Bachelor thesis

Evaluation of Generative Adversarial Neural Networks (GANs) for Generation of Image-based Aero-Solutions (m/f/d)

The design of aircraft turbines and compressors is a long period optimization task which requires many iterations of time consuming CFD (Computational Flow Field) simulations until the resulting aero solutions reach the desired quality standards. In order to cover also unseen abnormal turbulent Aero flow field scenarios the potential of Generative Adversarial Neural Networks (GANs) will be evaluated in order to generate fake realistic looking 2D and 3D Aero solutions from noise data.

YOUR TASKS

- Getting acquainted with the problem domain of aero solutions and CFD simulations. Analyzing and becoming familiar with the existing environment and provided CFD data.
- Studying the literature and identifying the most promising procedures to accelerate CFD simulations of internal aerodynamics of aircraft turbines by the capabilities of Deep Learning methods
- Implementing these procedures and checking the performance and accuracy
- Performing tests on various turbine geometries

YOUR PROFILE

- Major in computer science, mathematics or physics
- Programming experience in Python or related languages
- Practical experience with Deep Learning (CNN, GNN, etc.)
- Good knowledge about Deep Generative Models and GANs would be a plus
- Familiar with PyTorch, Pandas, Numpy, etc.
- Willing to get familiar with existing code
- Duration: 6 months

OUR OFFER

- Insights into practical work in aviation as an innovative, high-tech industry
- Exciting jobs that carry responsibility and are performed in an atmosphere of team spirit
- A personally assigned contact from company and university side
- Flexible working hours and possibility to work remotely in the home office
- Networking opportunities

READY?

Give your career a boost and send us your complete application (CV, Transcript of Records) with subject "thesis application MTU" to amu@informatik.uni-kiel.de.

We look forward to getting to know you.