

A multi-operator map generalization method based on the Fourier energy spectrum

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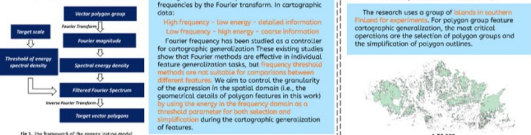
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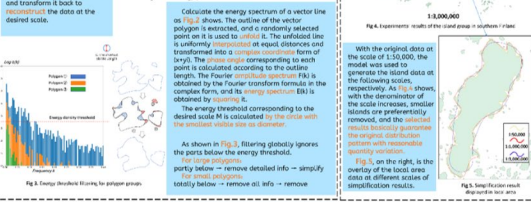
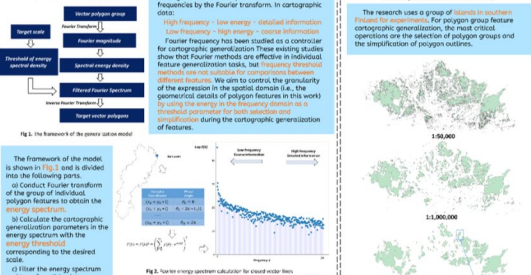
1. Introduction

Map generalization is one of the most important research areas in cartography and GIS. As a classic cartographic generalization, it has always been a recognized challenge and an ultimate goal pursued by cartographic generalization researchers. Over the years, cartographic generalization researchers have continuously been improving individual generalization operations for cartographic features, such as polyline simplification and point group selection. However, a unified and systematic method for generalization must combine more than single cartographic generalization operations. In this study, we propose a model based on the Fourier energy spectrum that includes both selection operators and simplification for the generalization of polygon features.

2. Methodology



3. Experiment Results



4. Conclusions

The experiments show that the proposed cartographic synthesis model can implement the simplification and selection of the polygon group features in parallel. Using the one model, the consistency of generalization parameters and effects can be guaranteed.

The Fourier energy spectrum superposition analysis of different cartographic features provides a new solution to the cartographic generalization multi-operator problem.

References
1. Gao, A., Ai, T., & Huang, H. (2022). A multi-operator map generalization method based on the Fourier energy spectrum. *ISPRS International Journal of Geo-Information*, 11(11), 2045.
2. Gao, A., Ai, T., & Huang, H. (2022). A multi-operator map generalization method based on the Fourier energy spectrum. *ISPRS International Journal of Geo-Information*, 11(11), 2045.
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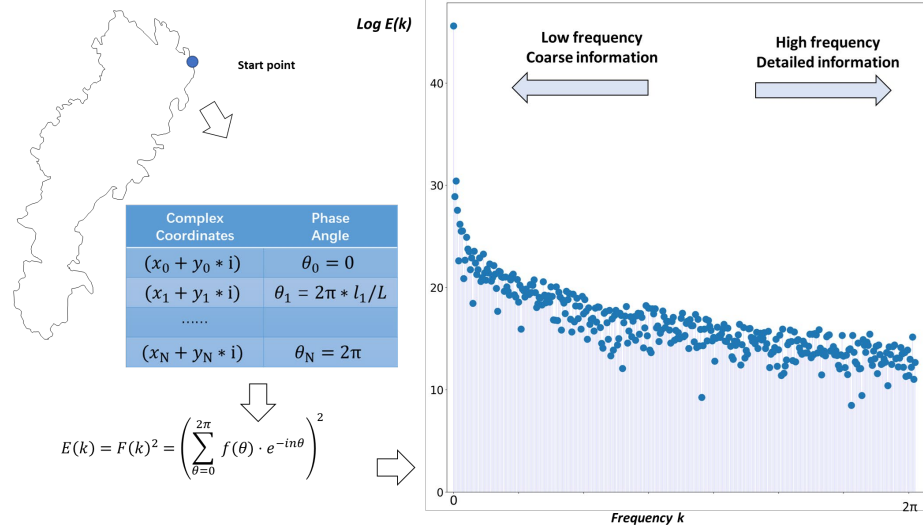


Fig 1. Fourier energy spectrum calculation for closed vector lines

Selection and simplification operator synchronously

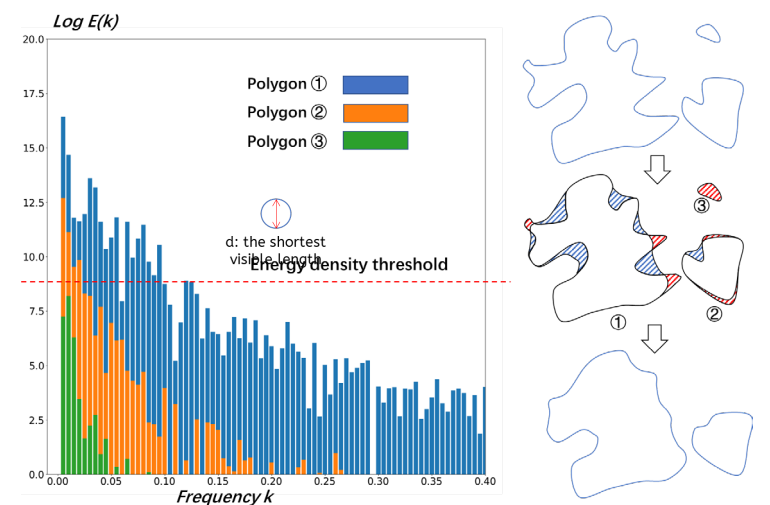


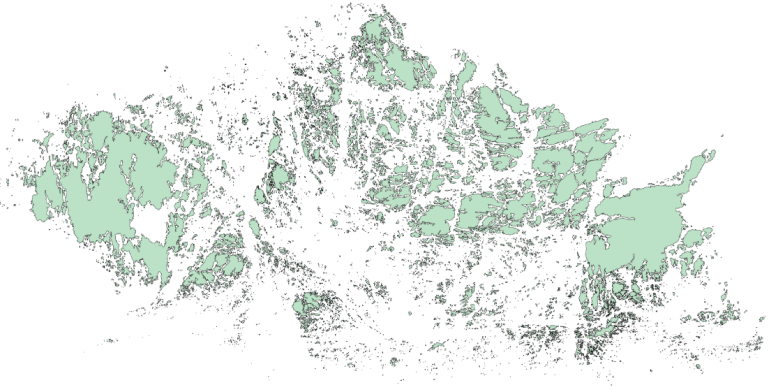
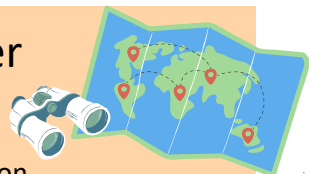
Fig 2. Energy threshold filtering for polygon groups

Key aspects we'll delve into at our poster station are:

Innovative Method: Details of A multi-operator map generalization method utilizing closed curve Fourier energy spectrum.

Effective in Real Data: Our research shows promising results when our method is applied to actual data sets, illustrating its practical applicability and effectiveness.

Versatile Applicability: The adaptability of this approach across varied geographic features and datasets.



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Fig 3. Experimental results of the island group in southern Finland