

# Jacobus Matthee

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| [www.jacobusmatthee.com](http://www.jacobusmatthee.com) |

## Education

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08/2017 – present     **B.S. in Mechanical Engineering | Spring 2021 | University of Texas at Arlington**  
GPA: 3.84  
Recipient of Maverick Academic Scholarship  
Recipient of Igor Fraiberg Endowed Scholarship

## Technical Skills

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- Proficient in multiple programming languages, namely MATLAB, Python, and C++
- Confident with 3D Computer Aided Engineering (CAE) concepts and software, specifically SolidWorks
- Well-versed in Finite Element Analysis (FEA) concepts and software, specifically ANSYS
- Experienced with Arduino microcontrollers, DC motors, sensors (sonar, encoders, etc.) and other electromechanical devices
- Comfortable with Linux Operating System environment
- Experienced with open-source robotics software and middleware, including the Robot Operating System, Gazebo, and RViz

## Work Experience

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06/2020 – present     **Undergraduate Researcher**  
**Aerospace Systems Laboratory | University of Texas at Arlington**

- Created URDF model of lab rovers for successful simulations to be conducted within the Gazebo environment
- Utilized ROS middleware to successfully operate off-road model rovers and acquire experimental data
- Collaborated with graduate students as needed on projects that involve unmanned vehicle systems, path planning and obstacle avoidance algorithms

01/2019 – present     **Student Associate/Tutor**  
**I.D.E.A.S. Center | University of Texas at Arlington**

- Facilitated daily STEM tutoring/mentoring sessions with students
- Employed interpersonal skills to explain engineering concepts to students from a variety of backgrounds and learning styles

## Projects

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### Simulation Model | Unmanned Ground Vehicle

- Modelled an unmanned ground vehicle in SolidWorks and created the needed URDF model for simulations to be conducted
- Utilized kinematics and dynamics principles to accurately simulate rover behavior when certain velocity or position inputs were provided to the vehicle

### Senior Design Project | Stair-Climbing Robot | Testing Platform

- Led the Electronics team in developing a testing platform where all hardware components and software could be tested, integrated, and refined before being implemented on the final robotics platform (which will be operational by May 2021)
- Programmed and implemented a basic obstacle-avoidance algorithm for the platform using data from ultrasonic sonar sensors

### Personal Project | First Person View (FPV) Drone

- Developed an understanding of the hardware, electronics, and software that comprise a quadcopter vehicle
- Expanded soldering, system integration, and drone piloting skills