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Maintenance of engineering systems by big data

The ubiquitous availability of high quality data European industry gathers, allows to optimize manufacturing processes even more and to stay competitive. However, while the data are rich enough to include those elements needed for optimization, the even increasing volume, veloctiy and variety of the data make mining effectively increasingly difficult. The paper addresses the special challenges in developing scalable algorithm and infrastructures for creating responsive analytical capabilities that produce timely prediction and monitoring alerts in industrial environments. We will describe a platform that can handle the special needs of the data and has a reach enough tool of data mining techniques. Case-based reasoning is used to combine streaming data of different types (sensor data, time series, maintenance logs etc.) as well. Special time series algorithm will be developed allowing the efficient analysis of the machine data. It will be deployed and validated in three industrial cases where data-driven maintenances are expected to have a significant impact: High-tech medical equipment, high-tech manufacturing of hard disks and structural health monitoring.

Biography

Petra Perne is the Director of the Institute of Computer Vision and Applied Computer Sciences IBaI. She received her Diploma degree in Electrical Engineering and PhD degree in Computer Science for the work on “Data reduction methods for industrial robots with direct teach-in-programing”. Her habilitation thesis entitled “A methodology for the development of knowledge-based image-interpretation systems". She has been the Principal Investigator of various national and international research projects. She received several research awards for her research work and has been awarded with three business awards for her work on bringing intelligent image interpretation methods and data mining methods into business. Her research interest includes “Image analysis and interpretation, machine learning, data mining, big data, machine learning, image mining and case-based reasoning”.

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