



Master's thesis (30 ECTS)

Working Title	Approaches to synthetic seismic data generation based on tunnel seismic prediction (TSP) data
Project objectives	<p>In machine learning, the development of reliable methods capable of yielding accurate predictions and reducing the data interpretation's subjectivity is highly dependent on the quality of the data. One of the main difficulties in developing accurate machine learning-based models in geoen지니어ing is the extreme sparsity and imbalance in data. However, different procedures of synthetic data generation (e.g. Oversampling, GANs) can help overcome the limitations arising from training the machine learning models using an imbalanced dataset. This master's thesis starts with a literature research on available approaches for synthetic data generation. You should choose at least one approach and apply it to tunnel seismic data. The focus will lie on whether and to what extent the synthetically generated data can be used in classification and regression tasks as a substitution for real observations, to train machine learning models.</p>
Student has enthusiasm for	machine learning applications for geotechnical purposes, tunnel seismic, programming
Start	January 2022
Project term (min. / max.)	6 / 9 months
Coop. with external institution	Amberg Technologies
Possibility of remuneration	no
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