

## AI-Assisted Design Optimization: A Recommendation System for Corrugated Board Design Selection

Ongoing research at the Institute for Paper Technology of the Technische Universität Darmstadt is focused on AI-assisted design optimization for corrugated boards. The project is focused on the application of AI frameworks to improve the design and optimization process, allowing for more efficient decision-making.

This involves analyzing the different design solutions and creating a recommendation system that assists in selecting optimal designs based on user-defined criteria. The goal is to minimize the weight, elastic resistance, and reliability of the solutions. This project not only aims to enhance board performance but also to provide insights into AI-driven design strategies.

We are seeking students interested in advancing existing knowledge in AI-assisted simulation and optimization. Participants in this project will gain hands-on experience with AI tools, data handling, simulation techniques, and the optimization process.

This opportunity offers a deep dive into cutting-edge design optimization techniques, and the skills acquired will significantly enhance both academic and professional career prospects.

### Required Knowledge

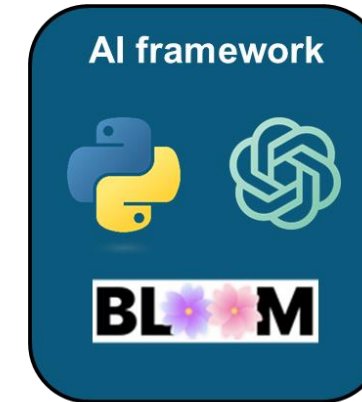
- At least one of the following:
- MATLAB; Python; Java; C++
- At least one of the following basics:
- Numerical Optimization;
  - Machine Learning;
  - Generative AI;
  - Probabilities & Statistics.

### Work packages

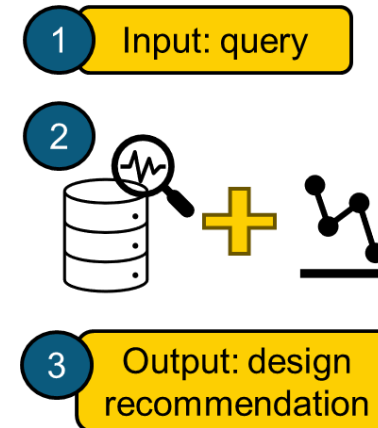
- Initial state-of-the-art review
- Experimentation of different AI platforms / AI Design;
- Test development;
- Verification and validation;
- Documentation & Presentation of the results.

### Organizational

- Weekly meetings with the supervisor
- Language: English



### Recommendation system



Papierfabrikation  
und Mechanische  
Verfahrenstechnik

Prof. Dr.-Ing. Samuel Schabel

Alexanderstr. 8  
64283 Darmstadt  
S1114 259

Ricardo Fitas, M.Sc.

Tel.: +49 6151 16-22720  
ricardo.fitas@tu-darmstadt.de

**Start:** As of now or  
by appointment

Paper engineering  
skills not required!