

Mining Large-Scale, Sparse GPS Traces for Map Inference: Comparison of Approaches

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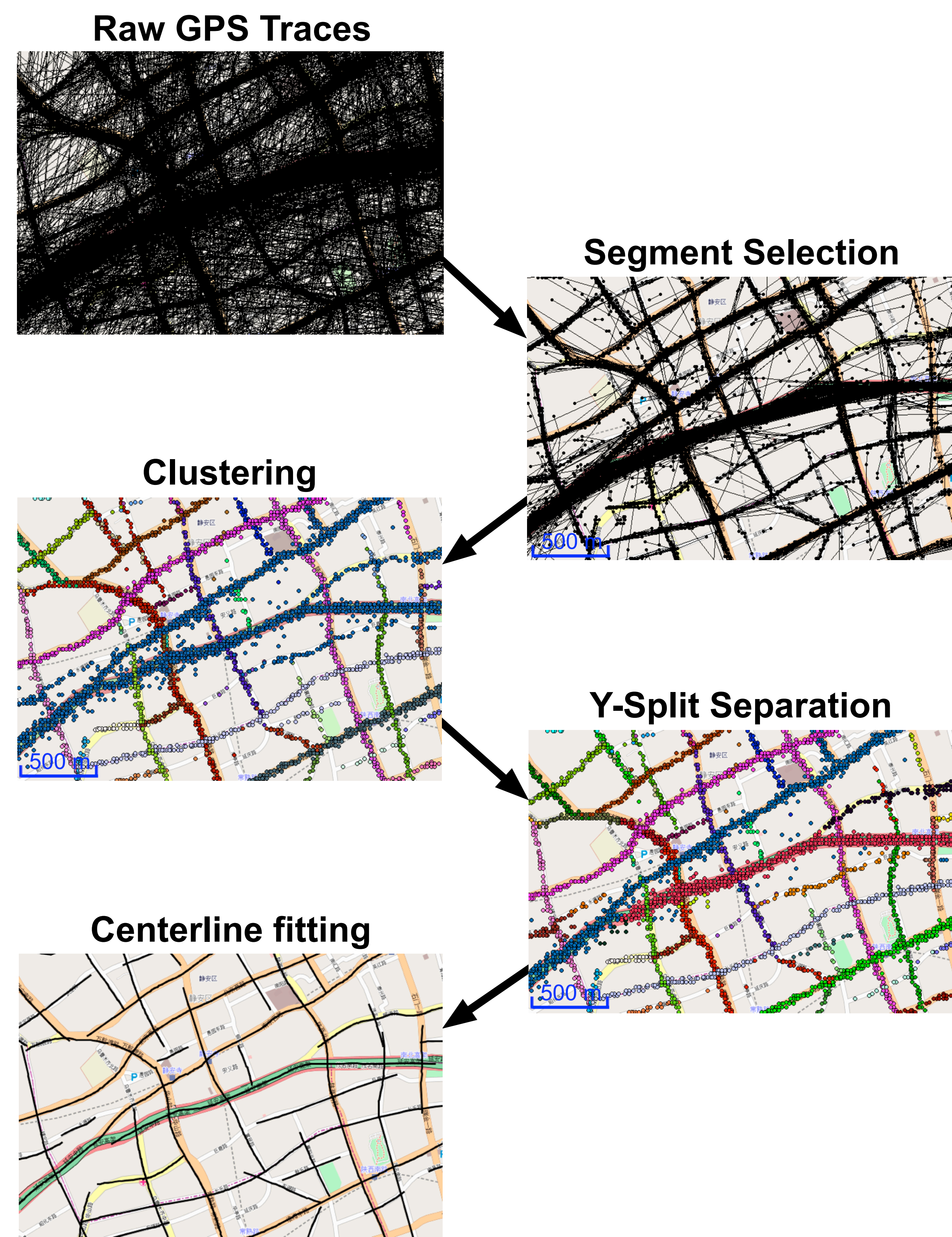
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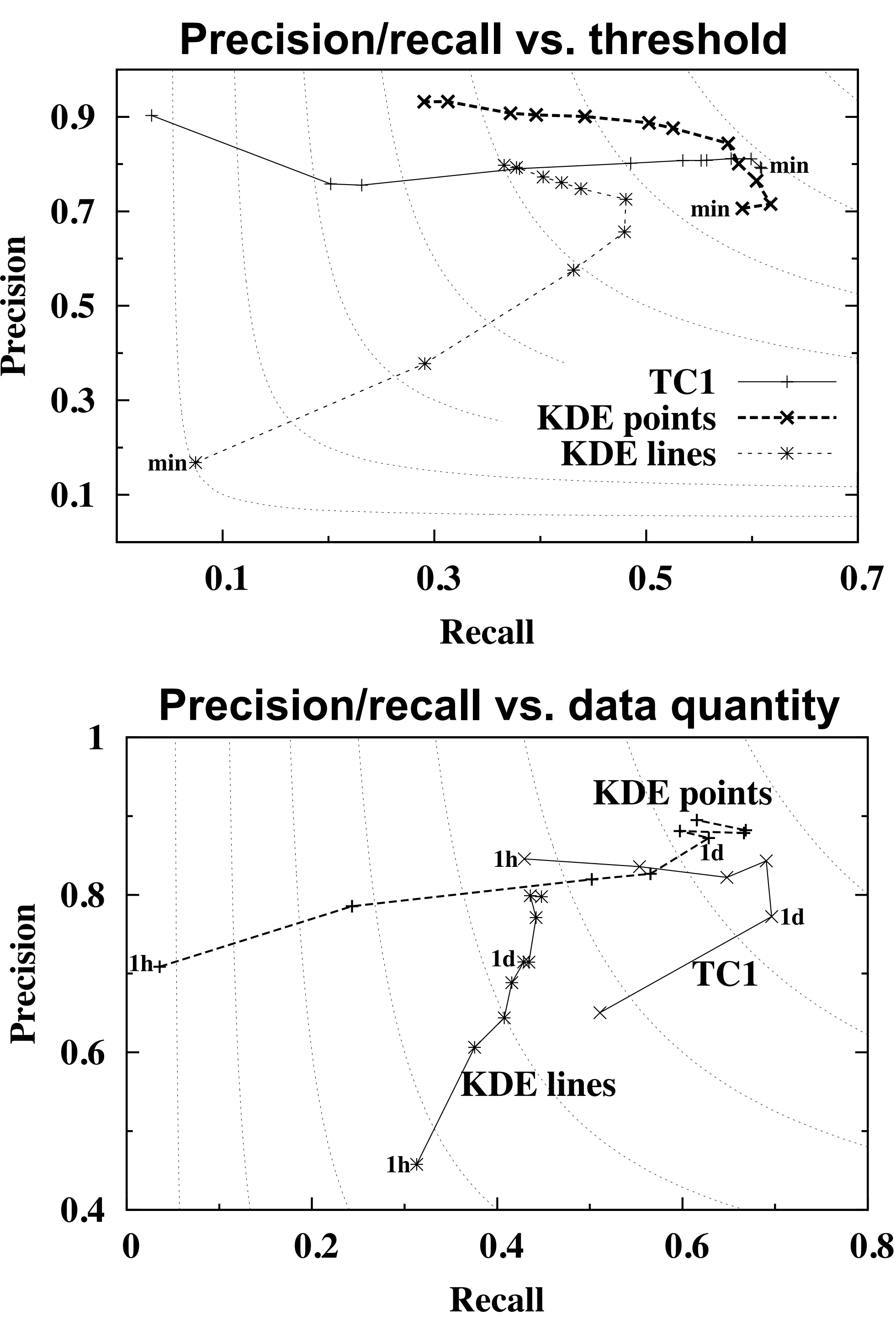
Introduction

