Fast AIr

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Purpose of the project

The core objective is the development of an AI prototype capable of autonomously generating new technology or process proposals based on a given specification sheet. These proposals are subsequently evaluated and refined by engineers. The intended reduction in development time, from several years to just weeks or even days, aims to significantly lower the costs of technology development.

Milestones

The project is divided into several work packages:

- **Parameterization**: Deriving relevant system parameters from material, process, and product properties using neural networks, fuzzy clustering methods, and topological transformations

- **Definition of Application Scenarios**: Selecting appropriate technologies and processes as a basis for AI training and testing scenarios

- **Development and Testing of the AI Environment**: Implementing a TensorFlow-based framework along with an evaluation and termination matrix

- **Application and Evaluation**: Testing the AI system on new scenarios and optimizing the software environment based on evaluation results

- **Exploitation and Dissemination**: Transferring the methods into industrial practice and academic teaching, as well as publishing the results

Motivation

With regard to climate change and digital transformation, and under increasingly stringent requirements for safety and product longevity, the aviation industry is facing significant challenges. The planned AI application is based on pattern recognition techniques as well as concepts from physics, chemistry, and pharmaceuticals. A special focus is placed on identifying system-relevant parameters and their parameterization, which form the foundation for the later generation of technology and process proposals.

Collaboration and Division of Work

This project is funded as part of the DATIpilot program and carried out by the Department of Engineering and Natural Science at TH Wildau. Collaboration with an aviation company is currently being pursued to support the project through data acquisition, process description, and the creation of a specification sheet. This will lay the groundwork for future developments in AI-supported product and process development.

Images AI generated