

I19-08 – Intern in Model Based Development Vehicle Performance Engineering

Company general information

TOYOTA is one of the world's largest automobile manufacturers and a leading global corporation. Founded in 1937. Toyota now sells vehicles in 170 countries and employs over 300.000 people.

Based in Brussels, Belgium, and staffed by 2.700 people and more than 60 nationalities, Toyota Motor Europe (TME) handles the wholesale marketing of Toyota and Lexus vehicles, parts & accessories, and manages Toyota's European R&D, manufacturing and engineering operations.

Team/division description

Vehicle Performance Engineering – Model Based Development

The VPE-MBD team within R&D has the role of providing simulation models and virtual evaluation tools to the specific vehicle dynamics performance teams (handling, ride comfort, drivability, brake control), as well as defining more advanced performance indicators to support vehicle project development target setting.

Your project

Develop an efficient process for design space exploration

Your mission will be to balance the use of vehicle performance simulation models with state of the art techniques for surrogate modelling and adaptive sampling to identify feasible design regions. Given the complexity of practical application cases, you will need to define a step by step approach to optimal design, considering performance dependencies and parameter sensitivities.

Problem

Decide the design that achieves the best performance trade-off

Performances example:

- Drivability
- Fuel economy
- Noise & vibration
- ...

Design parameters example:

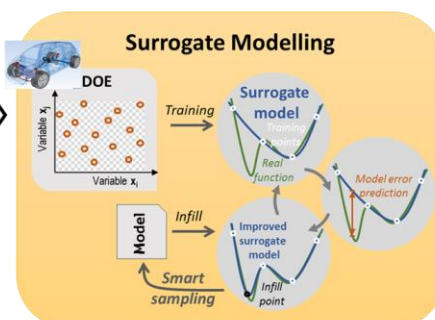
- Engine torque
- CVT gear ratio
- ...

→ Conflicting performances and many design parameters

Solution approach

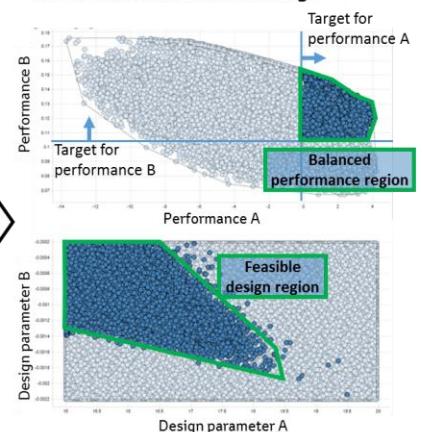
Design space exploration

- CAE Simulation models to predict performance
- Design Of Experiments to evaluate various designs
- Surrogate models for efficient sampling



Outcome

Identification of feasible design



Your profile

- Student in final year study of Master degree of engineering, with focus on simulation and optimisation methodologies.
- Proficient in Matlab scripting.
- Knowledge of advanced numerical methods for design space exploration (surrogate modeling, adaptive sampling, etc.) will be considered as a strong asset.
- Knowledge of vehicle and system dynamics simulation packages (Carmaker/Amesim/Simpack) and Python will be considered as assets.
- Fluent in English.

Place of employment

Toyota Motor Europe Technical Center
Brussels, Belgium

Starting date: As soon as possible

Duration: max 9 months

Confidentiality: Due to business requirement, not all performed projects can be reflected in the internship report. This issue needs to be discussed with candidate/school in advance.

It is mandatory that applicants are students for the entire period of the internship. Interested in this internship, please apply online via www.toyotajobs.com.