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### **GIS-Based Assessment of Disturbances Caused by Construction Logistics in Urban Environments [MA 211]**

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Construction activities in inner-city projects cause various types of disturbances that affect the inhabitants physically, economically, and socially. Measuring these disturbances requires methodologies that can keep up with the challenging nature of construction logistics. This research aims to evaluate the disturbance quantification approaches found in the literature and test their applicability, focusing mainly on construction transport logistics.

Most construction site deliveries are done by heavy vehicles due to the volume and weight of construction materials. These trucks induce damage to a city's street network and produce a wide range of toxic pollutants. To measure the metrics of these annoyances, off-site tracking data for each delivery vehicle is necessary. However, tracking transport logistics data is complex and seldom done. A potential solution that is conducted in this thesis is using GIS modeling tools to generate route-tracking data that can be used to quantify disturbances.

As part of the evaluation process for the disturbance quantification models, a systemic review of the scientific publications that propose quantification schemes is performed, highlighting the advantages and limitations of each approach. Finally, the quantification approaches evaluate the methodologies in terms of application, procedure, and instrumentation used for data collection.

To test the GIS data generation approach, a theoretical case study is performed using selected quantification methods from the systemic review and empirical studies.