Kale-ab Tessera

ML/RL Research Engineer

☎ +27 766806878

🌐 kaleabtessera.com

@ kaleabtessera@gmail.com

About me

Kale-ab is a young, bright and ambitious Research Engineer. He is adaptable and open to learning new concepts in Machine Learning and Reinforcement Learning to build on his previous knowledge. He considers an excellent work ethic, deep technical knowledge, and thinking innovatively as his greatest strengths.

Skills

Distributed Computing (Ray and Spark)

Reinforcement Learning

Deep Learning

Pytorch, Scikit-learn

Tensorflow, Keras

Flask, Django, SQL, NoSQL

Python

Amazon AWS, Google GCP

Mathematics, Quantitative Reasoning

(*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Good Understanding).]

Work Experience

Research Engineer

March 2021 - Present   InstaDeep

Research Engineer in Reinforcement Learning, specifically focusing on Multi-Agent Reinforcement Learning.

Machine Learning Engineer

April 2019 - Jan 2021   Multichoice

Using Machine Learning to model and predict the behaviour of over 15 million customers. I was the founding member of the ML team in Customer Operations, the team is now comprised of 5 people.

Achievements:
- Statistical A /B testing of recommendation systems.
- Build a high dimensional clustering model, leveraging DBSCAN, which managed to cluster around 7 million customers, with over 300 features each.
- Build a logistic regression with L1 regularization model to predict customer payback behaviour. This model achieved approximately 75% accuracy. Other models tried - random forrest, svm, standard neural networks and LSTMs.
- Build a model showing public sentiment based on media articles, leveraging Watson Discovery News.

Libraries and Technologies:
- Scikit-learn - Logistic Regression, Random Forrest.
- DBSCAN, HDBSCAN - High dimentional clustering.
- Pyspark, Databricks - Writing workflows to train distributed models.
- Keras - Neural Networks, LSTM.
- Cloud - Azure (Machine Learning and MLOps) , AWS (EC2,RDS).

Intermediate Software Engineer

Oct 2017 - March 2019   Entelect

Build highly scalable, fast, responsive websites for major clients such as Cell C and Discovery.

Achievements:
- Build highly responsive websites used by tens of thousands of people.

Libraries and Technologies:
- Front-End: React, Redux, Redux Saga, Jest and Enzyme.
- Integration Layer/Backend: Spring Boot, Maven.
- Databases: MongoDb.
- DevOps: Docker, Openshift, Jenkins, Linux.
- Data : I was tasked with managing a data catalog of tens of thousands of Mobile Phones (at Cell C). I had to collect this data from external sources via APIs, clean the data via automatic scripts, backup and recover the data using mongodump and provide search functionality on the data.

Software Engineer

Jan 2016 - Oct 2017   RetroRabbit

Build robust backend APIs with multiple system integrations.

Achievements:
- Led a team of 4 and designed the high level system architecture for a project.
- Solo developer for a highly responsive API, with many integration points.

Libraries and Technologies:
- Front-End: Angular JS 1 , React and Redux.
- Integration Layer/Backend: .NET MVC 4.5.2, .Net Core 1.1 .
- Databases: SQL Server, MySql.
- DevOps: Amazon AWS - EC2 and RDS instances, Web Servers (IIS).
- Data : I had to write advanced SQL stored procedures and functions, which ran efficiently on large data.
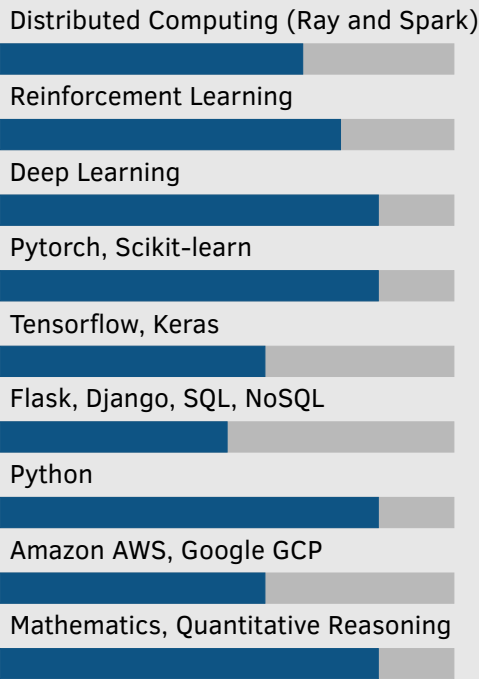
Kale-ab Tessera

