Optimizing Electric Vehicle EMC Filters with Gaussian Processes: A Master's Thesis Opportunity at Bosch

The Challenge: Shrinking mobility electronics demand innovative EMC solutions. This thesis develops advanced techniques to optimize EMC filters, ensuring performance and safety.

The Opportunity: Join Bosch's EMC simulation team to contribute to the transformation of the mobility sector. You will:

- **Develop Expertise:** Master the application of Gaussian Processes (GPs) to optimize complex engineering problems.
- **Gain Practical Experience:** Apply your theoretical knowledge in a real-world industrial setting, navigating industry standards and contributing to practical solutions.
- **Collaborate with Experts:** Work alongside experienced EMC engineers in a motivating team environment.

Thesis Goal: Use GP surrogates to improve EMC filter design:

- **Smart Learning:** Leverage GP uncertainty to guide an active learning algorithm, intelligently selecting data points for optimal model refinement.
- **Iterative Improvement:** Iteratively train and refine GP-based surrogate models, focusing on areas of high uncertainty or key performance targets.
- **Real-World Validation:** Apply and validate your models using data from electromagnetic compatibility simulations, tackling a critical challenge in electric vehicle engineering.

Prerequisites: Strong background in electromagnetic field theory; interest in programming with basic skills in Matlab/Python, acquainted with CST Studio Suite.

The thesis is co-supervised by the Robert Bosch GmbH and the TU Darmstadt.

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