Master's Thesis Presentation

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"Benchmarking Six Graph Neural Network Methods for Spatial Domain Detection"

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Abstract

Spatial domain detection in situ is critical for understanding tissue organization and disease mechanisms, especially in the tumor microenvironment. We compare seven graph-based methods—Spatial LDA, SpaGCN, STAGATE, UTAG, stLearn and CytoCommunity—on three spatial omics datasets (mouse spleen CODEX, mouse visual cortex STARmap, human colorectal tumor CODEX) using a unified pipeline. Performance is measured by evaluating scatter plots vs ground truth. Our results highlight how modeling and graph-construction choices drive method-specific strengths, offering practical guidance for spatial domain analysis.

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