Current map inference algorithms and evaluations are limited to small-scale, densely sampled datasets. In order to be useful for real-world applications, they need to be able to handle large-scale, sparsely sampled data. Here we evaluate and compare existing algorithms on such a dataset, collected from 2,300 taxis in the city of Shanghai.

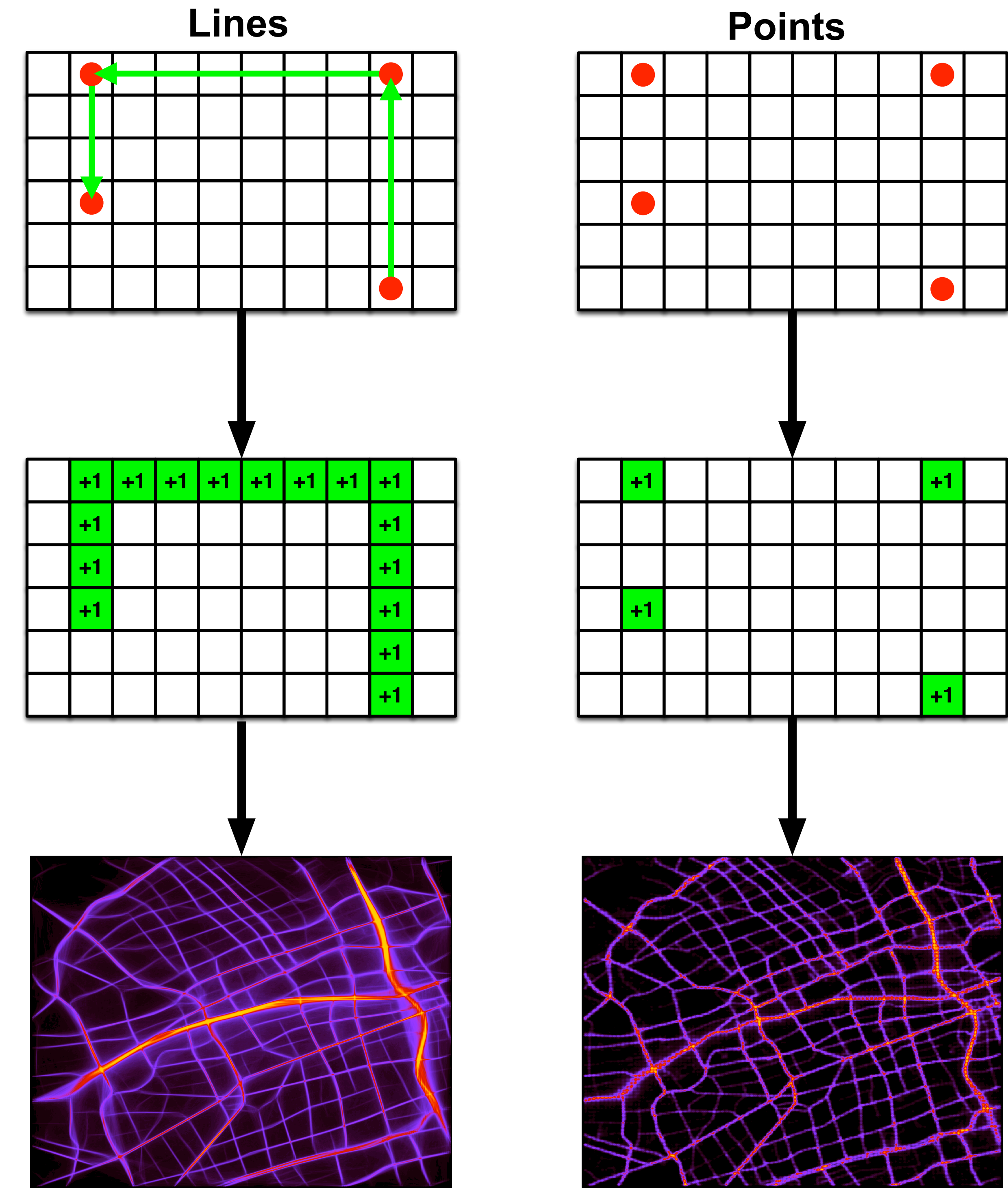
Trace Clustering ("TC1")



