ELAN VAN BILJON

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SUMMARY

I am a hardworking, self-motivated and determined individual who is not satisfied until he understands exactly why and how things work. I am very interested in artificial intelligence and machine learning and spend most of my free time learning about new concepts in the field.

SKILLS

Machine Learning and Reinforcement Learning	Through my degree and much self-study, I have built up my knowledge of machine learning. I am particularly interested in reinforcement learning and my thesis covered one of the approaches known as Deep Q-learning.
Algorithms and Data-Structures	I have spent many a holiday and late night participating in, and practising for, online programming competitions. This has developed my knowledge of algorithms and data structures.
Mathematical Problem Solving	I have had a love for mathematics for as long as I can remember. This lead me to take extra-curriculars to develop my mathematical problem solving skills
Signal and Data Processing	Through my self-study and competition experience, I have learnt that properly processing data before it is used is perhaps more important than the model itself.
Software and Web Development	Throughout my degree and while working for Moz I picked up valuable software and web development skills such as how to collaborate on large projects, creating clean understandable and manageable code and using testing schemes to ensure code is always working correctly.
Concept Communication	While tutoring for the mathematics department and working at Moz I learnt the art of communicating one's ideas and abstract topics efficiently and clearly.

TECHNOLOGY SUMMARY

Programming languages:	Python, Octave, Java, C, C++, JavaScript, CoffeeScript, PHP.
Libraries / development tools:	TensorFlow, Keras, Numpy, Git.
Programming competitions:	Google Code Jam, Kaggle, HackerRank, CodinGame.
Online Profiles:	GitHub, CodinGame, Hacker Rank, OpenCV, LinkedIn.

EDUCATION

2017 – current University of Stellenbosch – **MSc Computer Science**

Topic: Generality of Model-based Reinforcement Learning

2014 – 2017 University of Stellenbosch – **BEng Electrical and Electronic Engineering**

Research Project Topic: Creating Intelligent Agents with Reinforcement Learning

GPA: 77% (Graduated Cum Laude)

Received distinctions for 26 courses including the following: Computer Science – **machine learning**, **Object Oriented Programming**, Engineering Mathematics – **Differential and Integral Calculus, Linear Algebra and Differential Equations** (see appendix for more details).

2013 High School: Somerset College

GPA: 84%

4 distinctions: Information Technology (Java Object Oriented Programming), Science and both Mathematics subjects.

Top of my class in Information Technology.

Awarded Academic Honours twice for my consistently high academic results in all subjects.

EXPERIENCE

Software Engineering Intern

June - August 2016

Moz, Seattle, WA, USA

Front-end web developer

Main project: overhaul the product purchase flow on the website.

Machine Learning Tutor

Current
Stellenbosch University, South Africa

Aid students in understanding basic machine learning

Main responsibilities: Answering questions, explaining concepts and guiding students through concepts in introductory machine learning.

Also, tutored pure mathematics in 2016.

Deep Learning Indaba

September 2017

Attended the 2017 Deep Learning Indaba

One of ten undergraduate students compared to over 300 academic and industry professionals who attended.

Conference Organising

Current

On organising team for the Deep Learning IndabaX Western Cape

Details at: indabax.github.io

Was also on operations team for a Bayesian inference workshop that took place in January 2018. Speakers included: John Skilling, Kevin Knuth, Allen Caldwell and Udo von Toussaint.

ACHIEVEMENTS

1st place in Kaggle competition	I took part in my first Kaggle competition in 2017, the goal being to use individual level data to predict weather a client would default on their loan. My sister and I formed a team and we took 1st place
Deans Merit (2015, 2016, 2017)	The Deans Merit Award is given to those that finish an academic year with an average GPA of 75% or above.
Top Engineering Student in Cluster	Upon entry to the university, each student is placed in one of four clusters. I was the top engineering student in my student cluster for my final year.
Member of the Golden Key Society	The Golden Key Society invites students who globally place in the top 15% in their respective fields to join the society.

REFERENCES

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PERSONAL INFORMATION

I was born in Pretoria, South Africa in the 15th of September 1995. I am a male currently live in Stellenbosch, South Africa. My Hobbies include memory training, hiking, slacklining, computer and strategy based board gaming. I also competed in multiple sports at university level, including hockey, underwater hockey, water polo and squash.

COMMUNITY SERVICE

- Animal welfare work
- Community infrastructure improvement operations (putting up fences around houses in underprivileged communities, etc.)
- Student tutoring
- Teaching sports to underprivileged children
- Working with underprivileged children

APPENDIX

Subject	Content
Machine Learning (Computer Science 315)	Dimension reduction techniques; machine-learning techniques based on maximum-likelihood, maximum-posterior and expectation-maximization estimates; modelling using logistic regression, Gaussian mixtures and

hidden Markov models.

Object-Oriented Programming

(Computer Science E-214)

Formulation and solution of problems by means of computer programming in an object-oriented set-up; principles of testing and debugging; key concepts in object orientation: abstraction, encapsulation, inheritance and polymorphism; design patterns as abstractions for the creation of reusable object oriented designs; searching and sorting algorithms; complexity theory for the analysis of algorithms; fundamental methods in the design of algorithms; dynamic data structures.

Engineering Mathematics

Introductory Differential and Integral Calculus, Further Differential and Integral Calculus, Differential Equations and Linear Algebra, Series and Partial Differential Equations:

Mathematical induction and the binomial theorem; functions; limits and continuity; derivatives and rules of differentiation; applications of differentiation; the definite and indefinite integral; integration of simple functions.

Complex numbers; transcendental functions; integration techniques; improper integrals; conic sections; polar coordinates; partial derivatives; introduction to matrices and determinants

Ordinary differential equations of first order; linear differential equations of higher orders; Laplace transforms and applications. Matrices: linear independence, rank, eigenvalues. Laplace transforms and applications.

Infinite series and Taylor series; Fourier series; introduction to partial differential equations; Fourier transforms.