



Individualization of Studies through Digital, Data-Driven Assistants – SIDDATA

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Agenda

- About the Project
- Project Idea
- Interdisciplinary Research
- First Data Collection
- Research Questions

About the Project

Project Idea

Interdisciplinary Research

First Data Collection

Research Questions

About the Project – Joint Project Partners



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About the Project – Facts

- **3x Universities + 1x Consulting Service Institute** in 2x **German states**
 - 3x Centers for **E-Learning** (Hannover, Bremen, Osnabrück)
 - 2x Institutes of **Information Systems** (Hannover, Osnabrück)
 - 1x Institute of **Cognitive Science** (Osnabrück)
 - HIS-Institute for Higher Education Development (HIS-HE) (Hannover)
- **22+ Researchers involved – Research-in-Progress**
- **3.5 years Project Duration** (success: + 2.5 y), started November 2018

About the Project

Project Idea

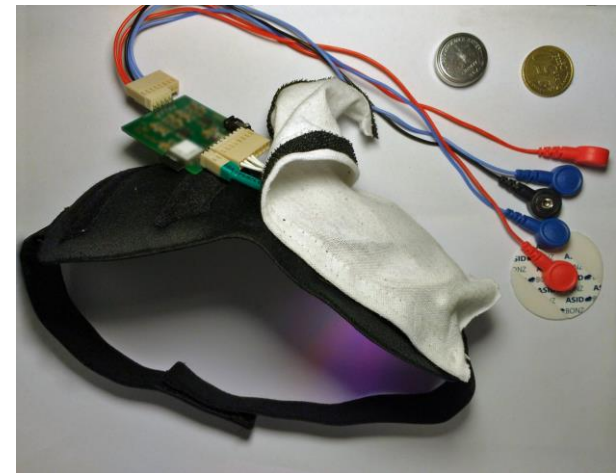
Interdisciplinary Research

First Data Collection

Research Questions

How can Students be supported in Achieving Individual Study Goals?

- **Combine and prepare previously unlinked data and information in a digital study assistant for self-responsible use**
 - Learning Management Systems (LMS) / Campus Management Systems (CampusMS)
 - Offers and Resources of other Universities / Institutions
 - Open Educational Resources (OER)
 - Data on individual learning and working behavior

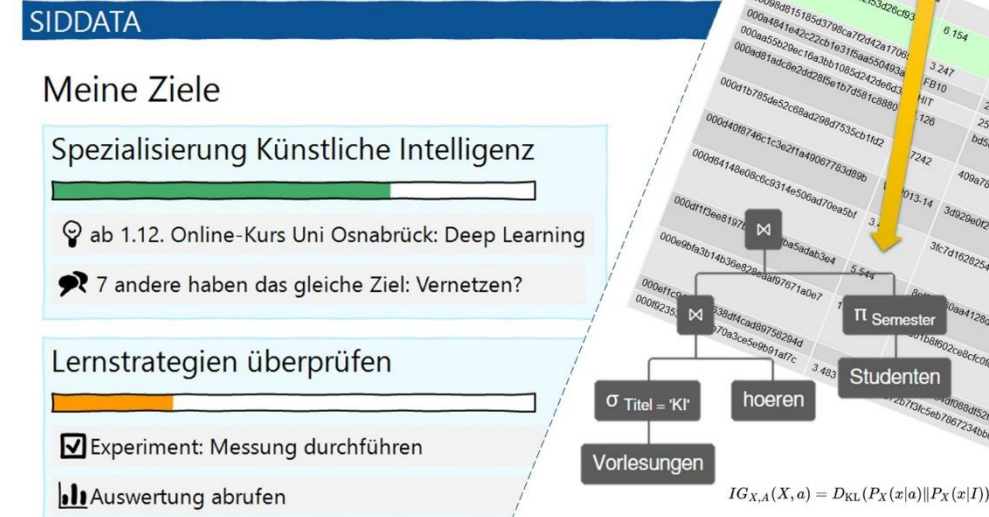


How can Students be supported in Achieving Individual Study Goals?

- **Encourage** students to **set** their own individual **study goals** (goal setting) **and to follow them**
- **Assist** students in making **informed decisions** for their own **individual study path**

➔ Data-driven assistant will be able to:

- give **hints, reminders and recommendations** appropriate to the situation
- support **self-monitoring** and **self-regulation**



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Meine Ziele

Spezialisierung Künstliche Intelligenz

ab 1.12. Online-Kurs Uni Osnabrück: Deep Learning

7 andere haben das gleiche Ziel: Vernetzen?

