

MEMORANDUM

TO: Dr. Bedillion

FROM: 24-774 Wei Lun William Chen, Romeo Valentin, Xinjia Yu, Siqi You



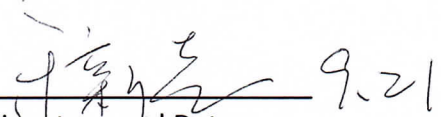
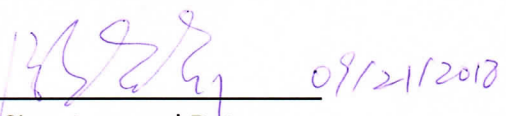
DATE: September 18, 2018

RE: Laboratory No. 1: Controller Design and Implementation

In this lab we applied Simulink and Embedded control strategies to the Quanser Aero System. We used classical control and state space controls on Simulink models and the hardware and we implemented these controls to the embedded hardware (Arduino).

For classical control, results for yaw angles are better than pitch angles for both SISO and DIDO controls. Saturations happened on pitch angles. For state space control, yaw angle results were also better than the pitch angles, and they are both better than classical controls. The Luenberger observer had some trouble estimating the states and resulted in oscillation, the differential observer gave a cleaner result. *For embedded control, DIDO is better when using Arduino and state space controls gave about the same results.*

This report has been proofread by all members of the group:

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