

David James McCleave

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www.davidmccleave.com is my portfolio website and contains similar information to this document in a format some may find preferable.

ABOUT ME

A BSC (Honours) graduate from Stellenbosch University with a background in Computer Science and Genetics.

I am a scientist at heart with a passion for machine learning (ML) and artificial intelligence (AI). Coming in a close second place, I enjoy web development, front-end and back-end, particularly for presenting interesting data science projects to the world. Alongside these related disciplines, I have been fortunate to gain experience in high-level languages such as Python, Java and Typescript, as well as low-level languages for embedded systems such as ANSI-C, and ARM64 and IA-64 assembly.

In my time away from code I enjoy playing, listening to and creating music from sound design, mixing and mastering, to playing guitar or piano. I also enjoy spending time at the gym, on a board in the ocean or hiking mountains. For those concerned, I hold dual citizenship and can work in South Africa and the United Kingdom.

WORK EXPERIENCE

Junior Software Engineer at SOLIDitech

Apr 2023 - Present

As described on our company website, "SOLIDitech provides businesses with a customised billing and business operations platform that automates the full customer lifecycle from quoting through to automated service provisioning, collections and customer support". I work as part of a team of developers on Stage Zero, an up and coming business that aims to entirely alleviate the issues of load shedding for the wider population of South Africa. Working at SOLID requires a degree of comfort with learning new technologies. A day at work could involve small changes to a client's frontend, refactoring core backend components, interfacing with a new API, a mix of all three, or something entirely different.

Student Assistant at Stellenbosch University

Feb 2022 - Nov 2022

I was a student assistant at Stellenbosch University, helping students understand the work, marking biweekly assignments and invigilating exams. I was responsible for two modules, Scientific Computing 272 and Scientific Computing 372.

Programming Intern at Techairos

Feb 2021 - Jun 2021

I worked as part of a small team of students to develop a "smart" todo-list website for the company. My work involved creating the frontend using Angular as well as intelligently linking frontend updates with the backend database and a bot on the company Slack channel. The majority of my work was done in TypeScript, I also set up the components and stylized them using HTML and Tailwind CSS. This was where I first became familiar with web frameworks and package managers like npm.

PROJECTS

Computational Intelligence Framework for Python

[Homepage](#)

CIFY is a framework for common computational intelligence paradigms written in Python. The framework provides end users with the ability to easily and reliably implement nature-inspired metaheuristics. A collection of well-known metaheuristics are provided alongside tools to manipulate these metaheuristics, define objective functions for them to optimize, and create pipelines out of collections of varying approaches.

Sommeclassifier

[GitHub Page](#)

How does one decide which variety of wine to taste on an afternoon out, or which wine will pair best with the meal they're preparing for friends and family? A recommender system is proposed that will recommend a selection of wine varieties that best match a description given in natural language using a simple naive Bayes classifier.

A range of smaller scope projects and research papers can be found on [my website](#) or hosted publicly on my [GitHub profile](#). My primary research interests involve population based metaheuristics, neural networks and data visualization approaches derived from AI paradigms.

EDUCATION

- 2022 - 2022 **BSC Hons (Computer Science)** at Stellenbosch University (73%)
I completed an honours in computer science specialising in Artificial Intelligence (AI), Machine Learning (ML), Compiler Construction, Computer Vision (CV) and Data Science (DS). Whilst working through the honours programme I was a student assistant (demi).
- 2019 - 2021 **BSC (Computer Science and Genetics)** at Stellenbosch University (74%)
I completed the 3-year Bachelor of Science degree, double majoring in Computer Science and Genetics, in the allotted 3 years. I was a resident at Goldfields Residency.
- 2014 - 2018 **IEB Matric** at Kearsney College (84%)
I achieved six distinctions at the end of matric for English, Information Technology, Life Orientation, Life Sciences, Mathematics and Physical Sciences. Whilst attending Kearsney, I engaged in a wide range of sports including rugby, field hockey, waterpolo, cricket, football and cross country. I was also involved in the Gillingham (house) band in my final year where we went on to take first place in the inter-house "battle-of-the-bands". I was also voted Businessman Of The Year in 2015 and won Business Of The Year in the same year.
- 2006 - 2013 **Primary Education** at Winston Park Primary School
During my time as a student at Winston Park Primary School I obtained A grades in all my subjects. I was also a prefect, or head leader as they were referred to, and was responsible for taking care of a junior class in the mornings and assisting the teachers with functions hosted at the school. I played a range of sports from swimming and cross country to football and cricket. I was a proud member of the boys' cricket first team. At primary school I would regularly participate at music events playing guitar or piano.

SKILLS

General

Project Management	I have had exposure to project management approaches such as Agile and Scrum.
Latex	All of my formal reports since my first year at university have been created using Latex.
Unix	Seven years of experience using common unix tools (Valgrind, Homebrew and Git among others) alongside writing zsh scripts to simplify my workflow.

Languages

Python	My Python experience includes using popular PyData libraries such as NumPy, Pandas, Scikit-learn, SciPy, Matplotlib, PySpark, PyTorch, Keras and Tensorflow among many others. I have also developed many data science pipelines and a computational intelligence framework. Aside from ML and AI projects, I have also written scripts and website backends using frameworks such as Flask and Django and incorporated web scraping using frameworks like Scrapy. I have also experimented with pure Python for scientific computing as well as smaller frameworks for niche models such as Kohonen self-organizing maps.
TypeScript	I have experience using TypeScript and JavaScript working with Angular and Vue. I've leveraged these technologies for my portfolio page as well as for small personal projects and the Techairos company todo-list page. Whilst working on these and other projects, I have developed a familiarity with the HTML and CSS markup languages as they come, and using frameworks like Bootstrap or Tailwind CSS.
SQL	I have used SQL for managing databases from MySQL to MongoDB. I also have experience using NoSQL and graph databases using technologies such as Neo4j.
Java	Java was the main language I was taught at Kearsney College and used extensively in the first two years of the Computer Science programme as well as whilst working for SOLIDitech. I have written code in Java and various compilers for the JVM where I learnt about Java bytecode. The projects I have completed in Java have exposed me to advanced peer-to-peer and client-server networking concepts as well as standard Java EE toolkits like Hibernate or tools from Apache Commons.
C#	I gained experience using C# whilst working on web-based backends using Microsoft's .NET framework.
C++	I've used C++ with Unreal Engine and have also experimented with audio plugin development using the JUCE framework.
ANSI-C	I have used C to implement single and multi-threaded (parallel) programs, as well as a number of side projects. My main interests in C lie with algorithm optimization and memory efficiency. I consider it a beautiful language when there are no memory leaks.
IA-64 / ARM64	Whilst working on compilers I gained exposure to the IA-64 assembly language. My enjoyment of the process of using assembly languages resulted in me learning ARM64 for the Apple Silicon line of devices.