Lernstrategien überprüfen

Experiment: Messung durchführen

Auswertung abrufen

$IG_{X,A}(X, a) = D_{KL}(P_X(x|a) || P_X(x|I))$

Diagramm: Ein Baumdiagramm zeigt die Hierarchie von Vorlesungen über Semestern zu Studenten. Ein gelber Pfeil zeigt auf einen Knoten mit der ID 00044018746c1c3e21e49067763d89b.



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Interdisciplinary Research



Higher Education Research

- Collection of stakeholder requirements
- Evaluation with multimethod approach



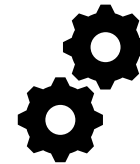
Cognitive Science

- Apply AI such as Machine Learning
- Physiological measurements of internal processes



Information Systems

- Empirical survey of success and failure factors
- Data Extraction processes and interfaces to LMS and CampusMS



Software Development

- Fast-to-use prototypes (agile)
- Hybrid IT project management models

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Project Idea

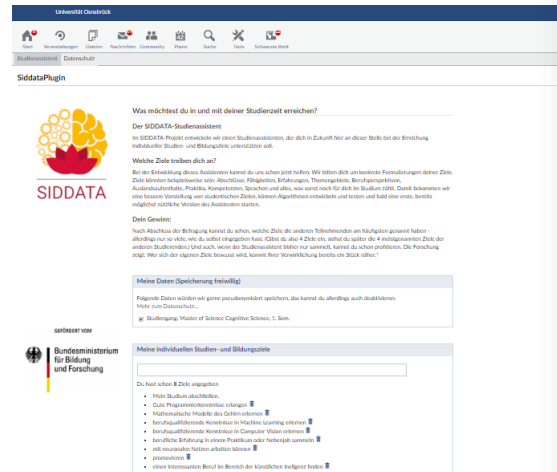
Interdisciplinary Research

First Data Collection

Research Questions

First Data Collection – First Prototype

- Individual Study Goals
- Frontend – LMS-Plugin (Stud.IP)
- Backend – Python/REST API



Meine Daten (Speicherung freiwillig)

Folgende Daten würden wir gerne pseudonymisiert speichern, das kannst du allerdings auch deaktivieren:
Mehr zum Datenschutz...

- Studiengang: Master of Science Cognitive Science, 1. Sem.

Meine individuellen Studien- und Bildungsziele

Du hast schon 8 Ziele angegeben

- Mein Studium abschließen. 🗑
- Gute Programmierkenntnisse erlangen 🗑
- Mathematische Modelle des Gehirn erlernen 🗑
- berufsqualifizierende Kenntnisse in Machine Learning erlernen 🗑
- berufsqualifizierende Kenntnisse in Computer Vision erlernen 🗑
- berufliche Erfahrung in einem Praktikum oder Nebenjob sammeln 🗑
- mit neuronalen Netzen arbeiten können 🗑
- promovieren 🗑
- einen interessanten Beruf im Bereich der künstlichen Inellgenz finden 🗑

First Data Collection – Individual Study Goals

Retrieved Data (Examples):

- “Complete my Studies”
- “Semester Abroad”
- “Finding a good job”
- “Learning Spanish”
- “Good Grades” ...
- “Being happy”
- “Abilities”
- “Experiences” ...

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Interdisciplinary Research

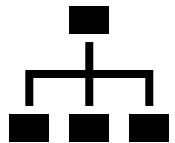
First Data Collection

Research Questions

Research Questions



Didactic and Pedagogical-Psychological Conditions of Success



Organizational Conditions of Success

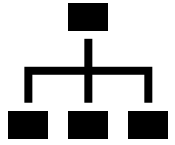


Technical Conditions of Success



Didactic and Pedagogical-Psychological Conditions of Success

- Can the **self-study competence** be **strengthened** by using the assistant?
- How can users be **sensitized successfully** for the **informed handling of their own data**?
- How can a **high actual usage** be **achieved**?



Organizational Conditions of Success

- How can **intra-organizational data** be made **available** and **accessible**?
- How can **teaching** and **inter-organizational data** be **exchanged**?



Technical Conditions of Success

- Which **technical conditions** are necessary for the **integration of data** from different systems?
- How can **attention processes** be analyzed?
- How can **heterogeneous data** be related to **individual study goals**?

Discussion



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