Chair of Computational Modeling and Simulation
TUM School of Engineering and Design
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Digital Twin Construction: Predicting performance of the concreting phase

Project Characteristics

Modeling:
Mathematics:
Programming:
Science:

Task

The core of this software lab is to use real construction data and develop a learning AI (NN) model to evaluate the progress rate of a construction project day by day. If the work done so far (e.g., in cubic meters of concrete) is shown in a system dynamics language by *L(t),* then it can be updated in a given period *(Dt): L(t+Dt)=L(t)+R.Dt*. Where *R* indicates the rate of progress. Calculating and updating *R* is the goal of the software laboratory.

- Collect and compile a dataset of historical construction project data, including information on activities, schedules, and actual performance
- Research and select suitable machine learning frameworks and models
- Clean and preprocess the data to prepare it for use in machine learning models
- Develop the rate of progress R
- Train and validate machine learning models to predict construction activity performance based on the historical data
- Test the model on real-world construction data and make necessary adjustments to improve the performance

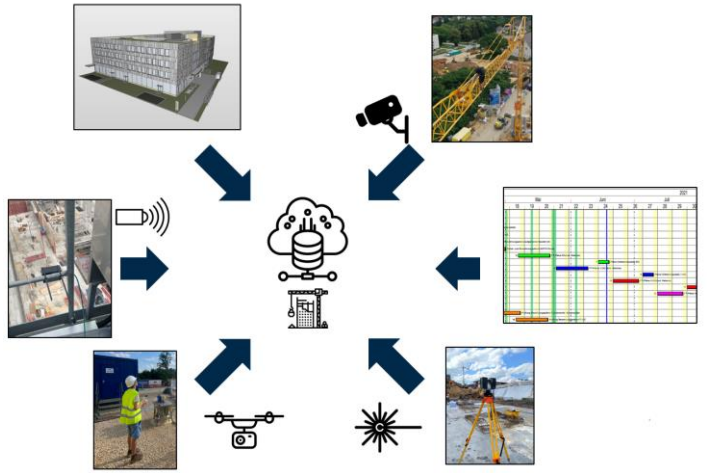

Fig.1: Sample data from construction site

Factors influencing the concreting phase:

- Environmental Conditions
- Supply Chain
- Elevation
- Dimensions of elements
- Finishing requirements
- Curing time
- Skills of workers
- Shuttering capacity

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