ConSLAM: Periodically Collected Real-World Construction Dataset for SLAM
Maciej Trzeciak, Kacper Pluta, Yasmin Fathy, Lucio Alcalde, Stanley Chee, Antony Bromley, Ioannis Brilakis, Pierre Alliez

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Challenges
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The digitization of the geometry of existing infrastructure assets is a crucial step for creating an effective Digital Twin.
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SLAM algorithms utilized by mobile scanners are not yet accurate enough to meet the requirements of demanding use cases in the construction industry.
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Available datasets for SLAM algorithms were not collected on construction sites hence we do not know what their performance there is.
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There is no dataset collected periodically which would reflect real-world use cases such as progress monitoring.

Our Approach
We used our prototypical hand-held scanner to collect the five sequences of data and a static Terrestrial Laser Scanner (TLS) to collect corresponding ground-truth scans.

During scanning, the recorded streams of data were time synchronized and monitored.

Practical Application (1/2): Evaluation of SLAM trajectory
We extend a popular software package (evo) to automatically measure the accuracy of SLAM algorithms against our trajectory and we show that A-LOAM and LIO-SAM (two popular odometry/SLAM algorithms) are subject to drift.

Practical Application (2/2): LiDAR projected onto images
LiDAR points can also be projected onto the corresponding images because we provide extrinsic calibration matrices between our sensors.