

Francois van Eeden

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ROBOTICS SOFTWARE ENGINEER

A passionate and focused engineering graduate with engineering, design and research experience. Extensive exposure to open-source tools and projects such as Robot Operating System (ROS), Linux, Python and git. Hands-on experience with autonomous vehicle research, software development and system administration. Avid learner both eager to be a productive team member and willing to take own initiative. Motivated by delivering high quality solutions and able to meet demanding deadlines. Looking for an opportunity to contribute to development of robotics systems with real-world impact.

WORK EXPERIENCE

Transnet Engineering - Pretoria, South Africa

Feb 2013 – Oct 2021

Transnet Engineering (Revenue 993M \$, 9 851 Employees 2020) is a state owned company providing engineering expertise to Transnet's operating divisions: freight rail, pipelines and ports. Transnet Engineering's Research and Development department was established in 2013 to serve the needs of Transnet's operating divisions.

➤ Engineer - R&D

Sep 2017 – Oct 2021

- Initiated and managed 3 year autonomous vehicle research project to the value of 84k \$. This included budgeting and scheduling, allocating tasks and assisting with their completion, and preparing technical specifications for procurement items.
- Conducted research for automation of yard tractors in container terminals.
- Evaluated and selected available tools, software and state of the art algorithms.
- Set up and utilized robotics simulations for development and testing of robotics software stack.
- Determined system design, architecture and required hardware for proof of concept vehicle.
- Designed, constructed and tested small-scale prototype to demonstrate technology capabilities.
- Developed vehicle controllers and utilities for testing and development.
- Set up hardware and accompanying testing software, both on-vehicle and server-side.
- Implemented prototype capabilities such as remote control, sensor fusion for state estimation and real-time data visualization.

➤ Master's Student

Sep 2015 – Sep 2017

- Participated in the "African Business Education Initiative for the Youth" (ABE Initiative) master's degree and internship program as part of an inter-governmental agreement between South Africa and Japan, coordinated by the Japan International Cooperation Agency (JICA).
- Completed a two year master's course at University of Miyazaki, Japan as a JICA bursary recipient, whilst maintaining position as engineer at Transnet Engineering.
- Completed 2 week internship in October 2016 at Mitsubishi Heavy Industries (MHI) Kōbe Shipyard in the Plant in the Purchase Quality Control Section (PQCS) for nuclear energy.

➤ Engineer - R&D

Feb 2015 – Sep 2015

- Conducted feasibility analysis for proposed projects.
- Designed prototypes and solutions using CAD (Computer Aided Design).
- Performed structural calculations and FEA (Finite Element Analyses) of designs.
- Researched and applied structural optimization techniques on a container wagon under-frame concept.

➤ Engineer in Training

Feb 2013 – Feb 2015

- Participated in graduate training program and received exposure to projects in various departments:
 - Researched and made recommendations for locomotive windshield glazing materials.
 - Researched, designed, analyzed and drafted locomotive oil cooler removal tool.

EDUCATION & PROFESSIONAL DEVELOPMENT

Master of Engineering University of Miyazaki, Japan *Sep 2015 – Sep 2017*

Thesis topic: Coordinating Multiple Robots in Mobile Fulfillment Systems - By tailoring the multi-agent path finding problem to the requirements of distribution centers, a provably safe and deadlock-free algorithm was developed.

Engineering Honours University of Pretoria, South Africa *Jan 2014 – Dec 2015*

Modules included: Control Systems, Optimum Design, Numerical Methods, Vehicle Dynamics, Intelligent Systems, Advanced Finite Element Methods, Finite Element Methods.

- The University of Pretoria Honours course prepares students for their Masters' research, exposing them to advanced topics in engineering and requiring critical thinking and hard work.
- Completed part-time as a Transnet bursary recipient and employee.

Bachelor of Engineering University of Pretoria, South Africa *Jan 2009 – Dec 2012*

NON-DEGREE COURSES

UCSanDiego online (Coursera)

- Data Structures and Performance Mar 2017
- Object Oriented Programming in Java Feb 2017
- Advanced Data Structures in Java Apr 2017

Short courses (Incusdata, South Africa)

- Standard C++ Programming March 2019
- Linux Fundamentals March 2019
- Standard C Programming March 2019
- Python Programming April 2019
- Advanced C++ Programming October 2019

COMPUTER SKILLS

Programming Languages

- Bash
- Python
- C/C++
- Java
- Matlab

Frameworks/Technologies

- Robot Operating System (ROS)
- git

Operating Systems

- Linux
- Windows

SELF-STUDY AND PROJECTS

- [MIT OpenCourseWare 6.004](#): Computation Structures (2017)
 - Self-study 2021/09-2022/02
- [Linux From Scratch \(LFS\)](#): Download and compile a working system from scratch.
 - Completed on 2020/08
 - LFS ID: [28548](#)
- [From Nand to Tetris](#): Building a modern computer from first principles:
 - Completed all projects successfully 2020/12 – 2021/03