EPR

European Pattern Recognition Project

" By investigating, developing and demonstrating within six application areas, the EPR project explores the vast potential of pattern recognition technology combined with power quality measurement in electrical grids.

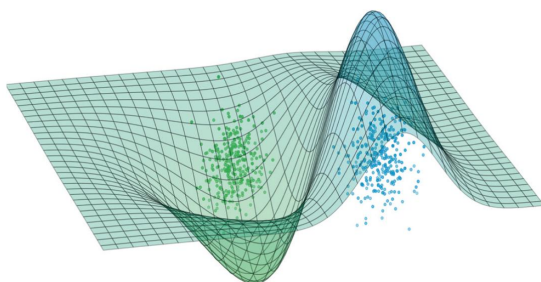### What is Pattern Recognition?

Pattern Recognition is a branch of machine learning that focuses on the recognition of patterns and regularities in data. Algorithms such as support vector machines, often trained by labeled training data, form its core. Today, the technology is used in many applications such as finger print recognition and in online search engines.

The EPR project will apply pattern recognition technology to power quality and other related electrical grid data such as smart energy meter readings to develop tools for grid operators and energy companies to optimise the power system and enable a higher share of renewable energy generation.

Practical applications

Six fields of application that Pattern Recognition is a promising technology are investigated:

- Pro-active Maintenance
- Power Consumption
- Micro-grid & solar power applications
- Voltage Regulation
- Hosting Capacity
- Inertia evaluation and support

Project Duration
01.03.2016 - 28.02.2018

Project Budget
Total Budget: € 1,600,000.-
Funding: € 1,000,000.-

Project Coordinator
Metrum (Sweden)

Project Partners
- Eltek (Norway)
- Rejlers Embriq (Norway)
- Enerjisa (Turkey)
- Glava Energy Center (Sweden)
- Mälarenergi (Sweden)
- Stri (Sweden)

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Key Figures

8 partners from Sweden, Norway and Turkey

4 demonstrators, including:

• PQ instruments, solar PV control system, micro-grid control system, energy data management system, 1 solar test site & 1 wind farm, combined with AMI and weather data

In 3 DSOs in the Nordic and Turkish power systems, covering:

• HV, MV and LV levels

• Rural, urban and microgrids

• High and low penetration of renewables

Main Objectives

EPR will enable more (distributed) renewable energy generation in the power system.

Pattern recognition technology in electrical grids helps tackle present and future challenges, e.g. distributed generation, power electronics, EVs, while:

• Keeping stability

• Increasing capacity

• Increasing flexibility

• Improved power quality and security of supply giving decreasing costs for interruptions

EPR actively contributes to the European knowledge community by forming a basis for further res earch in pattern recognition technology.

Main Results

• Measurement instruments with built-in pattern recognition technology

• Developed applications in the six selected fields

• Building a European knowledge community for pattern recognition technology in electrical grids:

  • Key findings will be available in reports and articles

  • Knowledge sharing database with labeled power quality data samples

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European Knowledge Community

http://www.eranet-smartgridsplus.eu

metrum

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This project is part of the 1st Joint Call for transnational RDD projects of the ERA-Net Smart Grids Plus initiative. More than EUR 31 million of funding have been made available to 21 projects from 19 regions/countries.

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