Developing a CFD-Driven AI Model to Predict Flow Properties in Multiphase Flows

Background

Over the course of the last decades, CFD solvers have shown a great capacity to accurately simulate multiphase flows. However, in complex applications, the calculation time is often the bottleneck, which hinders a rapid analysis/optimization of the system.

In this project, a model based on artificial intelligence (AI) should be developed. The AI model is to be trained using the data that are driven from CFD simulations, and it is meant to replace the existing CFD approach in specific applications. In the ideal case, the AI model would be able to predict the flow properties in (nearly) real-time without a considerable drop in the accuracy.

For further information, please get in touch.

Key Points

- Conducting literature review and gathering information about existing models
- Conducting limited CFD simulations to create data bank for the AI model, whenever needed
- Developing the AI model and analyzing its performance

Requirements

- High self-motivation
- Good understanding of fluid mechanics
- Experience in programming (desirably Python)
- Good knowledge of at least one CFD approach (FVM, SPH etc.)
- Fluent in German or English language

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