RYAN SELESNIK

Johannesburg, South Africa

selesnikryan@gmail.com | +27 799 932252 | LinkedIn

SKILLS

Programming: C/C++, Python, MATLAB, Mathematica, Ruby
Simulation: LTspice, SIMULINK
Version Control: Git, GitHub
Data Analysis and Visualisation: Pandas, NumPy, Matplotlib,
Shell and Unix: Bash/Zsh, Unix core utilities

EDUCATION

The University of the Witwatersrand   *Johannesburg, South Africa*
BSc (Eng) Electrical & Infromation Engineering (with Distinction)   *2019 to 2022*

King David High School, Linksfield   *Johannesburg, South Africa*
National Senior Certificate (Independent Examination Board)   *2014 to 2018*

EXPERIENCE

Stream – A Division of VAT IT   *Johannesburg, South Africa*
Software Engineering Intern   *Nov 2020 to Jan 2021*
- Developed a versatile PDF generation system using Ruby, JSON, and Microsoft's Mail Merge.
- Enabled non-technical employees to generate customer–specific PDFs, without relying on the software development team, thereby minimising Stream's opportunity costs.

Stream – A Division of VAT IT   *Johannesburg, South Africa*
Software Engineering Intern   *Dec 2021 to Jan 2022*
- Wrote a Ruby script to parse PDFs to structured data. This eliminated the tedious task of looking up duty and tax information for imported products.
- Developed a customisable message dashboard system using a headless Content Management System, Vue, Node.js, HTML, and CSS, enabling non-technical employees to edit Stream's website directly.
- Wrote two sets of comprehensive documentation for the dashboard system. One for the developers and another for the non-technical employees.

PROJECTS

Final Year Investigation Project   *Machine Learning*
- Conducted an investigation into a low–cost AI toy that can assist in Early Childhood Development.
- Implemented speech recognition and natural language understanding capabilities using modern ML models such as OpenAI's Whisper and Transformers.
- Ported the speech recognition model to a Raspberry Pi and used a children's speech dataset to assess the performance of offline children's speech recognition.

Final Year Design Project   *Machine Learning*
- Designed a therapeutic chatbot using GPT-2 and Reinforcement Learning.
- Adapted the input context of GPT-2 and used an empathetic reward function as part of the training objective.

Switch-mode Power Supply   *Power/Control Systems, Electronics*
- Simulated and built a switch-mode power supply based on the buck converter topology, achieving an output ripple of less than 1%.
- Implemented negative feedback by modulating the duty cycle to ensure a constant output of 5V, independent of the load.

Sensor Measurement Analysis using MPI   *Big Data*
- Wrote a script to compute statistical indicators for a given data set generated by a sensor in an Inertial Measurement Unit (IMU).
- Achieved a speedup of approximately 4x by leveraging Python bindings for the Message Passing Interface (MPI) as well as a computer cluster to parallelize the computation.

Temperature Sensor   *Embedded Systems*
- Designed and built a temperature sensor using the ATmega328P and programmed the logic in Assembly.

Multi-player Worlde   *Full-stack Web Development*
- Collaborated with a team of 5 to develop MultiWordle, a multiplayer version of Wordle. The tech–stack included JavaScript, Express, HTML, CSS, GitHub Actions, and MongoDB.

Centipede++   *Software Development*
- Collaborated with a team of 2 to develop the Centipede computer game in C++.

HONOURS AND AWARDS

Isazi Prize   *University of the Witwatersrand*

Awarded to the top 5 information engineering students who achieved an aggregate of 70% and above in their third year of study.

The Dean's List   *University of the Witwatersrand*

The Dean's list recognises the top 10% of students provided that a minimum average/aggregate of at least 70% is obtained on a full curriculum.

Wits Mathematics Competition   *University of the Witwatersrand*

Selected to represent King David High School, Linksfield at the Wits mathematics competition in 2018.