Thesis Progress Form
CHARLES DARWIN UNIVERSITY
College of Engineering, IT, and Environment

Name: Shane Reynolds

Unit: ENG720

Title: Automatic generation control of a two area power system using deep reinforcement learning

Supervisors: Charles Yeo & Stefanija Klaric

Time & Date: May 6, 2020 @ 2.30pm

1 Progress since last meeting

- Updated reinforcement learning section in background, including main algorithms used to derive DDPG algorithm
- Updated deep neural networks section in background
- Created Appendix A to detail modelling derivations for governor, turbine, and generator-load
- Created Appendix B to detail modelling for tie line and tie-line feedback connections
- Created drawings for reinforcement learning, deep neural networks, and two area power system
- Developed and simulated stochastic load profile demand signal on classical controllers
- Developed and tested iterative approach using ode integration for single area pi control

2 Discussion Points

- No points for discussion at this time — still writing thesis

3 Plan until the next meeting

- Need to complete deep reinforcement learning section in background
- Need to update deep reinforcement learning section of literature review
- Need to write Appendix C derivation of system of linear ODE for modelling
- Need to write Abstract
- Need to complete poster
- Need to implement power system in OpenAI framework
- Need to write section on experiments

Supervisor

May 6, 2020