# Yeoh Yu Xuan

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## EDUCATION

**NANYANG TECHNOLOGICAL UNIVERSITY (NTU), SINGAPORE** Aug 2016 – May 2020 (Expected)
**School of Mechanical and Aerospace Engineering**
*Bachelor of Engineering (Honours), Aerospace Engineering*

- Honours (Highest Distinction) (Expected)
- Current GPA: 4.94/5.00

**DELFT UNIVERSITY OF TECHNOLOGY** Sep 2018 – Jan 2019

- Semester Exchange

**DUNMAN HIGH SCHOOL** Jan 2010 – Dec 2015
*Singapore-Cambridge GCE (Advanced Level)*

- 7 Distinctions
- Rank points: 90/90

## AWARDS

- Dean's List – Aerospace Engineering (Top 5% of cohort) 2018
- NTU President Research Scholar (Distinction) 2018
- Defence Science and Technology (DSTA) Undergraduate Scholarship 2016
- NTU MAE Enrichment Grant 2016
- Edusave Award for Achievement, Good Leadership and Service (EAGLES) 2015
- Singapore School Sports Council Colours Award 2015
- Mountbatten Sports Award 2015

## INTERNSHIP EXPERIENCE

**DEFENCE SCIENCE AND TECHNOLOGY AGENCY, SINGAPORE** Feb 2019 – Jun 2019
*Intern, Air Systems (UAV)*

- Evaluated various Simultaneous Localization and Mapping (SLAM) methods to determine the most suitable method for real-time positioning with scale recovery.
- Implemented a visual-inertial SLAM system on an embedded computer by integrating data from a camera, inertial measurement unit, and flight controller using Robot Operating System (ROS).
- Created a ROS package to convert local coordinates from the SLAM system to the east north up coordinate system to enable the Pixhawk flight controller to estimate latitude and longitude.
- Planned and conducted indoor and outdoor trials to compare and analyze the performance of two visual-inertial SLAM algorithms under different operating conditions.
- Designed a 3D-printed camera mount for a quadcopter using computer-aid-design software (Fusion 360).

**THE BOEING COMPANY, RIDLEY PARK, PA, USA** Jul 2018 – Aug 2018
*Intern, Chinook Stress*

- Gained a deeper understanding of aircraft structure and design through visits to the shop floor.
- Worked closely with senior engineers to learn about the techniques used to ensure airframe structures comply with strength criteria.
- Performed force and stress analysis on a Chinook flare dispenser.

**DEFENCE SCIENCE AND TECHNOLOGY AGENCY, SINGAPORE** Jun 2017 – Aug 2017
*Intern, Air Systems (UAV)*

- Developed an android application that can autonomously control a drone in a distributed drone swarm.
- Incorporated a histogram of oriented gradients (HOG) object detector into the application for real-time object detection.
- Created an online database for drones to communicate to avoid collisions and share the location of detected objects.

## ACADEMIC PROJECTS

**FINAL YEAR PROJECT** Aug 2019 – Present

*On-board Tools for Mobile Miniature Robots*

- Designed magnetically actuated millimeter-scale robots with active on-board tools.
- Fabricated robots and performed experiments using a magnetic coil system.

**PSA BOX CHALLENGE** Jul 2019 – Oct 2019

- Led in a team of 4 to design and build a semi-autonomous delivery drone to scan, pick up, transport, and stack miniature 300-gram containers around a model yard.
- Developed a magnetic gripper mechanism to pick up and release the containers using the concept of magnetic shielding.
- Configured the Pixhawk flight controller to achieve good flight performance and integrated a lidar for altitude feedback.
- Designed a user interface using Kivy software to display video feed from the onboard camera and for QR code scanning.
- Created a ROS package to obtain the drone's battery status from the Pixhawk flight controller using the MAVROS package and display the battery status in the user interface.
- Emerged first runner-up in the final phase of the competition based on the number of points scored from stacking the containers, design creativity, build quality, and user interface.

**ENGINEERING INNOVATION AND DESIGN** Jan 2018 – Jun 2018

- Collaborated with 8 other team members to design and develop a prototype for a multi-purpose cleaning device for hard-to-reach areas.
- Conducted a market survey to gauge the popularity of the product and the suitable price range.
- Took on the role of a Treasurer and ensured the team stayed within the project budget and submitted all claims on time.
- Obtained A+ grade for the project.

**URECA UNDERGRADUATE RESEARCH PROGRAMME** Aug 2017 – Jun 2018

- Performed analysis of a plane design using XFLR5 to obtain its lift and drag coefficients and to ensure flight stability.
- Assembled a 3D-printed tilt-rotor UAV and worked on the control of the UAV using the Pixhawk autopilot system.
- Modeled the plane transition from hover to forward flight stage and calculated the forward velocity and thrust required for each rotor using both a simplified approach and a lumped-vortex model.
- Designed a poster and presented to judges and peers at the 2018 Discover URECA Poster Competition and won 3rd Place in the Engineering category.
- Completed the program successfully with Distinction.

## CO-CURRICULAR ACTIVITIES

**NTU TABLE TENNIS VARSITY TEAM** Dec 2016 – Jan 2020

*Member*

- Represented the university in the Institute-Varsity-Polytechnic (IVP) Games and Singapore University Games (SUniG).
- Achieved 2nd Place in the SUniG 17/18 and 18/19, and 3rd Place in IVP 17/18 as a team.

**NTU MECHANICAL & AEROSPACE ENGINEERING (MAE) CLUB** Aug 2016 – May 2017

*Member, Sports Sub-Committee*

- Worked with other committee members to organize a Sports Day for about 100 participants in various sports events.
- Appointed as the team manager for the Inter-School Games volleyball team. Booked venues and coordinated training sessions to prepare the team for the competition.
- Participated in the Inter-School Games table tennis, futsal, basketball, and race relay events. Guided the table tennis team to attain 2nd Place.

## TECHNICAL SKILLS

- Language: English and Mandarin
- Programming: C++, Python, Java
- Software: MATLAB, SolidWorks, Fusion 360, XFLR5, ROS, Android Studio, Processing, Microsoft Office