

# FRANCOIS VAN EEDEN

## ROBOTICS SOFTWARE ENGINEER

📍 Waterloo, ON

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## About Me

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Passionate and focused engineer with design and applied research experience. Extensive exposure to open-source tools for developing autonomous systems with hands-on experience in 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 tight deadlines. Looking for an opportunity to contribute to development of robotics systems with real-world impact.

## Skills

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Advanced Robot Operating System (ROS), Gazebo simulation

Intermediate C++, C, Bash, Java, Python, MATLAB, Ubuntu Linux

Basic agile/scrum (Microsoft Azure Devops), DVCS (git)

## Experience

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### Transnet Engineering

📅 02/2013 - 10/2021 📍 Pretoria, South Africa

Transnet Engineering (Revenue \$993M, 9851 Employees 2020) is a state-owned company providing engineering expertise to Transnet's operating divisions: freight rail, pipelines and ports.

09/2017 - 10/2021

#### Tech Lead / Manager – R&D Autonomous Port Hauler Project

- Initiated, managed and contributed to a 3-year autonomous vehicle research project.
- Evaluated and selected software/hardware platforms and development tools.
- Determined proof of concept vehicle system architecture.
- Designed, fabricated and tested scale prototype.
- Integrated, configured and developed Hardware/Software components:
  - sensing (IMU, LiDAR, odometry)
  - simultaneous localization and mapping (SLAM) (gmapping)
  - local and global path planning (ROS navigation stack, teb\_local\_planner)
  - control (PID on embedded Arduino controller, interfacing with Raspberry Pi)
  - sensor fusion (robot\_localization\_package, Kalman Filter)
  - simulation (Gazebo)
  - wireless sensor data visualization and remote control (rviz, joystick)
- Selected and prepared technical specifications for prototype components.
- Managed team and project in terms of budget, schedule and task allocation.

09/2015 - 09/2017

#### Master's student

- Completed at University of Miyazaki in Japan as bursary recipient, whilst maintaining position as engineer at Transnet Engineering.

02/2015 – 09/2015

### Engineer – R&D

- 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.

02/2013 – 02/2015

### Engineer in Training – R&D

- 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

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### MEng Mechanical Systems Engineering

 University of Miyazaki

 09/2015 – 09/2017  Miyazaki, Japan

Bursary recipient in the “African Business Education Initiative for the Youth” (ABE Initiative) Master's Degree and Internship Program coordinated by the Japan International Cooperation Agency (JICA).

**Thesis:** "VISITING PEBBLES ON RECTANGULAR GRIDS – Coordinating Multiple Robots in Mobile Fulfilment Systems"

Derived article published in "Intelligent Service Robotics" 14, 79–97 (2021).

### Hons Mechanical Engineering

 University of Pretoria

 01/2014 – 12/2015  Pretoria, South Africa

### BEng Mechanical Engineering

 University of Pretoria

 01/2009 – 12/2012  Pretoria, South Africa

## Certifications

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### Incusdata (short courses)

03/2019 Standard C++ Programming  
Linux Fundamentals  
Standard C Programming  
04/2019 Python Programming  
10/2019 Advanced C++ Programming

### University of California San Diego (Coursera)

02/2017 Object Oriented Programming in Java  
03/2017 Data Structures and Performance  
04/2017 Advanced Data Structures in Java

## Self-study and Projects

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02/2022 MIT OpenCourseWare 6.004: Computation Structures  
03/2021 From Nand to Tetris: Building a modern computer from first principles  
08/2020 Linux From Scratch: Download and compile a working system from scratch