



## Main research topics @ <u>KEG</u> Data Engineering (DE)

## Knowledge Engineering Group

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Al synergy

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- Challenges: Extracting **meaningful knowledge** from (raw, unstructured, sensor) data to drive **actionable insights**
- Our Approaches: Designing and implementing advanced **machine learning** techniques to process complex data and reveal hidden patterns
- Key application of our solutions:
  - Usage profiling and usage class prediction
  - Time series data modeling
  - Energy consumer classification
  - Predictive and preventive maintenance



# DE: Current industrial solutions - Usage profiling

- **User behavior** identification for enhanced predictive modelling in resource consumption
- Machine learning-based modelling solution:
  - Unstructured data handling
  - Heterogeneous data

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- Missing and noisy data
- Imbalanced learning problems
- Application: Integration into personalized recommendations for
  - optimizing resource management strategies





## DE: Current industrial solutions - Resources ai forum U T C Management solution

- Real time **resource allocation** solution for optimized management and efficiency
- Machine learning-based modelling solution for time series forecasting:
  - **Big** data processing
  - Raw sensors data
  - Noise and uncertainty
- Application: A step toward predictive maintenance, anomaly detection, and intelligent automation across domains









#### • Open to **collaboration** opportunities in the following areas:

- Consultancy & Advisory Services
- System Architecture & Solution Design
- Proof of Concept Development

### • Research Collaborations & Joint Proposals in:

- Advanced data analysis & processing for multi-dimensional and complex datasets
- Predictive and preventive maintenance strategies for industrial applications
- Time series data modelling (in real time)
- User & usage profiling for enhanced decision-making
- Other relevant topics open to discussion









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