ML/RL Research Engineer

☎ +27 766806878

🌐 kaleabtessera.com

@ kaleabtessera@gmail.com

About me ────

Kale-ab is a young, bright and ambitious Research Engineer. He is adaptable and open to learning new concepts in Machine Learning and Reinforcement Learning to build on his previous knowledge. He considers an excellent work ethic, deep technical knowledge, and thinking innovatively as his greatest strengths.

Skills ────

Distributed Computing (Ray and Spark)

Reinforcement Learning

Deep Learning

Pytorch, Scikit-learn

Tensorflow, Keras

Flask, Django, SQL, NoSQL

Python

Amazon AWS, Google GCP

Mathematics, Quantitative Reasoning

(*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Good Understanding).]

Internship

Sept 2015 - Nov 2015   RetroRabbit

Learned about various interesting topics including Source Control, Cloud Computing (Amazon AWS) and IoT.

2 weeks vacation work

July 2015 - July 2015   BBD

Requirements - Android Application, use of .NET MVC 4.5 Framework for the back-end and management of a SQL Server database.

House Committee Member, Secretary, Head of IT and Communications

Sept 2014 - Sept 2015   University of Pretoria

I helped lead and mentor various residence, especially those who had academic difficulties and/or technical IT related issues.

Teaching Assistant, COS 212

Feb 2015 - Jun 2015   University of Pretoria

As a teaching assistant for Data Structures and Algorithms it was crucial to identify and recognize all the classical data structures; implement them in different ways; know how to measure the efficiency of implementations and algorithms.

Teaching Assistant, COS 110

Jul 2014 - Dec 2014   University of Pretoria

As a teaching assistant for Program design and Programming techniques, it was crucial to have good knowledge of object-oriented programming, inheritance, polymorphism, operator overloading, memory management and encapsulation.

Papers

Keep the Gradients Flowing: Using Gradient Flow to Study Sparse Network Optimization
2021

Kale-ab Tessera, Sara Hooker, Benjamin Rosman

Education

Msc in Computer Science, Focusing on Deep Learning

2018 - Dec 2020   University of Witwatersrand

Research

Title - On Sparsity in Deep Learning.

Topics - Theory of Deep Learning, Pruning, Regularization, Generalization, Neural Architecture Search and AutoML.

Lab - Robotics, Autonomous Intelligence and Learning lab.

Supervisor - Dr. Benjamin Rosman.

Tools and Skills

Deep Learning - Custom optimization (sparse network optimization) and training procedures written in Pytorch.

Computing - Distributed computing (Ray, multi-core TPU training) , experiment logging (Comet-ML) and hyperparameter search using random search and Bayesian Optimization.

Statistics - Comparing models using statistical hypothesis testing.

Coursework - 85% Average.

Adaptive Computation and Machine Learning, Reinforcement Learning, Robotics, Artificial Intelligence, Large Scale Optimization for Data Science and High Performance Computer and Scientific Data Management.

Honours in Computer Science, Cum Laude

2016 - 2016   University of Pretoria

Honours in Computer Science.

B.Sc. Computer Science

2013 - 2015   University of Pretoria

The BSc (CS) degree emphasises the understanding of computer science fundamentals by offering a wide variety of computer science and mathematics courses.

