

## ABSTRACT

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Artificial neural networks (ANN) have many parameters and many degrees of freedom in architecture, making them a powerful method of machine learning, especially in classification. The development of a suitable ANN for an unknown dataset is time-consuming and difficult due to many construction possibilities and required computing capacities. To mitigate this problem, the software *Network Architecture Construction Environment* (NACEnv) was designed as a part of this master thesis using the method of machine learning. It is designed to learn a strategy for efficiently constructing and training a suitable ANN for an unknown dataset. Despite the limitation of the task to *Convolutional Neural Networks* it was not possible to learn a universal strategy. However, with NACEnv it was possible to learn a very simple strategy in a simplified scenario. With NACEnv it was possible to construct a suitable ANN for a dataset, which was previously also used in the training of NACEnv.