Rik Williamson

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Education

University of Sheffield – Master of General Engineering (Mech)   July 2024

Projects

Thin-film Process Control and Optimisation with Reinforcement Machine Learning

- Developed a Deep Learning Neural Network to control and optimise a slot-die thin-film manufacturing process using Reinforcement Learning

Habit Reminder   github.com/rikeroo/habit-reminder

- Independently developed custom PCB using KiCad based on a bare ESP32 C3 module
- Created firmware in C++, integrating external ToDoist APIs, an NTP Client, Webserver, OLED display, NeoPixel LEDs and de-bounced buttons using external interups
- Manufactured and assembled PCB

Design and prototyping of Fighting Robot to Compete in a National Tournament

- Created a report detailing overall robot design, legal and standardisation concerns, data management, quality management, marketing and sustainability
- Designed robot drive system using BLDC motors and belt driven gear reduction
- Created performance testing setups for stall torque and velocity reversal to fine-tune ESC programming and evaluate situation specific perforamnce

Non-Linear FEA Model for new and aged Engine Mounts

- Created a non-linear FEA model for a multi-material hydraulic engine mount
- Conducted mesh refinement studies to determine most computationally efficient areas of geometry to refine
- Verified results using mesh convergence studies
- Validated results against experimental DIC, discussing reasons for discrepancies

Experience

Web Developer Intern, Rent4Sure – Norwich   July 2016

- Developed and published a News section for the main production site with PHP and SQL

Skills

Design Tools: Ansys Fluent, Ansys Mechanical, Fusion 360, KiCad
Languages: Python, C++, MATLAB, Java