PEPPS College

2008 - 2012   Polokwane

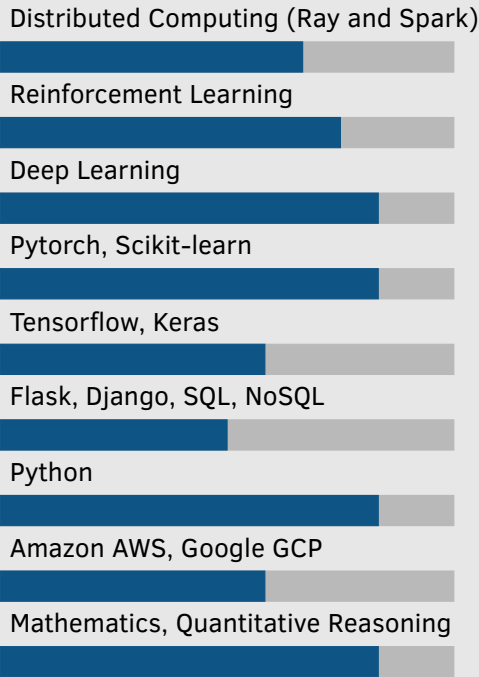IEB Private School - 7 distinctions.

Kale-ab Tessera
ML/RL Research Engineer

☎ +27 766806878

🌐 kaleabtessera.com

@ kaleabtessera@gmail.com

About me ———

Kale-ab is a young, bright and ambitious Research Engineer. He is adaptable and open to learning new concepts in Machine Learning and Reinforcement Learning to build on his previous knowledge. He considers an excellent work ethic, deep technical knowledge, and thinking innovatively as his greatest strengths.

Skills ———

Distributed Computing (Ray and Spark)

Reinforcement Learning

Deep Learning

Pytorch, Scikit-learn

Tensorflow, Keras

Flask, Django, SQL, NoSQL

Python

Amazon AWS, Google GCP

Mathematics, Quantitative Reasoning

(*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Good Understanding).]

Committees

Indaba Application and Selection Committee   2020
Part of the committee making decisions relating to improvements to the Deep Learning Indaba applications and selections process.

Black in AI Reviewer   2017,2018
Reviewed papers focused broadly on Machine Learning.

Research Interests

My broader research interests include Deep Learning (specifically Pruning, Generalization and Neural Architecture Search) and Reinforcement Learning (specifically Policy Gradient methods and MARL).

Research Presentations

- Presented a Spotlight talk at the Deep Learning Indaba 2019 - video,slides.

- Presented a poster at the Deep Learning Indaba 2019 - poster.

- Presentation on Neural Architecture Search for the Robotics, Autonomous Intelligence and Learning lab - slides.

- Presented a poster at MLSS London, 2019.

Honours and Awards

Baobab Prize   2019
Deep Learning Indaba
For contribution to the Deep Learning Indaba applications website.

Microsoft Prize - Best Poster at Deep Learning Indaba   2019
Deep Learning Indaba
I received the prize for the best poster at the Deep Learning Indaba. This was the top prize out of 194 posters.

Travel Award to attend Deep Learning Indaba   2019
Deep Learning Indaba
I received a travel grant and accomodation award to attend the Deep Learning Indaba in Kenya.

Full scholarship to attend MLSS London   2019
MLSS
I received a full scholarship to attend Machine Learning Summer Schools (MLSS) London. This competitive summer school had a 11.75 % acceptance rate (1,200 applicants for 140 places) and of 140 attendees, only 21 % were MSc students.

Postgraduate Merit Award   2019,2020
University of Witwatersrand
Was awarded a Postgraduate Merit Award based on academic merit.

Academic Honorary Colours   2017
University of Pretoria
Was awarded Academic Honorary Colours by the University of Pretoria.

Honours Cum Laude   2016
University of Pretoria
80.75 % Average for Honours in Computer Science.

Amazon Prize for Best Mobile Application - COS 301 Final Year Software Engineering Project   2015
Amazon, University of Pretoria
Project involved creating a website and Mobile App that uses Computer Vision to automatically identify and tag species of Stink Bugs.

Golden Key Honour Society   2013-2015
University of Pretoria
Was selected to join the Golden Key Honour Society as a result of being in the top 15% of my degree.

