5ᵗʰ International Conference on

ARTIFICIAL INTELLIGENCE

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AUTOMATION & ROBOTICS

April 16-17, 2018 | Las Vegas, USA

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Multi time-series mining for medical, engineering, and smart maintenance purposes in order to figure out critical system statuses

In many applications multiple time series of measurement parameters are taken. The aim is not to forecast how the single time series will evolve. The aim of this study was to figure out when a biological system, an engineering system, or a system under observation will go into a critical status that requires immediately action to preserve the system. This task requires different intelligent observations from prediction to decision making over multiple time-parameters. Often the measurement data points are not equidistant. They are often on different time-intervals and they have to be brought into a common time interval by adequate interpolation methods. The status of the system in the past and how it will be behaving in the future will also play an important role. That does not bring it into a single point observation but rather into a more complex consideration that needs to take into an account the system status. We will show on different application how such an application can be solved. We will review the state of the art of single time-signal prediction. We will show how the system theory method has to be applied. We demonstrate that it is necessary to take the system theory quotation into account to solve the problem, it does not matter if it is a biological, engineering, or maintenance object; and finally, we will show on different application how we solved the applications with system-theory data mining methods

Biography

Petra Perner is the Director of the Institute of Computer Vision and Applied Computer Sciences IBaI. She has received her Diploma degree in Electrical Engineering and her PhD degree in Computer Science for the work on data reduction methods for industrial robots with direct teach-in-programing. Her habilitation thesis was about 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 has 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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Advances in Robotics & Automation| ISSN: 2168-9695 | Artificial Intelligence 2018, Automation & Robotics 2018 | Volume: 7

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