

Team Bumblebee, from the National University of Singapore (NUS), comprises undergraduates from the various disciplines of Mechanical, Electrical, Computer Engineering and Computer Science. This is our 6<sup>th</sup> time participating in the International RoboSub Competition. The competition team of 11 comprises:

<b>Mechanical</b>	<b>Electrical</b>	<b>Software</b>	<b>PR</b>
1. Wei Han 2. Luke	1. Ren Jie 2. Zhi Jie 3. Ren Zhi 4. Weng Fei	1. Ruth 2. Wei Hong 3. Wilson	1. Eng Wei 2. Zhi Hao

Staying true to our 3 years masterplan that kicked off in August 2016, we have upgraded Bumblebee Autonomous Underwater Vehicle (BBAUV) for integration with our Bumblebee Autonomous Surface Vessel (BBASV). This is in line with the team's vision of engineering autonomous systems of the future, where we envision an autonomous maritime system operating as a system of systems with the capability to launch and recovery an AUV without the need to deploy a manned ship for the operation.

For mechanical, upgrades include swapping to stronger thrusters to improve sea deployability and weight reduction achieved by integrating various housings together. For electrical, there has been a major revamp in the electrical systems of the vehicle. Other than boosting the computing power with a computer upgrade, every PCB has been redesigned for robust reliability. For software, improvements include more robust object detection using machine learning, a revamped software architecture that is maintainable and extensible, as well as a new mission planner interface to change missions on the fly.

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