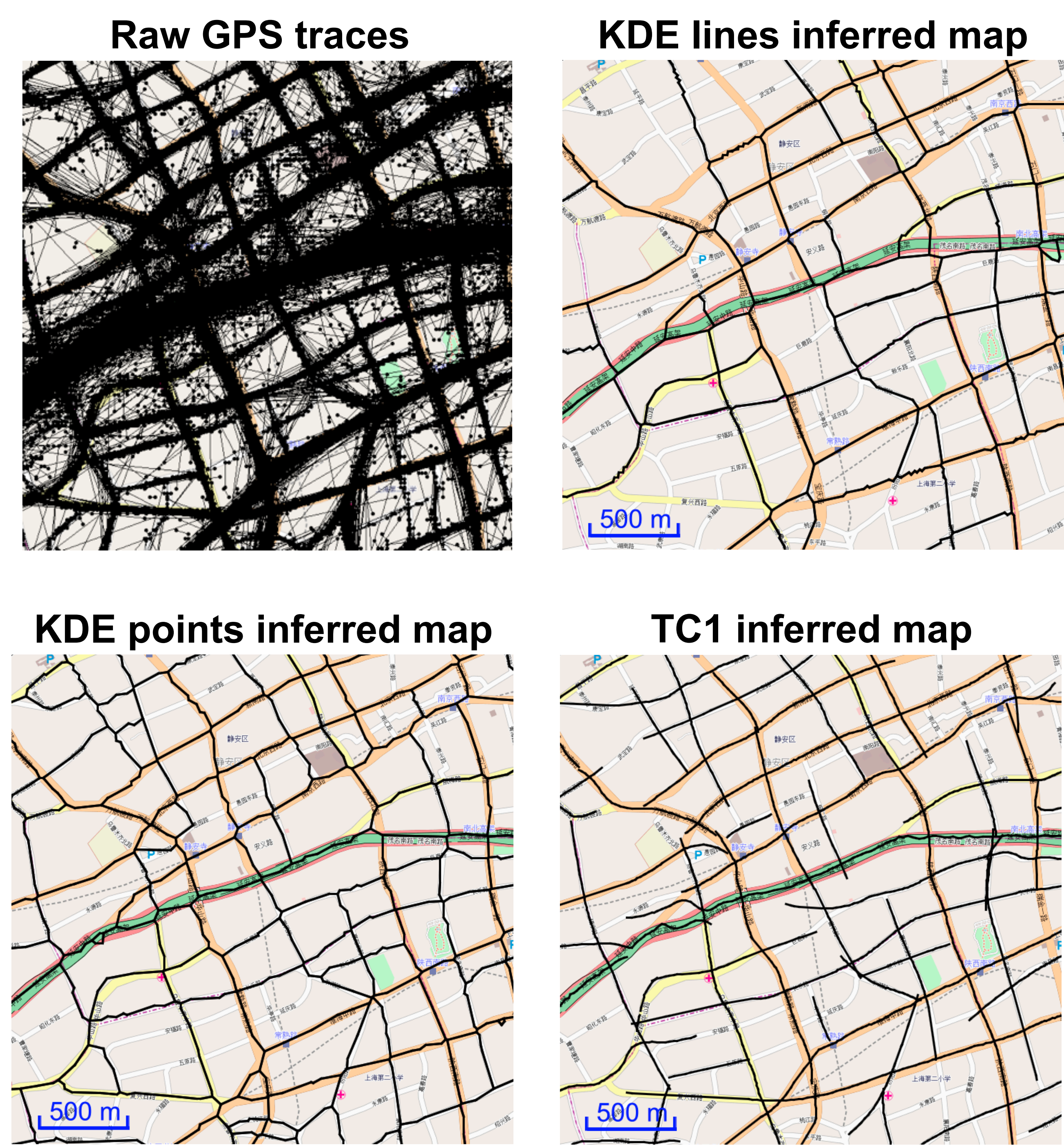
Quantitative Evaluation



Kernel Density Estimation (KDE)



Qualitative Evaluation



Conclusions

Further research is required to produce high-quality, fully-navigable maps from large-scale, sparse data.

- + KDE points is simple and accurate
 - Requires lots of data
- + TC1 handles sparseness well
 - High runtime complexity