

# Alex C. Tacescu

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## Qualifications Summary

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Robotics engineering student with significant experience in 3D CAD design and extensive knowledge of multiple programming languages in multidisciplinary applications

## Technical Skills

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**Robotics:** Software Development, Mechanical Design, Electrical Design, Agile Project Management (SCRUM)

**3D CAD:** Design and Simulation in Autodesk Inventor [7 years], Dassault SolidWorks [5 years], and PTC Creo Parametric (ProE) [1 year]

**Programming:** ROS (C++ & Python), Android (Java), Pipelines (in Unix/Linux) and Git

**Microprocessors & Single-Board Computers:** Raspberry Pi, BeagleBone Black/Blue, NVIDIA TX1/2, ESP32 & ESP8266, Device Trees in Linux

**Other software experience:** Linux (Debian/Ubuntu), MathCAD and MATLAB, Adobe Creative Suite (Photoshop & Premiere), Excel Macros Programming

## Work Experience

## References Available upon Request

**Summer 2018: Tesla** Integration Engineering Intern, responsible for troubleshooting battery thermal system issues and developing test stands for Model S/X, Model 3, Semi-Truck, and other products. Developed software components for testing, collecting data over CAN networks. Discovered and fixed 3 issues in critical systems such as the battery and powertrain thermal system and the high voltage system. Identified a problem and implemented a change in 2 assembly cells that increased Model 3 end-of-line production by 45%

**2018-Present: WPI** Student Teaching Assistant for WPI's Junior year Robotics classes (RBE 3001 & 3002) focusing on robotic manipulation, dynamics, machine vision, path-planning, and other advanced concepts

## Education

**Worcester Polytechnic Institute (WPI): 3.45 GPA** Graduating in 2020 with BS/MS in Robotics Engineering

## Projects

Please visit [www.alextac.com/projects](http://www.alextac.com/projects) for all projects and updates

**2018-Present: SmallKat Major Qualifying Project** is a quadrupedal robotic platform designed for research and development of multipedal robotic systems. SmallKat is 3D printed, open source, and contains fully custom electronics. I am developing the high-level software, including footstep planning, path planning, forward/inverse kinematics, machine vision, and networking systems for off-platform debugging. To learn more, please visit [www.alextac.com/smallkat](http://www.alextac.com/smallkat)

**2015-Present: Project Maverick** is an award-winning omni-directional robotic system that provides mobility for people with walking disabilities. The drive system allows the user to move in any direction using 4 steering and 4 driving electronically synchronized motors, creating the same degrees of motion as an able person. It was designed, built, and programmed as a personal project, initially with Java and then converted to ROS (C++ & Python). To learn more, please visit [www.pmaverick.com](http://www.pmaverick.com)

**2017-Present: Poverty Stoplight Interactive Qualifying Project** is an Android application for social workers in Paraguay to better help people in poverty. The application was designed for Fundación Paraguay and Poverty Stoplight and consisted of developing a REST API and an Android application capable of syncing sensitive family data with a secure server. To learn more, please visit [www.alexatc.com/stoplight-iqp](http://www.alexatc.com/stoplight-iqp)

**2016-17: NASA Space Robotics Challenge** is a competition to develop software for NASA's humanoid robot Valkyrie. Developed footstep motion planning, optimized cycle-speed, and tested in ROS, C++, and Python with Gazebo as a member of the WPI Humanoid Robotics Lab. To learn more, please visit [www.alexatc.com/src](http://www.alexatc.com/src)

**2017: Project Drogo** is a wearable embedded system accompanied by a smart-phone app designed to assist elderly people through post-hip surgery recovery. It combines 2 goals of post-surgery medicine: preventing prohibited motions and guiding the user through physical therapy and rehab. Developed on a team of 4 students as a part of the hackathon Health Hacks RI. To learn more, please visit [www.alexatc.com/drogo](http://www.alexatc.com/drogo)

**2017 Project Pather** is a kiosk mapping software developed to provide directions to Brigham and Women's Hospital visitors. It has contextual search as well as the capability to send users directions via text message or email. It is written in Java and JavaFX, with a SQL backend, and was developed on an 8-person team for a school project. To learn more, please visit [www.alexatc.com/pather](http://www.alexatc.com/pather)

**2013-16 4 years with FIRST FRC Robotics Team 2761** (total of 5 robots designed, built, programmed, and tested). To learn more, please visit [www.alexatc.com/frc](http://www.alexatc.com/frc)

**Awards – Please visit [www.alexatc.com/awards](http://www.alexatc.com/awards) for updates**

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## **2018**

- Dean's List at Worcester Polytechnic Institute (Spring 2018)
- Rho Beta Epsilon Robotics Engineering Honor Society Member

## **2017**

- Dean's List at Worcester Polytechnic Institute (Fall 2017)
- 1<sup>st</sup> Place at HealthHacksRI at the University of Rhode Island for Project Drogo
- NASA Space Robotics Challenge Team Finalist

## **2016**

- 2<sup>nd</sup> Place at the Intel International Science and Engineering Fair (ISEF) in the category of Applied Mechanics
- Google International Science Fair Regional Finalist
- International Council on Systems Engineering First Award for “best interdisciplinary project that can produce technologically appropriate solution that meet societal needs” at the ISEF
- GE Fallonventions Award and participation on NBC's Tonight Show starring Jimmy Fallon (aired on April 11, 2016)
- Sweepstakes Award winner (1<sup>st</sup> place overall) and 1<sup>st</sup> place in Engineering at the Central California Science, Math, and Engineering Fair
- National Honor Society Inductee and California Scholarship Federation Member

## **2015**

- Institute of Electrical and Electronics Engineers President's Scholarship Award at Intel Science and Engineering Fair for "an outstanding project demonstrating an understanding of electrical engineering, electronics engineering, and computer science."
- 1<sup>st</sup> place in the category of Applied Mechanics and Structures at the California State Science Fair
- Sweepstakes Award winner (1<sup>st</sup> place overall) and 1<sup>st</sup> place in Engineering at the Central California Science, Math, and Engineering Fair

## **Leadership**

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**2017** Project Manager for scrum team working on Project Pather as described above

**2016** Leadership Practice at WPI: analyzed business and leadership practices for an on-campus organization with Prof. Sharon Wulf

**2012-16** Lead Technical Director, CAD, Build and Pit Team Leader for FIRST FRC Robotics Team 2761

## **Hobbies**

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Robotics Engineering, Computer Science, Tennis, Ultimate Frisbee, Skiing, Fishing