

GNN-based Data Imputation In Support of Trustworthy Road Digital Twins

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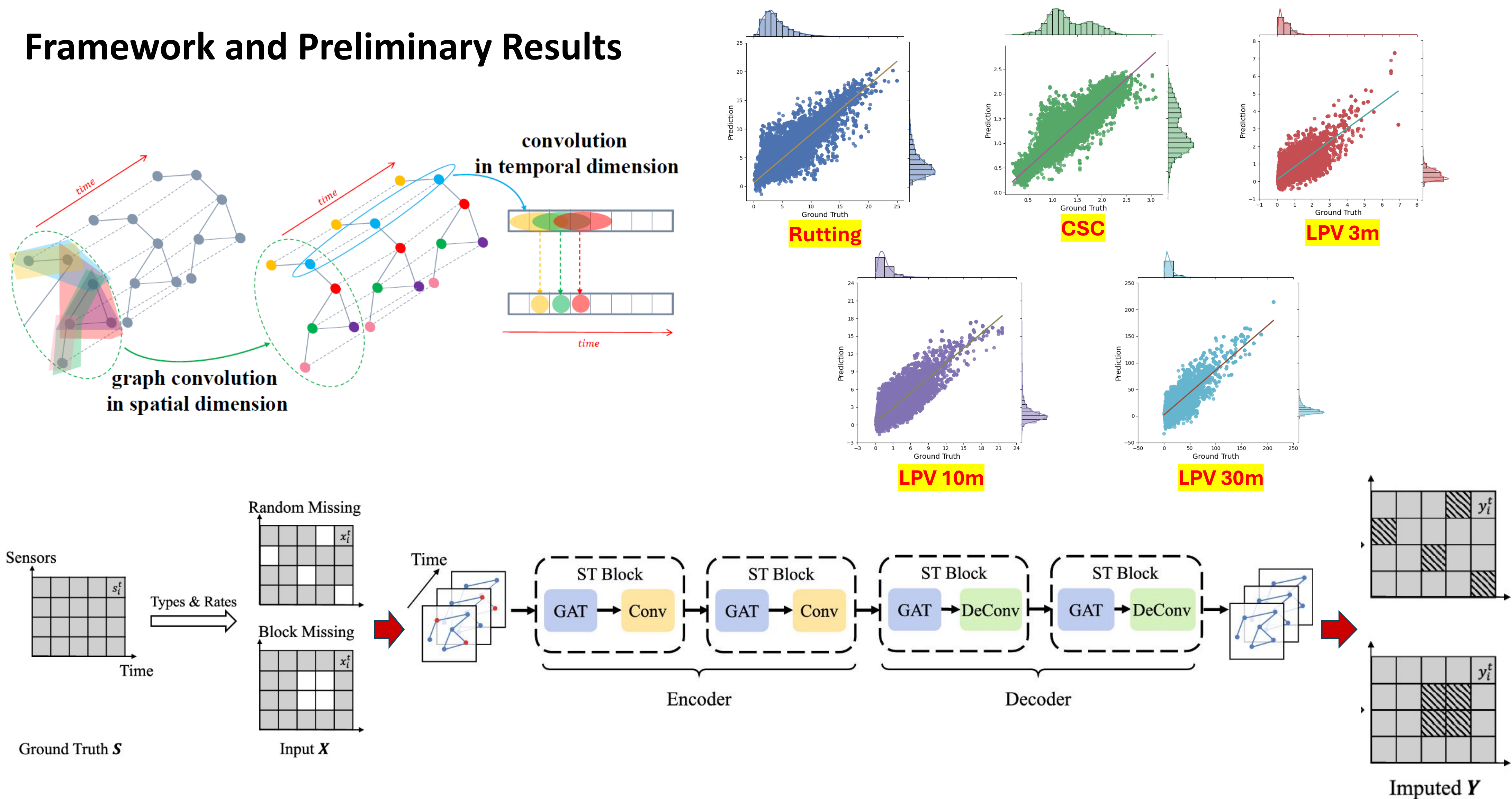
Background & Motivation

- **Trustworthy Principle:** Data quality has been identified as one of the most important trustworthy principles in DT applications.
- **Decision Making:** The optimal and precise maintenance decision marking based on the quality of collected data; an inappropriate maintenance plan could yield a low efficiency of budget usage and untreated road distress.

Objectives

- **Abnormal Data Detection:** Develop a data quality measurement tools based on ADMM for abnormal data detection and identification.
- **Data Imputation:** Develop a GNN-based algorithm for data imputation for the identified abnormal data points.

Framework and Preliminary Results



What next?

- Test method performance using different dataset
- Extend GNN model for pavement condition prediction and preventive maintenance planning
- Measure and improve other critical trustworthy criterions for road DT system.

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