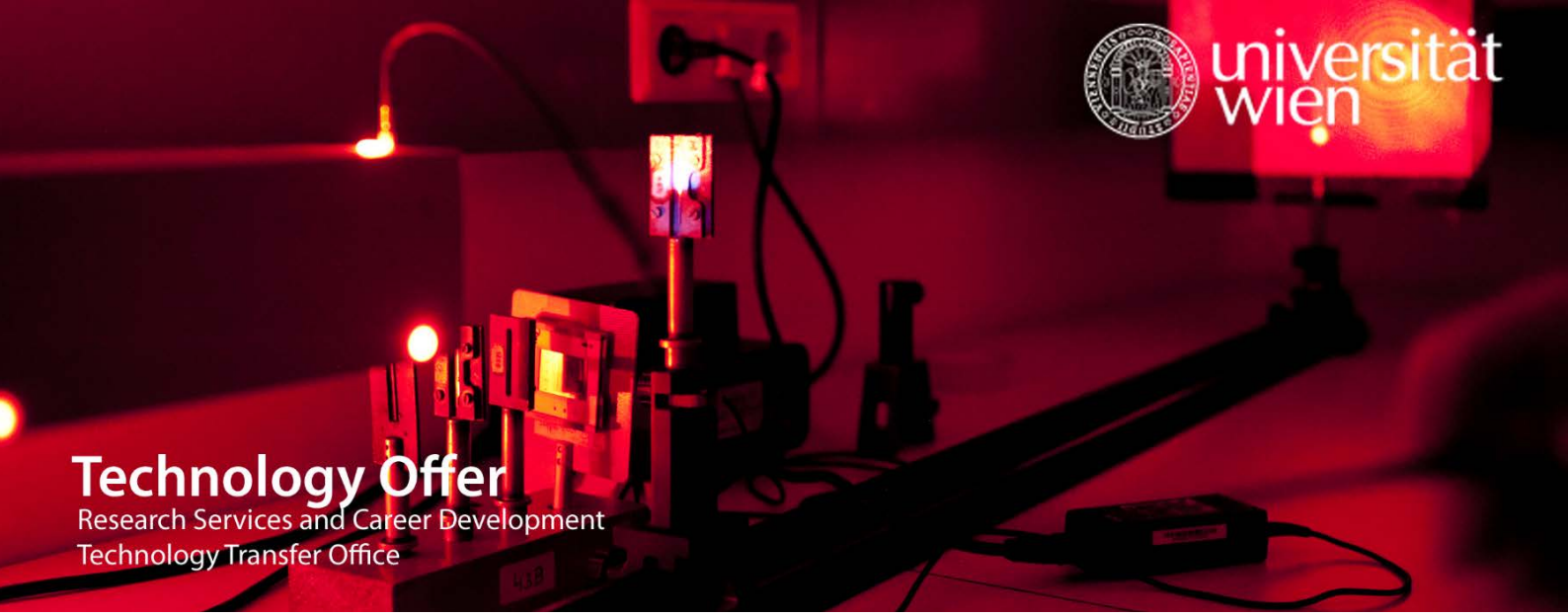

Rational Functions Approach to Weigh-in-Motion (WIM) data analysis and storage

Weigh-in-motion (WIM) technology uses strain sensors to estimate a moving vehicle´s weight, thereby permitting assessment of dynamic loading on bridges or other vehicular infrastructure, and identification of overloaded vehicles. Vehicle overloading is a significant factor in the degradation of road surfaces. The analysis of sensor data is particularly complicated when dealing with multiple parallel lanes and vehicles with many axles.

An algorithm developed at the Faculty of Mathematics of the University of Vienna enables the signals received by WIM sensors to be assigned correctly to individual axles and axle groups, even when parallel moving lanes fail to stay perfectly in lane. The analysis does not require estimation of influence lines. The data are stored in compressed form and can be rapidly retrieved.

(Image Attrib. Benson Kua)

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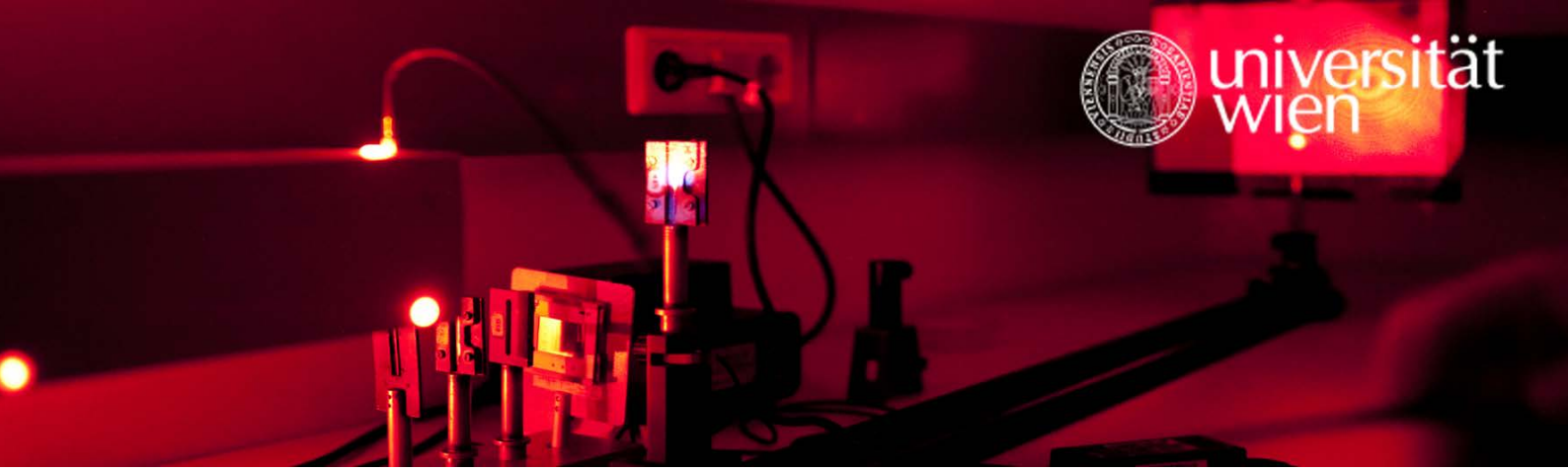

Applications

- In-road WIM
- Nothing-on-the-road (NOR) or Free-of-axle (FAD) WIM, e.g. Bridge Weigh in Motion (BWIM)
- Rail WIM

Advantages

- Weights can be assigned to individual axles and axle groups
- No need to estimate influence lines
- Data extracted in a concise manner, thereby making the transmission from site and storage at the central data warehouse more economical
- Data stored in highly-compressed form
- Rapid retrieval of information
- Distributed computing: most of the computation is on site, thereby making the system immune to failure of central data services

Development Status

This mathematical data analysis method has been successfully field-tested.

Intellectual property Status

An Austrian patent has been approved for grant. A PCT application will be filed in December 2013.

Publications

In preparation

Contact

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