

July 26, 2022

Bachelor/Master-Thesis – data processing

Regime prediction of splashing droplets with deep learning

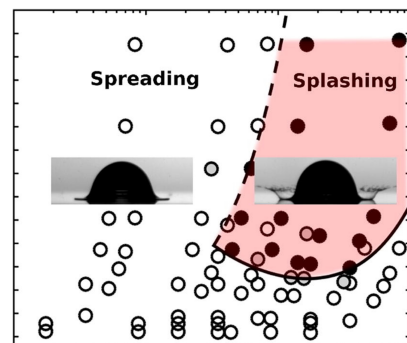
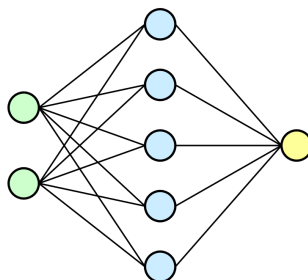
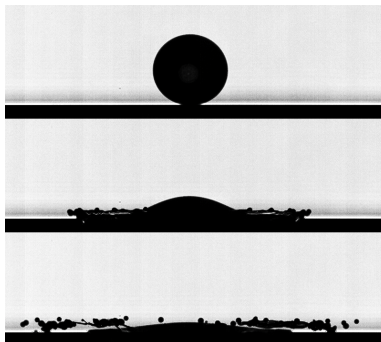
Background

The impingement of a liquid droplet on a flat or structured surface is a relevant phenomenon for various technical processes, e.g. spray cooling, spray coating, combustion and de-icing. Whilst being a simple and elementary process, drop impact behaviour is still not fully understood and therefore subject of ongoing research. In particular the exact conditions influencing whether a droplet splashes or remains on the wall in one piece are still not determined accurately and universally accepted by the research community.

Content of the Thesis

Therefore in the following thesis a neural network should be trained via deep learning for the prediction of splashing on the basis of a large scale data set. Literature data has to be collected and brought into a uniform data framework in order to serve as training data for the neural network. The proposed decision boundary of the neural network for splashing should afterwards be compared to known criteria from literature.

- Research and familiarization with the topic
- Creating a unified drop impact data base
- Training and comparison of the neural network to literature data



Requirements:

Good knowledge of fluid mechanics
Knowledge of programming

Beneficial Skills:

Python or Matlab

Start: immediately

Contact:

M.Sc. Maximilian Dreisbach
Institute of Fluid Mechanics
Kaiserstraße 10,
Building 10.23, 6th floor,
Room 603

☎ +49 721 608 45880

✉ maximilian.dreisbach@kit.edu