Dean Rance

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EDUCATION

IBRO-Simons Computational Neuroscience Imbizo   **Cape Town**
Summer School   *January 2018*
A summer school organised by UCT, UCL and Oxford.
Presentation: Biological Models of Synaptic Plasticity

University of Cape Town   **Cape Town**
MPhil in Financial Mathematics and Risk Management   *Incomplete*
A coursework and minor dissertation masters programme. Coursework complete.
Relevant Subjects:
o Stochastic Calculus
o Numerical Methods
o Risk Management
o South African Financial Markets

University of Cape Town   **Cape Town**
BSc (Hons) in Mathematics - First Class Pass   *June 2016*
Project: Optimizing Information Transfer in Noisy Neural Networks

University of Cape Town   **Cape Town**
BSocSci in Mathematics and Philosophy - Distinction in Mathematics   *November 2014*

WORK EXPERIENCE

Self-Employed   **Cape Town**
Data Science Consultant   *October 2017 - Present*
o Building, evaluating and facilitating incorporation of machine learning and deep learning models
o Reviewing academic publications for up-to-date methodologies
o Building natural language preprocessing pipelines
o Exploratory data analysis and cluster analysis

WhereIsMyTransport   **Cape Town**
Data Scientist and Researcher   *November 2014 - August 2017*
o Core part of Research and Development team
o Prototyping and extending projects as presented in academic publications
o Algorithmic research, particularly graph theoretic
o Using optimisation software to resolve NP-hard prototypes
o Exploratory data analysis and cluster analysis
o Supervised and Unsupervised Learning
o Simulation, including Monte Carlo methods with pseudo-random sampling

COMPETITIVE EXPERIENCE

Barclays   **Cape Town**
Data Wars Hackathon   *October 2015*
Team Placed Second Nationally
Used random forest to predict success of NAEDO (Non-Authorised Electronic Debit Order) hits

KEY PROJECTS

Document Feature Extraction *AppStrax Technology*

A natural language processing pipeline allowing for interactive clustering, summarisation and analysis of text corpora.
- Collocation Extraction
- Topic Modeling
- Sentiment Analysis
- Key-Word Extraction, Graph-based Summarisation
- Word Embedding

Analysis of Text Corpora *AppStrax Technology*

Tools to analyse and interact with datasets incorporating text, such as forums or surveys with custom responses.
- Dimensionality Reduction
- Multiple Correspondence Analysis
- Collaborative Filtering
- Information Retrieval
- Gaussian Mixture Models

Automated Map Drawing *WhereIsMyTransport*

A Windows forms based interactive tool which extracts GeoJSON route data of a public transport provider and automatically draws a London-Underground-styled metro map.
- Mixed-Integer Linear Programming
- Hill-Climbing Optimisation

Estimating Vehicle Arrival Time *WhereIsMyTransport*

Machine learning regression to estimate the arrival time of a public transport vehicle at downstream stops on its route.
- Neural Networks
- Support Vector Machines
- k-Nearest Neighbours

Vehicle Trajectory Routematching *WhereIsMyTransport*

A classifier for determining which public transport route a vehicle is traveling on from recent GPS trace.
- Hidden Markov Models
- Expectation-Maximisation Parameter Optimisation
- Monte Carlo Simulation

TECHNICAL STRENGTHS

- Programming Languages: Python, C#, MATLAB, Octave
- Python Machine Learning: Keras, Tensorflow, Scikit-Learn, Scikit-Surprise, Pandas, Matplotlib, PuLP, NLTK, Gensim, SpaCy
- Tools: Jupyter, VSCode, Visual Studio, Mendeley, Gurobi, Git

REFERENCES

Henk Van Jaarsveld **Professional**

✉ *henk@whereismytransport.com* *WhereIsMyTransport*

My Line Manager and Research and Development Team Lead at WhereIsMyTransport

Miki von Ketelhodt **Professional**

✉ *miki@appstrax.tech* *AppStrax Technology*

Senior Fullstack Engineer at AppStrax Technology.