Rob Maccallum

Research

Nitschke Lab
University of Cape Town *'19-Current*
AI-accelerated drug discovery.
- Biased and Transferable Generative Networks.

University Education

[**Planned**] ***PhD***, *Artificial Intelligence* *'22*
Univeristy of Cape Town
South Africa

[**Underway**] ***MSc***, *Computer Science Specialising in Artificial Intelligence* *'20*
University of Cape Town
South Africa
Research methods, computational geometry for 3D printing, distributed scientific computing, evolutionary computing (genetic algorithms, particle swarm optimization, ant-colony optimization, etc.), intelligent systems (neural networks, reinforcement learning, bayesian networks), logics for artificial intelligence (propositional and description logic, knowledge representation and automated reasoning), ontology engineering.

BSc, *Computer Science and Computer Engineering* *'18*
University of Cape Town
South Africa
Digital, embedded and adaptive systems (with traditional machine learning methods: regression, regularization, random forests, clustering etc.), C++ with applications in machine learning (supervised and unsupervised learning, clustering algorithms, concept learning, dimensionality reduction, neural networks, reinforcement learning), computer science I, II and III, electrical engineering I and II, systems development.

BSc Honours, *Physics and Electronics* *'15*
Rhodes University
South Africa
Electronic design, microcontrollers and embedded systems I and II, signal processing, astronomy and astrophysics.

BSc, *Physics and Chemistry* *'14*
Rhodes University
South Africa
Physics I, II and III, chemistry I, II and III, electronics I, II and III, AC theory, signals and systems, pure and applied mathematics I and II, cellular biology I, zoology I, earth science, statistics 101.

Academic Awards

BSc: Distinctions in physics and chemistry, dean's list for academic merit, academic colours, Alexander Ogg prize for physics, Golden Key Honours Society. **BSc Honours:** Distinctions in physics and electronics, Rhodes University Honours Scholarship, Rhodes University Radio Astronomy Honours Bursary. **MSc:** Distinction in computer science, academic colours.

Online Courses

[**Planned**] ***Deep Generative Models*** *'20*
Stanford University Online
Autoregressive models, variational autoencoders, normalizing flow models, generative adversarial networks, energy-based models.

[**Planned**] ***TensorFlow in Practice Specialization*** *'20*
Coursera & deeplearning.ai
Introduction to TensorFlow for artificial intelligence, machine Learning, and deep learning, convolutional neural networks in TensorFlow, natural language processing in TensorFlow, sequences, time series and prediction.

[Planned] ***Deep Learning Specialization*** *'20*
Coursera & deeplearning.ai
Neural networks and deep learning, improving deep neural networks: hyperparameter tuning, regularization and optimization, structuring machine learning projects, convolutional neural networks, sequence models.

[Underway] ***Machine Learning*** *'20*
Coursera & Stanford University
Linear regression, linear algebra, logistic regression, regularization, neural networks, machine learning system design, support vector machines, unsupervised learning, dimensionality reduction, anomaly detection, recommender systems, large scale machine learning, Ocatve, Matlab.