Open Master thesis

Full life cycle Digital Twin for EV Batteries

Batteries represent the most valuable, and to some extend also the most defining part of electrical vehicles (EV). As EV markets ramp up, battery innovation is key to global competitiveness. Performance, weight, safety, resilience, reduction of raw material reliance, and recyclability are hot topics in research. A digital twin allows collecting data from all phases of a batterie's life cycle, becoming a valuable source of knowledge for research, production, operation, repurposing, and recycling. One challenge comes from the heterogeneity of data sources from interacting systems. Service-oriented architecture (SoA) together with automated data translations are expected to provide a foundation for cost-efficient solutions. **AVL List GmbH (Graz)** offers the following Master Thesis together with University Klagenfurt:

TASK:

- Analysis of data structures of systems interacting with EV batteries along their life cycle (testers, chargers, battery management systems, diagnostics etc)
- Implementation of a digital twin, capable of collecting, processing and representing data from a sub-group of these systems, based on the Eclipse Arrowhead infrastructure
- Testing and analysing the impact of this prototype for selected use cases

REQUIREMENTS:

- Good programming skills in Python
- Knowledge of modern SW and Runtime architectures (Containers, SOAP, REST, …)
- Knowledge of data structures and translations
- Knowledge of communication protocols (eg TCP/IP, COAP) and their implementation with Python modules
- Good knowledge of German and English
- For this thesis is your at least partial presence at AVL's headquarter in Graz required!

PREFERRED FIELD OF STUDY:

- Computer Science
- Telematics
- Physics
- Electrical Engineering

The successful completion of the thesis is remunerated with a one-time fee of EUR €3,500.00 before tax.

You don't want to write your final thesis just for the books, then explore the mobility of the future together with us! Maybe you will be a part of it soon!

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