

Master Thesis - “Machine Learning to Explore Process and Inspection Data to Support Additive Manufacturing” (30 credits/20 weeks –1 student)

About us

GKN Aerospace is the world’s leading multi-technology tier 1 aerospace supplier. With 55 manufacturing locations in 15 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.

This thesis work will be conducted at GKN Aerospace Engine Systems, Sweden, Trollhättan.

Project Background

Additive Manufacturing (AM) is becoming more popular nowadays for producing light-weight customized products and for decreasing the cost and time of manufacturing. One of the crucial aspects of AM is monitoring of the welding process for a better quality of products. A common way to analyze the deviations in the welding process is through visual inspection of melt-pool images which are captured by cameras, and analyzing data (X-ray/CT) from inspection methods (Non destructive testing, NDT). However, this is a very time-consuming verification procedure if done manually since a huge data is generated from every built component, and it is also prone to human-inaccuracy due to the time consuming and tedious task. Furthermore, it is expensive to inspect every built which is manufactured.

The aim of the master thesis is to investigate machine learning/deep learning based solutions to explore the connection/correlation between inspection from NDT methods and process data from in-situ monitoring to support process engineers in finding more efficient ways to speed-up the validation and certification of AM products.

Assignment Description

- Familiarize with topics, additive manufacturing and aerospace engineering.
- Understanding process/manufacturing and inspection data
- Identifying the challenges with process and inspection data and to explore ways to model it.
- Proposing a suitable approach or a method based on machine learning/deep learning for the studied task with a better accuracy to be able to use in practice.
- Implementing and validating the developed models
- Documenting results in thesis and presenting thesis work at GKN

Qualifications and Skills

- Be a final year master thesis student in Machine learning or data science or similar fields.
- Great interest in image analysis, data analytics and deep learning.
- Knowledge in probability theory, statistics and mathematics.
- Knowledge in sequence, time series predictions.
- Practical experience in Python programming.

Apply by

Send your resume and cover letter to Siva.Dasari@gknaerospace.com

Last date for application: 2022-12-15