Merit Certificate for Leadership   2015
University of Pretoria
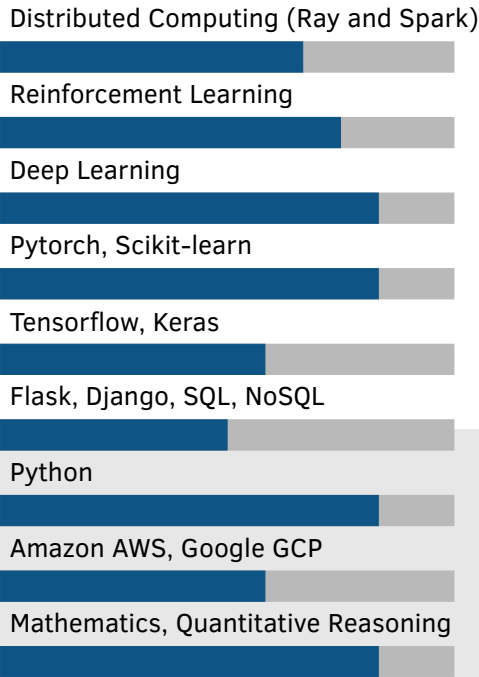I received this reward for leadership during my time as a House Committee member

at House Boekenhout.

Matric Academics
PEPPS College
2012
Notable achievements include being in the Top 1% of IEB IT Matric Students and receiving 7 Distinctions with an average of 87%.

Deputy-Head Boy
PEPPS College
2012
Was selected as deputy-head boy of my school in my matric year.

Academic Honours and Cultural Colours
PEPPS College
2012
Academic Honours were awarded for receiving Academic Colours (average above 80%) three years in a row. Cultural colours were awarded for excellence in various cultural activities such as chess and newspaper editing.

Leadership

- Secretary, Head of IT and Communications- Boekenhout Residence, University of Pretoria.
- Deputy-head boy - PEPPS College.

Summer Schools

NeurIPS 2019
I attending NeurIPS 2019 as part of an award given by Microsoft. I attending workshops in Reinforcement Learning, Information Theory and Deep Learning.

Deep Learning Indaba 2019

- I was the Front-End architect for the Applications system - Baobab.
- I was selected as a tutor for the following advanced level practicals - build your own TensorFlow, optimization for deep learning, convolutional networks and recurrent neural networks.

MLSS London 2019

- The Machine Learning Summer School (MLSS) is a 12-day event where participants take intensive courses on a variety of topics in machine learning, ranging from optimization and Bayesian inference to deep learning, reinforcement learning and Gaussian processes.

Deep Learning Indaba 2017,2018.

- One week intensive Summer School covering state of the art techniques in Machine Learning and AI.

Skills

- Languages: Python, Java , Javascript, C# .
- Frameworks: Pytorch, Tensorflow, Keras, Scikit-learn, Flask, Django and React.
- Devops : Amazon AWS (EC2 and RDS), GCP, Docker, Openshift, Jenkins, Linux.
- Databases: Mongo, SQL Server and MySql.

Online Courses

- Introduction to Python for Data Science- Edx
- Machine Learning by Stanford- Coursera

Kale-ab Tessera
ML/RL Research Engineer

☎ +27 766806878

🌐 kaleabtessera.com

@ kaleabtessera@gmail.com

About me ─────

Kale-ab is a young, bright and ambitious Research Engineer. He is adaptable and open to learning new concepts in Machine Learning and Reinforcement Learning to build on his previous knowledge. He considers an excellent work ethic, deep technical knowledge, and thinking innovatively as his greatest strengths.

Skills ─────

Distributed Computing (Ray and Spark)

Reinforcement Learning

Deep Learning

Pytorch, Scikit-learn

Tensorflow, Keras

Flask, Django, SQL, NoSQL

Python

Amazon AWS, Google GCP

Mathematics, Quantitative Reasoning

(*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Good Understanding).]