ENG720: Literature Review

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

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1 Literature Review

Traditional control structures for maintaining power system frequency, like automatic generation control (AGC), operate based on an assumption of linear plant models. An increasing proportion of photovoltaic sources of generation, and an increase in the use of high voltage direct current (HVDC) transmission lines to Australia's power network means power system dynamics are becoming more non-linear. This is driving a need to explore applications of novel control architectures to AGC for increased control performance under non-linear plant conditions. One such control architecture being investigated is Deep Reinforcement Learning (DRL). To fully grasp this problem two key areas of understanding are necessary. Firstly, it is important to know what AGC is and the control architectures that have been explored to address this problem. Secondly, knowledge of DRL and its historical applications to control problems is required to understand strengths, limitations, and underlying assumptions of the architecture. This review addresses both aspects in §§ 1.1 and 1.2, respectively.

1.1 Automatic Generation Control

1.2 Deep Reinforcement Learning