

Template for LaTeX with VS Code and EndNote

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1. Introduction

As this is a template/example I do not know what to write. I Could ask ChatGPT but cba.

1.1. What Is a PhD

A PhD is is not well-defined qualification[1].

2. MPC

Model Predictive Control (MPC) is an advanced control technique used in engineering and control systems to optimize the performance of a dynamic system over a specific time horizon [2].

Example:

$$\mathbb{P}(x) : \underset{u_0, \dots, u_{N-1}}{\text{Minimise}} \sum_{t=0}^{N-1} \ell(x_t, u_t) + V_f(x_N), \quad (1a)$$

$$\text{subject to: } x_{t+1} = f(x_t, u_t), t \in \mathbb{N}_{[0, N-1]}, \quad (1b)$$

$$x_{\min} \leq x_t \leq x_{\max}, t \in \mathbb{N}_{[1, N]}, \quad (1c)$$

$$u_{\min} \leq u_t \leq u_{\max}, t \in \mathbb{N}_{[0, N-1]}, \quad (1d)$$

$$x_0 = x. \quad (1e)$$

2.1. SMPC

Stochastic Model Predictive Control (MPC) is a control technique that incorporates probabilistic descriptions of uncertainties into the optimization problem and is an extension of traditional Model Predictive Control (MPC) [3], [4].

References

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- [2] E. F. Camacho and C. B. Alba, *Model predictive control*. Springer science and business media, 2013.
- [3] A. Mesbah, “Stochastic model predictive control: An overview and perspectives for future research,” *IEEE Control Systems*, vol. 36, no. 6, pp. 30–44, 2016.
- [4] T. A. N. Heirung, J. A. Paulson, J. O’Leary, and A. Mesbah, “Stochastic model predictive control—how does it work?,” *Computers and Chemical Engineering*, vol. 114, pp. 158–170, 2018.