

# DATA ENGINEERING, SCIENCE AND SYSTEMS



## THE DESS GROUP AT AALBORG UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE  
TECHNICAL FACULTY OF IT AND DESIGN

The group advances value creation from data by conducting high-quality research in data engineering, data science, and data systems.

## RESEARCH

### KEY RESEARCH AREAS

The DESS research group targets the following overall challenges:

- › Efficient and effective analytics, including query processing, data mining, and machine learning for temporal, spatio-temporal, and time-series data, enabling value creation in a broad range of domains, including transportation, Internet of Things (IoT), and digital energy.
- › Big data analytics, including data warehousing, OLAP, and data mining for multidimensional and time series data, enabling value creation in, e.g., intelligent energy applications.

## EDUCATION

### STUDY RELATED ACTIVITIES

The DESS staff teaches 15-20 courses, including data management, and third semester M.Sc. specialization courses.

Furthermore, we are involved in the Bachelor's and Master's programmes in data science and organize PhD courses in data management and machine learning.

## COLLABORATION

### WHO BENEFITS FROM OUR RESEARCH

Our research benefits most directly companies and organizations that manage temporal, spatio-temporal, and time-series data, but also graph, textual, heterogenous, and energy data. This includes companies and organizations - often within transportation, IoT, and digital energy - that work with location-based services, travel-time information, green accounting, and control of energy usage.

### EXAMPLE PARTNERS

Bring Logistik AB, EWII, FlexDanmark, IBM Research Ireland, IT Universitet, Nanyang Technological University, TU Dresden, University of Zurich and Zhejiang University.

## PUBLICATIONS

### IMPORTANT PUBLICATIONS

- › [Outlier detection for time series with recurrent autoencoder ensembles](#)
- › [PACE: a PAtH-CEntric paradigm for stochastic path finding](#)
- › [Path-based queries on trajectory data](#)
- › [Modeling and Managing Energy Flexibility Using FlexOffers](#)



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## KEY PROJECTS

### DIREC

National Centre for Research in Digital Technologies aims to expand the capacity within research and education in Denmark.

### OPTITRUCK

The project focuses on fuel savings in +40-ton trucks.

### FLEXIBLE ENERGY DENMARK

The project is targeting a more cost-effective green transition through intensive use of data.

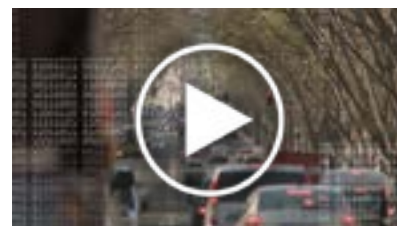
### A DATA-INTENSIVE PARADIGM FOR DYNAMIC, UNCERTAIN NETWORKS

Data analytics and machine learning on massive trajectory data for greener and more efficient transportation.

### DEDS - DATA ENGINEERING FOR DATA SCIENCE

Joint PhD education focusing on research in methods and tools for big data analytics.

## VIDEO PRESENTATION



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