Last updated: September 22, 2020

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

1 Shane Mulligan; BSc (Computer Science)

1.1 Cover Letter

To my prospective employer (Amazon),

Please consider me for this role.

I have been in the workforce as a linux-based software developer for 10 years. I am experienced in NLP, search engines, microservices, scripting languages, cloud native, "Hardware In The Loop", C++ and Golang. I can research, create quality documentation, design and automate experiements. I'm keeping up-to-date with the latest technologies and have a blog where I talk about the things I'm learning. In 2019 I automated a pipeline to scale a platform for automating pull requests to GitHub. In 2020 I contracted for FMG in Australia developing part of their CI/CD infrastructure for their vehicle autonomy team. I enjoy developing search engines, building NLP tooling in emacs, designing REPLs, creating domain-specific languages and chatbots. I studied Information Retrieval at postgrad level and have built my own code search engine. I have been integrating search engines into emacs ever since. 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

1.4 Work experience

1.4.1 Fortescue Metals Group (contract)

job title Senior Software Tester and Tooling

Job Application Application to Fortescue Metals Group // Bodacious Blog

`https://www.cncf.io/`

technology	context
gitlab-ci	CI pipeline with own runner on AWS
docker	tooling
shell	deployment
ROS2	static analysis, linting
AWS	packaging and deployment

started Jan 2020

ended May 2020

1.4.2 CodeLingo Ltd

job title Software Engineer (contractor)

Development / automation

Golang, bash, kubernetes

1. Examples of pull requests generated and made automatically

   These pull requests were generated by the automated CodeLingo platform.

   `https://gist.github.com/1860bfea2a9e1e3b3bbb96b95a11bdd0`

   started Sep 2018

   ended May 2019

2. Languages used

language	context
golang	Built the Gometalinter lexicon
shell	Pipeline
python	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)

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 HIL (hardware-in-the-loop) Test Engineer

Continuous integration.

Embedded c/c++.

started Jan 2015

ended Sep 2017 (2 years 8 months)

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

Embedded programming

Full-stack web development

started Jan 2011

ended Mar 2013 (2 Years 2 months)

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
- Functional Programming

1.7 Education

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

1.7.1 Highlights

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

1.7.2 Interest papers

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

1.7.3 Books read

Coherence in natural language. Data structures and applications.

1.8 Volunteer work

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
   (a) 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

   (b) built a bot that can play the board game codenames (circa. 2018)
      - Taught the concept of 'word vectors'.

1.9.2 General knowledge / skills (context)

Area	Context
Search infrastructure	Preprocessing, indexing, aggregation, presentatinon.
Automating terminals	Automating and integrating virutally anything text
Linux	Containerisation, packaging, networking
Java / Clojure	Application development
POSIX shell	Creating portable shell scripts
Creating IDEs	LSP (Language server protocol)
Diagrams & Documentation	Graphviz, Mermaid, emacs
Aritifical Intelligence	NLP, symbolic
emacs	Very advanced (creating modes, plugins, apps)
Formal language theory	Compilers, parsers
Natural Language Processing	Parsers, chatbots, reading tools, messaging clients
Language agnostic	Configuration files, code-gen, parsing
CLI interfaces	openautocomplete, TUI, emacs
CLI automation	tcl/expect, terminfo
CLI pipelines	jq, tcl/expect, python
CI/CD	GitLab
Lisp	Metaprogramming, Racket, elisp
Microservices	docker, k8s, GCP, AWS, IaC
Cloud Native	Serverless, CNCF, IaC
Preprocessing	rosie-lang, pcre, sed, awk, spacy
Functional programming	racket, haskell
PPLs	Problog
Research / learning	Search aggregation, presentation, blogging

1.9.3 General knowledge / skills (evidence)

Area	Evidence from my blog
Creating LSP client plugins	Creating an LSP mode for racket // Bodacious Blog
Automating terminal applications	Automating rat, a powerful productivity tool // Bodacious Blog
Build tool automation	Automating build systems for many languages
Polyglot programming	Languages supported by my development environment
Scripting / pipelines / automation	Reading YouTube rather than watching it
Building terminal user interfaces	Complex Dwarf Fortress macros with tcl/expect, emacs and tmux
Building debugging tools	tooling TensorFlow Debugger (tfdb) and emacs DAP mode for emacs
Metaprogramming	Practical macros in Racket C++ template metaprogramming with Racket
Preprocessing	Filtering text streams
Algorithms	The Illustrated Transformer `https://mullikine.github.io/glossary.html`
Information retrieval	Tremendous Task: Searching for code on GitHub with BigQuery and GHTorrent
Documentation	Graphviz and Hugo Entropy, Cross-Entropy and KL-Divergence
Web development	The Semantic Web and Ontology
Deep learning	The Illustrated Transformer
Continuous Integration	`http://codelingo.io` Overview of modern Continuous Integration tools
Natural language processing	Named Entity Recognition
Functional programming	GHCi and Haskell code intermixed in babel
Telco / Microservices / Kubernetes	telco github GCP
Bayes	(WIP) Probabilistic programming with problog
Building editing environment	Browsing sqlite3 databases with edbi for emacs
Research / learning	Review of 'Language Engineering; Harnessing the Power of Language (2004)'
Code refactoring and linting	CodeQL by GitHub and Semmle CodeLingo vs Linters

I am always learning:
`https://mullikine.github.io/glossary.html`

1.9.4 Tools

tool / skill
emacs
vim
Deep TabNine
GPT-2
ctags
Google search automation
Code generation
Code snippet search

1.9.5 Programming languages

I support many languages in my environment.

> `https://mullikine.github.io/posts/emacs-languages-supported/`
>
> —
>
> **Language strengths**

Table 1: legend

key	
OOP	object-oriented
FP	functional programming
Exp.	experienced

Language	Strong	Work Experience
Python	yes	yes
bash / zsh	yes	yes
c	yes	yes
c++ (98)		yes
c++ (13)		yes
SQL	yes	yes
Go	yes	yes
CSS	yes	yes
Haskell		yes
common lisp	yes	
tcl/expect	yes	yes
emacs lisp	yes	yes
scheme / racket	yes	yes
problog		yes
perl	yes	yes
sed, PCRE	yes	yes
awk	yes	yes
clojure		
javascript		yes
java		yes
jq	yes	yes
graphviz	yes	yes
latex	yes	yes
vimscript	yes	yes
rosie		
prolog		
rust		
typescript		
scala		
smalltalk		
R		

Cloud-Native Language	Strong	Work Experience
CodeLingo Query Language	yes	yes
CodeQL (GitHub / Lgtm)		

1.10 Citizenship

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

1.11 References

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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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