



Australian Government
 Department of Defence
 Defence Science and
 Technology Organisation



**\$30,000 Sponsored Masters Scholarship
 through the
 Graduate Industry Linked Entrepreneurial Scheme – GILES**

G04/08 – Adaptive Optimal Autopilot Design for Hypersonic Flight

Objective of Project

This project will study the analysis and synthesis of adaptive optimal autopilot for hypersonic vehicles. The control strategy involves the use of LQPI optimization technique; sensitivity and robustness of the design will be investigated using closed-loop Eigenvalue approach. An adaptive algorithm will be derived and studied to allow control gain variation for a hypersonic flight over a wide range of operation.

Project Specification and Timetable

Activity	Timelines	Deliverables
Literature Survey	Jun 08 – Dec 08	Report on previous relevant research.
Optimum Autopilot Design & Simulation	Jun 08 –Dec 08	Test and validate available software. Report: on autopilot design.
Control Robustness/Sensitivity Studies	Dec 08 – Jun 09	Report: Autopilot sensitivity and robustness characteristics.
Implement and Test Adaptive Control Algorithm	Dec 08 - Jun 09	Test and validate software. Report: on adaptive algorithm

Personal Requirements

Highly motivated with an ability to work unsupervised, good negotiating skills, well developed communication and interpersonal skills high level computer skills .
 Specific Requirements: high level of MATLAB programming skills; good understanding of control system analysis and design techniques including state space and optimal control theory.

Academic Qualifications

Bachelor’s Degree in: Electrical/Electronics Engineering, Aerospace Avionics; Physics and Applied Mathematics.

Other Requirements

Prior background in control systems (industry or academia) is an advantage.

Division and Contact Person

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