Teaching and research concepts

Professur für das Fachgebiet Data Science

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FRANKFURT UNIVERSITY OF APPLIED SCIENCES

From Physics to Data Science: curiosity, Data Science methodology and project experience

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ZUKUNFT SEIT 1386

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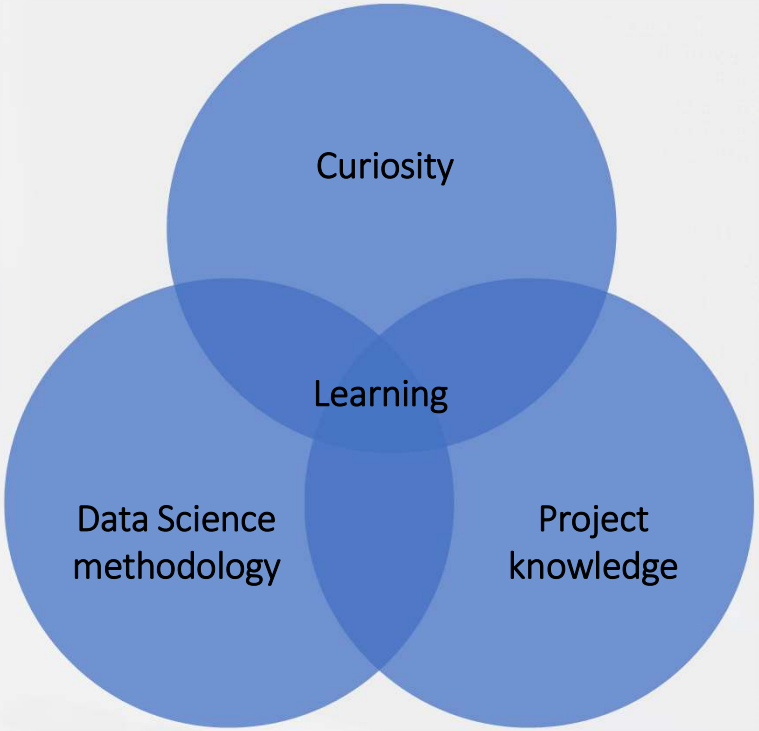
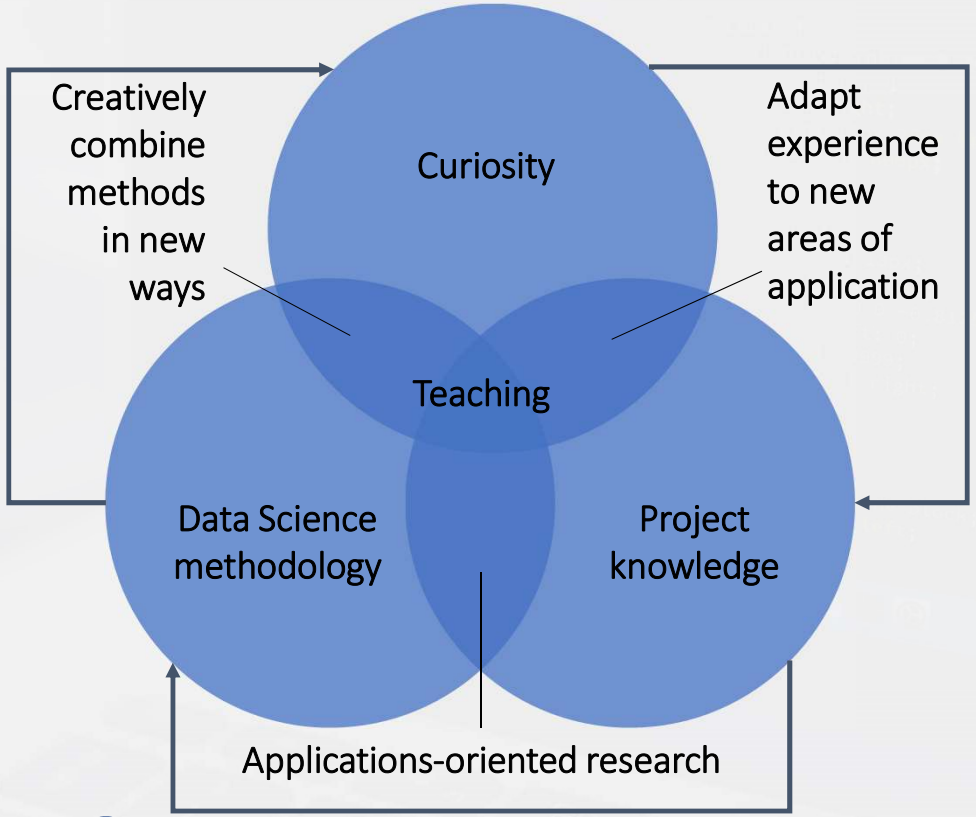


paf now

Capgemini invent

14 projects on Data Science
in 7 industry sectors
Contacts to 19 companies

The cycle of business question, modelling and re-integration to business is at the core of my teaching concept



2 **Understand** data and answer question numerically

3 **Re-integrate** results into business processes

1 **Translate** business question to data question

Teaching Data Science implies enabling students to work on real-life applications together with industry project partners

