TECHNISCHE
UNIVERSITÄT
DARMSTADT

Thesis (B.Sc. / M.Sc.)
Knock, Knock. Who's There? Deep Learning Time Series Predictions for Parcel Delivery Optimization

Background: In collaboration with the startup Green Convenience, we are developing an innovative machine learning solution for optimizing parcel delivery services. The goal is to create a robust deep learning framework that can predict reliable delivery time frames and improve overall service efficiency. We are looking for a motivated student to take this project to the next level by implementing and refining the deep learning framework and bringing it to production-ready status.

Department 18
Electrical Engineering and Information Technology
Self-Organizing Systems Lab

Prof. Dr. Heinz Koeppl
Head of lab
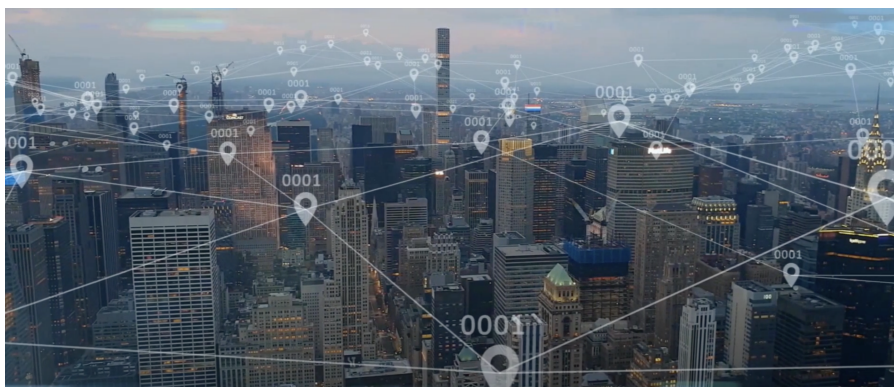
Philipp Froehlich
Project supervisor

S3|06 206
Merckstrasse 25
64283 Darmstadt

philipp.froehlich@tu-darmstadt.de
https://www.bcs.tu-darmstadt.de

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Objective: This thesis focuses on the implementation and productionization of a deep learning framework for parcel delivery optimization. The student will work on developing, testing, and deploying a comprehensive machine learning solution that meets real-world requirements. Key aspects of the project include:

- **Deep Learning Framework Refinement and Productionization:** Enhance and refine state-of-the-art deep learning models tailored to the specific requirements of parcel delivery optimization. This includes exploring various architectures, optimizing model performance, ensuring scalability, and avoiding overfitting.

- **Production-Ready Development:** Transform the research prototype into a production-ready system. This involves code optimization, creating robust APIs, implementing proper error handling, and ensuring the solution meets industry standards for deployment.

- **System Integration and Testing:** Work on integrating the deep learning framework with existing systems and conducting comprehensive testing to ensure reliability and performance under various conditions.

- **Performance Optimization:** Focus on improving model efficiency, reducing inference time, and optimizing resource utilization to meet production requirements.

This thesis offers an excellent opportunity to gain hands-on experience in developing and deploying deep learning solutions in a real-world business context. You will work closely with both academic supervisors and industry

partners, gaining valuable insights into the practical challenges of bringing machine learning models from research to production.

Prerequisites:

- Strong background in machine learning and deep learning (e.g., students of electrical engineering, computer science, data science, mathematics, or related fields).

- Proficiency in Python and deep learning frameworks (e.g., TensorFlow, PyTorch).

- Interest in software engineering practices and production deployment.

- Motivation to work on real-world applications with industry partners.

For further information, please contact Philipp Froehlich.