Avi Bank

Computer Scientist

Personal Information

Website
avi-bank.com

Phone
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avibank1@gmail.com

Date of birth
1992-12-23

Programming Languages (Proficient)

Python
C
CUDA C
C++
Java
JavaScript
Matlab

Programming Languages (Familiar)

C#
Wolfram Language
VisualBasic

Markup & Data Query Languages

SQL
GraphQL
HTML | CSS | Markdown
LaTeX

Systems, Protocols, Programs & Frameworks

MPI
OpenMP
Linux
Bash Scripting
Slurm
LDAP
Docker
Intel Parallel Studio
Django
VueJS
NodeJS
Mathematica
Excel (advanced use)
Android
IOS

Skills

Linux System Administration
High Performance Computing
Parallel Programming
Mellanox Infiniband
Machine Learning
ARM
Nordic Semiconductor
Embedded Systems
Optimisation
Numerics
Mathematics
Formal Logic
Cryptography
Applied Computational Finance

Languages

🇬🇧 English
🇿🇦 Afrikaans
🇩🇪 German

Experience

2019-current — Operating Systems Head Tutor
University of the Witwatersrand

- Organised the practical assignments and tutorials for a final year computer science course in operating systems (GNU/Linux and C).
- Was responsible for a class of 118 students as well as liasing with course lecturer overseas.
- Managed a team of four tutors; tasks delegation, assignment planning, coordinating the schedule *etc.*
- Wrote a time logging terminal application for claiming hours worked.

2019 – current — Robotocist
University of the Witwatersrand (RAIL LAB)

- Hired by RAIL LAB to extend my robotics project (a chess robot) into a demo to be used for impressing potential academic donors. Developed in conjunction with Niambh Blundell.

2017 – current — HPC Instructor
University of the Witwatersrand / CHPC

- Trained teams to design, setup and optimise a cluster for the national CHPC Student Cluster Competition.
- Organised and maintained an office with a cluster of 20 commercial servers (decommissioned STAMPEDE nodes), for training and research, at the Wits Mathematical Sciences Laboratories.
- All teams have always placed in the top 3 of the CHPC Student Cluster Competition.

2018 – 2018 — Software Testing
O C C

- Responsible for system integration and user space testing of a company's operations program.
- Responsible for communicating status of acceptance-tests between client and software development team.
- Responsible for test design, implementation and reporting.
- Created an automated invoice generator based on time logs for my work.

2015-12 – 2016-07 — CHPC International Team
CSIR, Centre For High Performance Computing

- Won the CHPC Student Cluster Competition (South Africa, 2015).
- Won the International Student Cluster Competition (Germany, 2016).

2015 – 2016 — Maths Tutor
Master Maths

- Taught high school mathematics to many students from grade 1 to grade 12.

Education

Postgraduate

2019 — University of the Witwatersrand, Computer Science, B.Sc Honours
University of the Witwatersrand
Advanced courses taught by world class researchers, and certainly the best in the country, if not the continent:
- Machine Learning
- Robotics
- Computer Vision
- Digital Image Processing
- High Performance Computing
- Reinforcement Learning (the first of its kind in Africa)
- Applications of Algorithms

current — Honours Thesis
University of the Witwatersrand, MIT
Creating GPU and parallel libraries for automated machine learning frameworks.

Undergraduate

2018 — B.Sc Mathematics and Computer Science
University of the Witwatersrand

Secondary

2011 — National Senior Certificate (matric)
Eden College

- 6 distinctions
- Academic honours
- Tennis squad captain
- Head Boy

Projects

Chess Robot

- Created a 2-arm (6 DoF each) chess playing robot (collaboration with Niambh Blundell).
- Hired to make a demo out of the project to show off to investors and visitors of the university.
- See it in action here .
- Source code .

HPC Cluster Monitor

- A Linux tool to inspect loads on individual compute nodes, across an HPC cluster.
- Source code .

University Statistics Visualisation Dashboard

- Statistics visualisation dashboard for Wits University lecturers
- Created as part of a software design course with Dr. Steven James as the team's client.
- Developed using Agile workflow.
- Team of 7 developers.
- Supports custom queries to produce charts for any data desired.
- Robust Django backend for handling of Big Data.
- Modern frontend written in Vue.js.
- Source code .

More Projects

- Gitlab projects .
- Github projects .

Awards

Winners: Student Cluster Competition	CHPC
Grand Champions: International–Student Cluster Competition	HPC-AI Advisory Council
First: Computational and Applied Mathematics I	Wits
First: Basic Computer Organisation I	Wits
First: Discrete Computational Structures I	Wits
First: Mobile Computing	Wits
First: Computer Networks II	Wits
First: Operating Systems	Wits
First: Formal Languages and Automata	Wits
First: Advanced Analysis of Algorithms III	Wits
First: Computer Graphics and Visualisation III	Wits
First: Machine Learning III	Wits
First: Software Design III	Wits
First: Software Design Project III	Wits