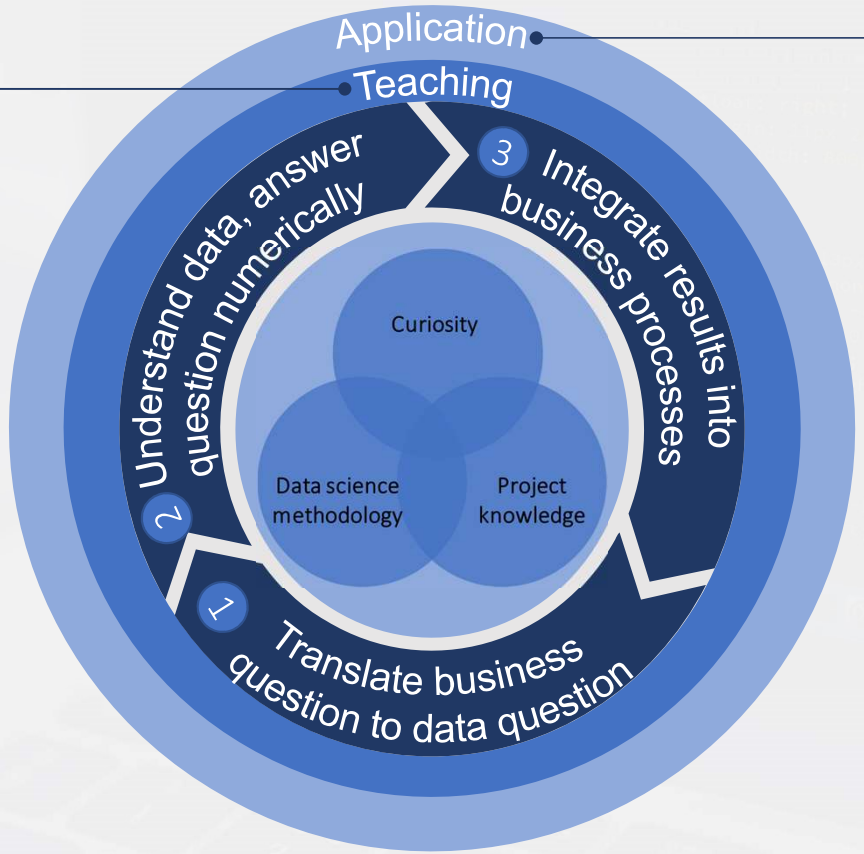
Teaching

The key targets of my teaching:

1. Share knowledge
Lectures, exercise groups, scripts, lecture videos, interactive online courses, digital tools, self-assessments, group work

2. Share experience
Make myself available outside of lecture hours

3. Share contacts and network
Work on Data Science assignments together with companies



Application

Continuous work in *cross-semester projects* with industry partners: the *Data Science Lab*

1. Combined with lectures
Begin to familiarize with new tools, methods and processes

2. Combined with projects
Apply lecture knowledge to actual industry projects

3. During internships and thesis
Work on own project and form own network for job entry

Basic and advanced courses I am capable of teaching

Possible areas of involvement

- B.Sc. and M.Sc. courses within relevant current and future study programs
- Interdisciplinary Studium Generale
- Kompetenzcampus and continuous learning
- Labor für Schülerinnen und Schüler

I am prepared to teach within and beyond the regular scope of study programs

Existing courses to contribute to

- Algebra, Analysis
- Statistics, multivariate data analysis
- Data engineering, data mining methods, learning from data, machine learning
- Project courses as well as Bachelor‘s and Master‘s theses

Teaching basic subjects is important to me

Possible additional courses

Lectures incl. tutorials

- Recommender engines
- Anomaly detection

Projects

- Reproducible Data Science Pipelines
- Translation of business questions to data and business application of results

Seminars

- Data Science in consulting
- The meaning of “science“ in Data Science

The four components of my focus area of research concentrate on steps 1 and 3 of the data science cycle

Component	1 Data Science to action	2 Data Science on edge	3 Operating model integration	4 Regulatory and ethical perspectives
Possible aspects	▪ Unified and task independent framework of generating actions from analyses ▪ Data analysis peculiarities from different business perspectives	▪ Efficient model-based exchange of information ▪ Online learning methodologies ▪ Energy efficiency of machine learning	▪ Definition and deployment of standardized Data Science pipelines ▪ Standardized processes for Data Science roll-out and scaling	▪ Understandable AI ▪ Implications of the „Gutachten der Datenethikkommission“ of October 2019 and the proposed “KI-Observatorium“
Possible collabo-rations	▪ ML@APPRISE ▪ Institut für Interdisziplinäre Technik ▪ Institut für Data Driven Business	▪ Autonome Systeme und Intelligente Sensorik ▪ Kompetenzzentrum Netzwerke & verteilte Systeme ▪ HAW Hessen	▪ Institut für Data Driven Business ▪ Kompetenzcampus ▪ External companies	▪ Institut für Vertragsgestaltung und Konfliktlösung ▪ HAW Hessen ▪ Bundesministerium für Arbeit und Soziales