

# Levi Todes

Cape Town, South Africa

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## Education

- **Northwestern University** **Evanston, Illinois, USA**  
*Master of Science in Robotics* *December 2019*
- **University of Cape Town** **Cape Town, South Africa**  
*Bachelor of Science (Hons.) in Engineering Mechatronics* *December 2017*

## Experience

- **Trossen Robotics** **Downers Grove, Illinois, USA**  
*Robotics (Mechatronics) Engineer* *August 2019 - April 2021*
  - Design and implementation of electro-mechanical systems for new products. Innovation by CAD, PCB Design and Software.
  - Extend lifespan of older devices by adjusting microcontroller code to fit modern interfaces. **(C, C++, ESP32)**
  - Sensor integration for products within the Robot Operating System (**ROS**) world. Control of various software languages for communication protocols and GUI creation. **(C++, Python, QT)**.
  - Increased reliability in the control of robotic arms by formulating accurate models of robotic arms in Universal Robot Description Formats (**URDF**) for modelling use in **ROS** simulations.
  - Created CAD (**Fusion360**) models with accurate inertial values, allowing for precise physics in URDF simulation.
- **NxR Lab (Northwestern University)** **Evanston, Illinois, USA**  
*Research Assistant* *July 2019 - August 2019*
  - Innovated new enclosed, hexagonal maze with obstacles intended for repeatable, experimental lab use. Mechanical design was achieved by creating a modular, scalable set of CAD (**Onshape**) drawings - set to be laser cut out of acrylic sheets.
  - Coordinated with project stakeholders in order to satisfy the experimental needs of the maze. Made decisions based on physical and mechanical constraints of the maze.
- **Balancell** **Cape Town, South Africa**  
*Mechatronics Engineer* *May 2018 - September 2018*
  - Built test rig for Balancell battery circuit - included development of serial communication between bed of nails jig, computer and various oscilloscopes using **Java, Python and Arduino**.
  - Lead new project development through experimental use of various **microcontrollers**.
  - Constructed and populated printed circuit boards (PCB), using Altium for **PCB design**.
  - Facilitated effective communication within a diverse startup team, providing a mechatronics perspective in introducing new standards to lithium ion battery technology.
- **Bioelectronics and Neuroscience (BENS) Research Group** **Sydney, Australia**  
*Associate* *November 2016 - January 2017*
  - Controlled/programmed a multi-axial automated camera rig, tracking a light, sound or movement. Control of the servo motors and light and sound sensors were done with an **Arduino**.
  - Designed a Piezo-electric sensing board that could determine where on a board a ping pong ball bounced.
- **Cape Peninsula University of Technology** **Cape Town, South Africa**  
*Trainee* *November 2014 - December 2014*
  - Practical training in manufacturing processes.

## Skills

- **Software**
  - C, C++, Java, MATLAB, Python
  - ROS, Git, TeX, Mathematica, Linux and Windows
  - Microcontrollers & Microcomputers - STM, PIC, ESP32, RaspberryPi, Arduino
- **Electrical**
  - PCB Design (Altium, Eagle, kiCAD), LT Spice, LabView, Soldering
  - Control Theory - PID, lead-lag, digital and analogue implementation
- **Mechanical**
  - CAD Design (Onshape, Fusion360, SolidWorks), Laser Cutting, 3D Printing
- **Languages**
  - English (native), Afrikaans, Hebrew

## Portfolio of Projects

Detailed descriptions of my student projects can be found at this link! [leto37.github.io](https://leto37.github.io)