Chair of Computational Modeling and Simulation
TUM School of Engineering and Design
Technical University of Munich

Learning by printing: Prediction of AM-process outcomes

Project Characteristics

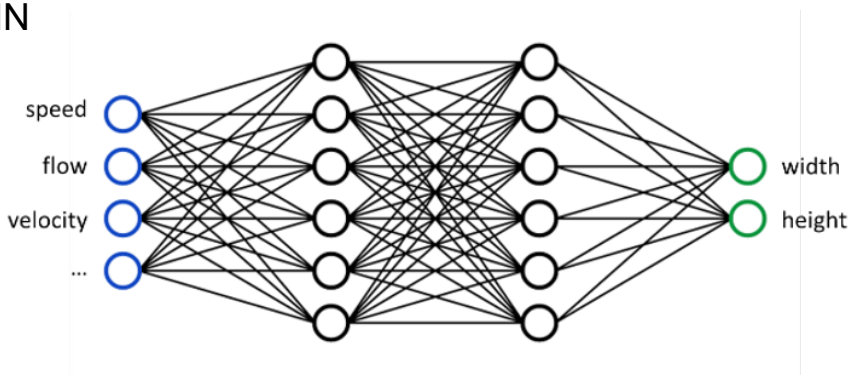
Modeling:
Mathematics:
Programming:
Science:

Task

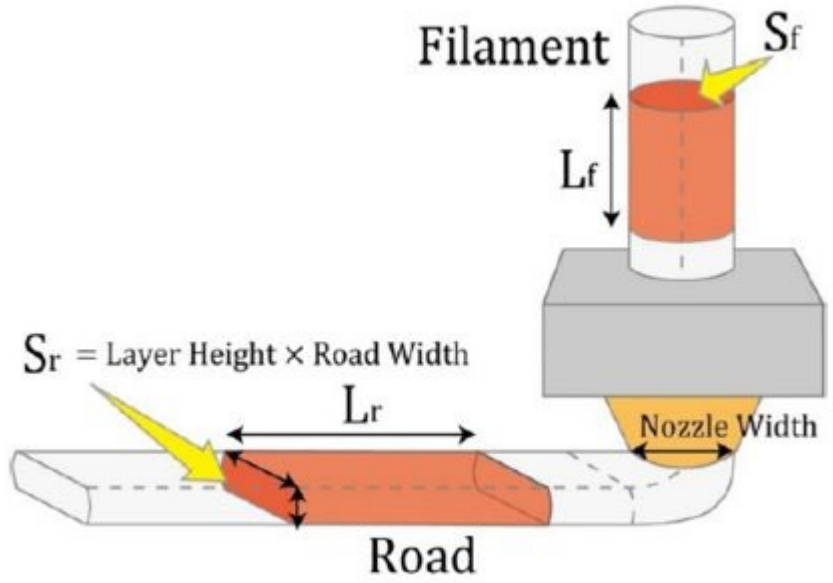
Predict the outcome of an extrusion-based AM process using a Neuronal Network (NN) trained on as-designed process parameters. To this end, a suitable data set is to be generated using a small-scale clay extrusion printing setup.

GENERAL INSTRUCTIONS:

- Design suitable Experiments for the small-scale printing setup
- Generation of a large data set by systematic parameter variation
- Capturing of “as-printed” geometry
- Comparison of captured and “as-designed” geometry
- Development of Neuronal Network (NN) architecture
- Training of the NN



Example architecture: Mulit Layer Perceptron (MLP)



Takahashi, H and Miyashita, H: Expressive Fused Deposition Modeling by controlling extruder height and extrusion amount