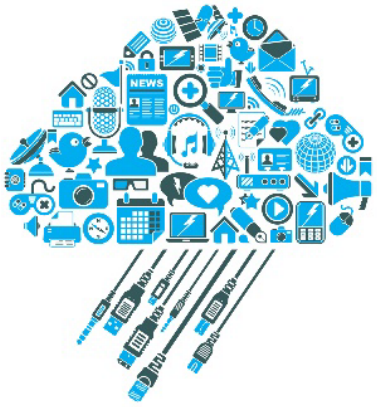
Practical Course Information Systems
Fachpraktikum Datenbanken

Data-intensive Computing

Winter Term 2025

Lecturers:	Prof. B. Mitschang, Prof. H. Schwarz and researchers of IPVS/AS
Contact:	Michael Behringer, michael.behringer@ipvs.uni-stuttgart.de
Study Programs:	Master Informatik, Master Softwaretechnik, Master Autonome Systeme (Vernetzte Intelligenz), Master Computer Science (STE)
Language:	English

Description



This practical course mainly focuses on data-intensive applications and how they process, analyze and store their data. Nowadays, the amount of data in applications is growing intensely. This data can be either structured, e.g., stored in relational database systems such as MySQL, or unstructured, e.g., stored in text documents, pictures or other media files. Deriving information and, as a consequence, knowledge from this data is a huge challenge. To cope with this issue, new data analytics and data management technologies have been developed that focus on both, deriving information from this large amount of structured and unstructured data (e.g., machine learning, data mining, natural language processing, large language models, …) and data platforms (e.g., data mesh, data lake, …) as well as the underlying data storage (e.g. NoSQL databases, column-stores, RDBMS…). Another recent technology is text-to-sql transformation via LLM technologies (e.g. BIRD-SQL). For this topic, we cooperate with IBM to evaluate various foundation models regarding their suitability for text-to-sql.

In this practical course, you will work in small teams. Each team will implement a new or extend an existing data-intensive application in the context of one of the current research projects in the department. The used infrastructure, e.g. a cloud-based infrastructure, depends on the application.

First Meeting

The first meeting will be at the beginning of the winter term. Registered participants will be informed by email.

Remarks

This course is primarily offered for students of the Master Computer Science (STE), Master Informatik, Softwaretechnik and Autonome Systeme. Students from other programs may participate if there are not enough participants from the above mentioned study programs. Participants will work in small teams of typically three students.

Prerequisites

Experience in programming and system development is mandatory, same as basic knowledge on database systems and information systems, e.g. from lecture "Modellierung".