GitHub and AWS and utilised shell, go, python and common lisp.

In 2018 I studied Information Retrieval and Deep Learning at the University of Otago. I developed a GitHub search engine as my project.

From 2016 to 2017 I maintained CI infrastructure for Crown Equipment Corporation for their autonomous forklifts.

I really enjoy emacs, chatbots, NLP and lisp. I work entirely within a terminal environment I have been automating since 2011. I have 10+ years experience in the workforce as a linux-based software developer and tester. I can research, create quality documentation, design and automate experiments. Please take a look at my blog (<http://mullikine.github.io>) I am very capable and hard working.

Thank you for your consideration,

Shane Mulligan

1.2 Links

- Blog: <http://mullikine.github.io> - Daily Blog
- Startup: TakaheAI - Ultra-realistic avatars and chatbots for the enablement of humanity.
- GitHub, gists, List of most active users in GitHub - GitHubStats

1.3 Past CVs

This is here to communicate my background but not my direction.

- CV and written reference - 2015 - Application for C++ Development

1.3.1 Presentations

1. *<2020-10-06 Tue>* Creating standalone UI applications for CLI tools using emacs and docker <https://mullikine.github.io/posts/codecraft-creating-uis-for-cli-programs-with-docker-and-emacs/>

1.3.2 Relevant blog articles for Platform Engineering / DevOps

- GCP
 - Tremendous Task: Searching for code on GitHub with BigQuery and GHTorrent // Bodacious Blog
 - CodeCraft: Stacklet - Save Money on the Cloud // Bodacious Blog
- NLP
 - Generating poetry with GPT-2/
- Deployment and IaC
 - <https://mullikine.github.io/tags/iac/>
 - CodeCraft: Stacklet - Save Money on the Cloud // Bodacious Blog
 - Deployment with IaC and Octopus // Bodacious Blog/
 - Automatic, interactive handling of build files and IaC // Bodacious Blog
 - Review of 'Terraform code quality - CloudSkiff' // Bodacious Blog
 - Terraform // Bodacious Blog/
 - OS-agnostic program installation with Ansible // Bodacious Blog
 - Review of 'Ansible and Terraform: Better Together' // Bodacious Blog
 - HashiCorp: Terraform, Vault, Vagrant, Packer // Bodacious Blog/
 - Provisioning with IaC // Bodacious Blog/
 - Ansible // Bodacious Blog/
- AWS
 - Review of 'AWS RoboMaker - Amazon Web Services' // Bodacious Blog
 - Autoscaling GitLab Runner on AWS // Bodacious Blog

1.4 Work experience

1.4.1 Fortescue Metals Group (contract)

Job title Senior Software Tester and Tooling

Description Software testing, CI/CD and deployment for autonomous mining vehicles.

Job Application Application to Fortescue Metals Group // Bodacious Blog

Started Jan 2020

Ended May 2020

| Area | Task |
|---------------------------|-----------------------|
| Point of failure analysis | FMEA |
| CI/CD | GitLab Runner, Docker |
| Tooling | ROS2, C++ |
| Deployment | Shell, Octopus |
| Platform Engineering | EC2, Terraform |
| Research | AWS RoboMaker |

1.4.2 CodeLingo Ltd

Job title Software Engineer (contractor)

Description CI/CD for autonomous GitHub pull requests.

Started Sep 2018

Ended May 2019

CI/CD, Platform Engineering with kubernetes, GCP and AWS. Development in many (10+) languages. CodeLingo is a SAAS for linting and automating pull requests on GitHub using a domain-specific language.

1. Examples of pull requests generated and made automatically

These pull requests were generated by the automated CodeLingo platform.

<https://gist.github.com/1860bf2ea2a9e1e3b3bbb96b95a11bdd0>

2. Languages used

| language | context |
|------------------------|--|
| Golang | Platform Development. Tooling. Specifically, lexicons. |
| Shell | Deployment Pipeline |
| Ruby, Python, Go | GitHub API |
| ElasticSearch Lucene | Debugging |
| BigQuery standard SQL | GHTorrent / Bigquery for Github |
| JavaScript | Unit testing |
| emacs lisp | Building an environment for a new language (CLQL) |
| YAML, Go, Python, Ruby | Researching best practices and generating code |

3. Highlights

- 0 to 1000 automated github pull requests over 8 months.
- Pipeline outreach scaled the platform from 10 to 300 app installs.

1.4.3 Crown Equipment Corporation

Job title Software Engineer

Description CI and testing for autonomous forklifts.

Started Jan 2015

Ended Sep 2017 (2 years 8 months)

HIL (hardware-in-the-loop) testing

CI/CD

C++ application development

Python unit testing

1. primary languages used

- C++ 13
- python

2. Responsibilities

- HIL (hardware-in-the-loop) rigs / integration tests
- Implement driver for 3D Basler Camera

3. Highlights

- Built a platform for correlating error messages with logs and code using the the Sphinx open source search engine.

1.4.4 TracMap

Job title Software Engineer

Description Embedded software development for GPS navigation.

Started Jan 2011

Ended Mar 2013 (2 Years 2 months)

Embedded C++ application development. Porting Firmware.

1. primary languages used

- C++
- Python
- JavaScript
- PostgreSQL

2. Highlights

- Ported the firmware from the older TM4 head units to the then prototype TM5 headunit.

