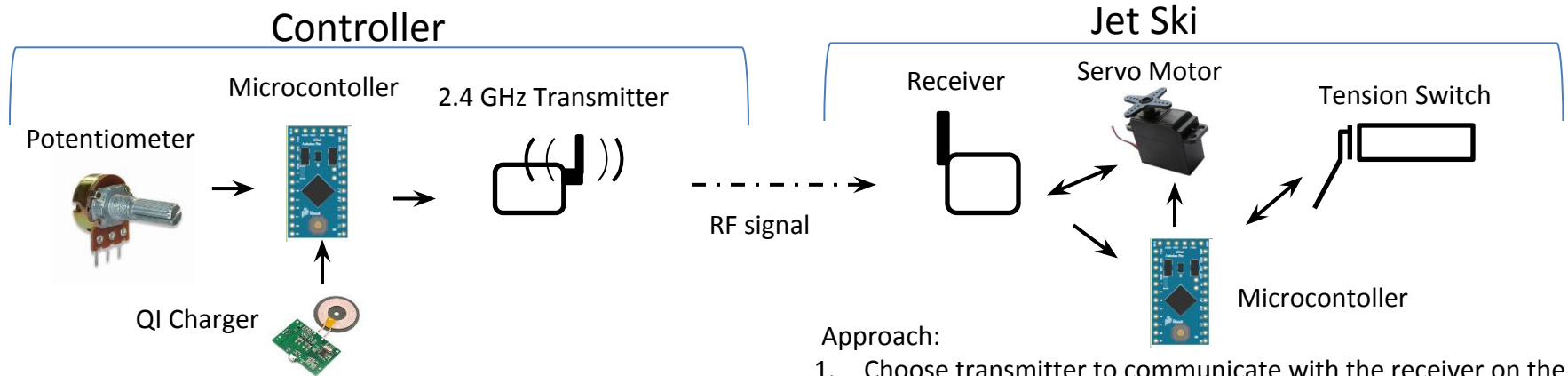


ECE 191 Group B: Controller for Solo Wakeboarding

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Project Background:

Wake-Solo is revolutionizing the sport of wakeboarding. Wake-Solo gives the rider full control of the jet ski, providing a more enjoyable experience without the need of a separate driver.

Objective:

1. Implement RF Transmitter & Receiver with kill switch for safety.
2. Modify existing controller code to improve control of servo motors with added new features.
3. Design inductive charging system for a water sealed handlebar.
4. DC-DC power conversion for various components of overall system.

Conclusion:

Control between handlebar and jet ski operates through communication with various states. Using a 2.4GHz transmitter allows for better communication over water with the jet ski. Better throttle control has been included to allow for different rider modes. Induction charging design has been completed and will operate under Qi standard with water sealed protection. Components inside handlebar power up through magnetic clip and only require one DC/DC boost to 12V. Future assignments can include a PCB design for easier manufacturing.

Approach:

1. Choose transmitter to communicate with the receiver on the jet ski.
2. Design a tension sensor as a kill switch which sends a signal to shut down the engine for when the rider falls off.
3. Implement a state-machine that controls the operation of the jet ski. Write code to control throttle transmission.
4. Design Inductive charging system to charge the battery inside the water sealed handlebar.
5. Select components with similar power requirements thus reducing the number of required power conversions.