GKN AEROSPACE MAKING THINGS FLY

Master Thesis - “Aircraft Engine Modelling using Neural Networks”

(30 credits/20 weeks – 1 student)

About us

GKN Aerospace is the world’s leading multi-technology tier 1 aerospace supplier. With 33 manufacturing locations in 12 countries, we serve over 90% of the world’s aircraft and engine manufacturers. We design and manufacture innovative smart aerospace systems and components. Our technologies are used in aircraft ranging from the most used civil aircraft to the world’s advanced 5th generation fighter aircraft and the Ariane orbital rockets used by ESA.

Project Background

In order to support the aeronautical industry’s goal of net-zero aviation carbon emissions by 2050, multiple concepts for increasing the efficiency of aero engines and aircraft are being investigated across the industry.

Within the GKN Aerospace’s Global Technology Centre (GTC) the Future Concepts department works to identify and prepare for the next generation of aircraft and powerplant architectures. The preliminary design and sizing of powerplant thermodynamic cycles is reliant on the performance demands of the associated aircraft. An enabler of faster and more optimised designs is the linking of aircraft and aero engine performance models.

Assignment Description

Within the Future Concepts department, this thesis will investigate the application of neural network surrogate models to aircraft engine performance models, and assess the accuracy and performance of this approach. The preliminary project plan is:

- Review existing methods and literature
- Model a turbofan in GKN’s engine performance modelling software (NPSS)
- Implement a neural networks based representation of the engine model
- Assess the accuracy and performance of the neural networks model in comparison to existing composite modelling approaches
- Document and present the performed work

Qualifications

- Final year Master’s student in Aeronautical, Mechanical, Physics Engineering (or similar)
- Thermodynamics and turbomachinery knowledge
- Programming knowledge in Python (and preferably C++)
- Aircraft performance and high-speed aerodynamics knowledge is a plus

Apply by

Send your resume and cover letter to Nicholas Mundell
nicholas.mundell@gknaerospace.com

Last date for application: 2026-11-15.





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