3. Images

- 2012: TM4 needs love
- 2019: First TM5 returns home

1.5 Open-source Projects

1.5.1 Age of Kings Trigger Studio

<http://aok.heavengames.com/blacksmith/showfile.php?fileid=12103>

The most popular Age of Empires II scenario editor. Downloaded 11,000 times since 2014. Used in making campaigns for Age of Empires II HD edition and expansions.

| Software | Purpose |
|--------------------|---------------------|
| IDA Pro | Reverse engineering |
| Visual Studio 2005 | Compiling |
| emacs/vim | Programming |

1.6 Skill set

- Natural Language Processing
- emacs
- Language agnostic / polyglot
- Self-management
- Continuous learning
- Automation
 - Build tools, pipelines, cloud.
- Functional Programming

1.7 Current projects

1.7.1 LSP Server in Clojure

I have an ongoing project which is my expansive glossary. I'm currently building an LSP server in clojure which highlights any editor with things that I know or want to incorporate into my lexicon. I use this glossary system as the scaffolding to apply NLP algorithms and to help me to learn things. This is intrinsic and present within everything I do on my computer.

Updates and demonstrations of the glossary system // Bodacious Blog

1.8 Education

| Degree | Field | Institution | Status |
|--------|-----------------------|---------------------|---------------|
| BSc | Computer Science | University of Otago | Finished 2010 |
| PGDip | Information Retrieval | University of Otago | Started 2018 |

1.8.1 Highlights

- Won the COSC343 robot competition
- Completed a GitHub search engine using GHTorrent and BigQuery.

1.8.2 Interest papers

- Health science 1st year
- Chemistry (200 level)
- Anatomy (200 level)
- Information Retrieval (400 level)

- Neural Networks (400 level)

1.8.3 Books read

Coherence in natural language. Data structures and applications.

1.9 Volunteer work

1.9.1 School of Computer Science

Ongoing. Tutoring junior school and high school students.

started 2018

ended Dec 2019

1. proud moments

- portfolio gallery (circa. 2018) Guided 2 high school students in building an interactive portfolio gallery for the Otago Settler's Museum.
 - Taught CSS, javascript, php.
 - Used Google Cloud NLP for transcribing spoken queries
- built a bot that can play the board game codenames (circa. 2018)
 - Taught the concept of 'word vectors'.

1.9.2 Experience

| | Company | Context | |
|-------------------------------------|------------------|---|-----------------------|
| Containerization | <u>FMG</u> | Docker, docker compose, docker swarm | 5 months (2020) |
| Orchestration | <u>CodeLingo</u> | Making tooling for K8s, EKS, minikube | 8 months (2018, 2019) |
| Software deployment, AWS | <u>FMG</u> | AWS, GitLab CICD, Octopus. | 5 months (2020) |
| GitLab CI/CD tools | <u>FMG</u> | Automating Build and Deployment | 5 months (2020) |
| AWS | <u>CodeLingo</u> | Platform Automation CodeLingo | 8 months (2018, 2019) |
| GCP | <u>CodeLingo</u> | Searching for github code | 8 months (2018, 2019) |
| Golang | <u>CodeLingo</u> | Go application development | 8 months (2018, 2019) |
| Test automation (Hardware) | <u>Crown</u> | Localisation, smoke, integration tests. | 2 years (2016, 2017) |
| Test automation (Hardware) | <u>TracMap</u> | Prototype traceability matrix | 2011 |
| C++ testing | <u>TracMap</u> | C++ application testing | 2011 |
| Test automation (JavaScript) | <u>TracMap</u> | SAAS testing | 2012 |
| Python testing | <u>TracMap</u> | SAAS testing | 2013 |
| C++ | <u>Crown</u> | C++ application development | 2015, 2016 |
| C++ | <u>TracMap</u> | C++ application development | 2011, 2012 |
| Python testing | <u>Crown</u> | Selenium, HIL | 2016, 2017 |
| Test automation (Golang) | <u>CodeLingo</u> | | 2018 |
| Point of failure analysis | <u>Crown</u> | Test logs | 2016 |
| Web Development | | | 2005-2020 |

1.9.3 Programming languages

I support many languages in my environment.

<https://mullikine.github.io/posts/emacs-languages-supported/>

Language strengths

| Language | Work Experience | Language | Work Experience |
|--------------------------|-----------------|-----------------|-----------------|
| Python | yes | scheme / racket | |
| Clojure | yes | problog | yes |
| Shell (POSIX, bash, zsh) | yes | Perl | yes |
| c | yes | PerlRE and PCRE | yes |
| c++ (98) | yes | sed | yes |
| c++ (13) | yes | awk | yes |
| SQL (BigQuery) | yes | JavaScript | yes |
| Go | yes | Java | yes |
| Haskell | | JQ | yes |
| Common Lisp | | GraphViz | yes |
| TCL (expect) | yes | Latex | yes |
| emacs lisp | yes | VimScript | yes |
| Rosie RPL | | Prolog | |
| Cloud-Native Language | Work Experience | | |
| CLQL | yes | | |
| CodeQL (GitHub / LGTM) | | | |

1.10 Citizenship

- Australia
Eligible for an E-3 visa in the USA.
- New Zealand

1.11 References

1.11.1 Dr Zhiyi Huang

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1.12 Contact details

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1.13 Colophon

If there are missing pages or the formatting is off, you can find an original here:

Online version: <https://mullikine.github.io/cv/>

PDF version: <https://mullikine.github.io/ox-hugo/cv-newest.pdf>

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