

## **Abstract**

This thesis addresses the problem of line feature generalization in cartography using the Partial Modification operator. The aim was to apply the operator to real ZTM10 data and compare two calculation models, Snakes and New Splines. The study focuses on evaluating the effectiveness of these methods in various generalization scenarios, including analysing the impact of individual input parameters on the results.

Based on existing studies, three generalization scenarios were selected, and solutions were proposed using algorithms implemented in Python. Initially, the influence of individual input parameters of both models was analysed, and then the results of the models were compared. The comparison was performed using numerical metrics that assessed positional accuracy and shape preservation of the generalized lines.

The research demonstrated that the Snakes method achieves better results in more complex situations, whereas the New Splines method is characterized by faster computations but was found to be less effective in some cases. Both methods face issues with shape distortions of lines when multiple features are displaced simultaneously. Testing the influence of parameters confirmed that optimal settings are strongly dependent on specific data and situations, with no universal recommendations for parameter choices. The comparison of both models provides valuable insights for future research in cartographic generalization and suggests modifications to algorithms for improved performance in complex scenarios.

**Keywords:** line feature generalization, energy models, Partial Modification, cartographic generalization, GIS.