

From Debates to Building

- The academic world is currently stuck in circular debates about large language models instead of building tools
- Goethe University is moving past the superficial "Chat interface" and deep into the "Engine room"
- GWDG provided APIs are the key to ending the "Siloed Era" of isolated departmental software
- The goal is a hybrid model providing commercial State-of-the-Art performance today and total local sovereignty tomorrow

Sovereign, Scalable, Shared

Building the Future of Generative AI
at Goethe University Frankfurt



Pillar 1: The Infrastructure (The Engine Room)

- The initiative is led by the AG Generative KI at the direction of the University Presidency
- The AI-ToolLab serves as the secure, experimental laboratory managed by studiumdigitale
- Available tools include LobeChat for text generation and Whisper-based transcription for media
- A model-agnostic LLM API currently routes to leading commercial models while integrating GWDG-hosted models

Infrastructure: Compliance & Sovereignty

- Access requires the completion of a self-learning course aligned with the EU AI Act
- System access is securely managed through valid HRZ-accounts
- Strict data sovereignty is enforced, requiring users not to enter personal or sensitive information
- The architecture allows the university to eventually pivot to total local sovereignty without rewriting any code

Pillar 2: LearnMate (Scaling Pedagogical Support)

- LearnMate is an AI-based Learning Assistant designed to support students and teaching staff
- The Winter Semester 2025/2026 pilot launched with 3 courses and logged over 3000 interactions, known as traces
- The program is scaling to 15 courses for the Summer Semester of 2026
- A Data Prep Agent automates the training of the RAG system by structuring lecture scripts, slides, and videos

GOETHE UNIVERSITÄT FRANKFURT AM MAIN **LearnMate: KI-gestützte Lernbegleitung für Studierende und Lehrende** **studiumdigitale**

Kontext & Zielsetzung

Einsatzgebiet
Bereits im Einsatz in einigen Vorlesungen der Goethe-Universität

Zielgruppe
Studierende und Lehrende der Goethe-Universität

Ziel
Individuelle Unterstützung bei der Vor- und Nachbereitung von Vorlesungen

Warum es wichtig ist
Reduziert die Arbeitsbelastung der Lehrenden
Erhöht Barrierefreiheit und Engagement in Massenvorlesungen

Hauptmerkmale

Zusammenfassung von Vorlesungsinhalten

Erklärung von Schlüsselbegriffen und Konzepten

Auswahl zwischen Scaffolding oder Answer Mode

Bereitstellung prüfungsorientierter Fragen

Evaluation & Nutzung

Status
Pilot im realen Vorlesungsbetrieb (laufend)

Datenbasis
Über 3300 "Traces" (Interaktionen) seit Beginn aus 3 Vorlesungen

Datenschutz
Interaktionen werden anonymisiert DSGVO-konform protokolliert

Metriken
Quellen nachvollziehbarkeit (Traceability)
Akzeptanz und Art der Nutzung von Studierenden

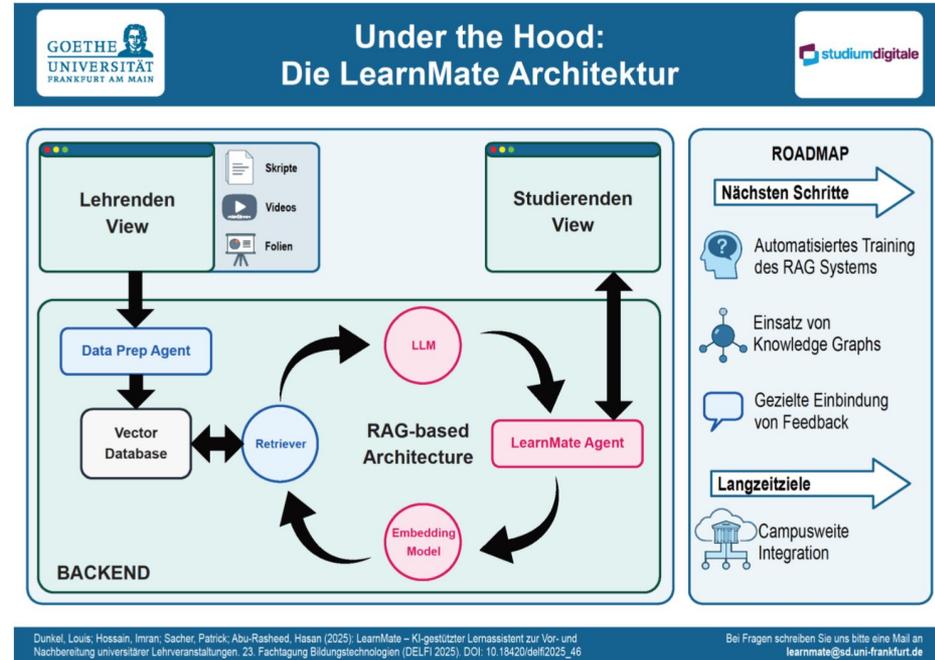
Dunkel, Louis; Hossain, Imran; Sacher, Patrick; Abu-Rasheed, Hasan (2025): LearnMate – KI-gestützter Lernassistent zur Vor- und Nachbereitung universitärer Lehrveranstaltungen. 23. Fachtagung Bildungstechnologien (DELFI 2025). DOI: 10.18420/delfi2025_46

Bei Fragen schreiben Sie uns bitte eine Mail an learnmate@sd.uni-frankfurt.de

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LearnMate: Under the Hood

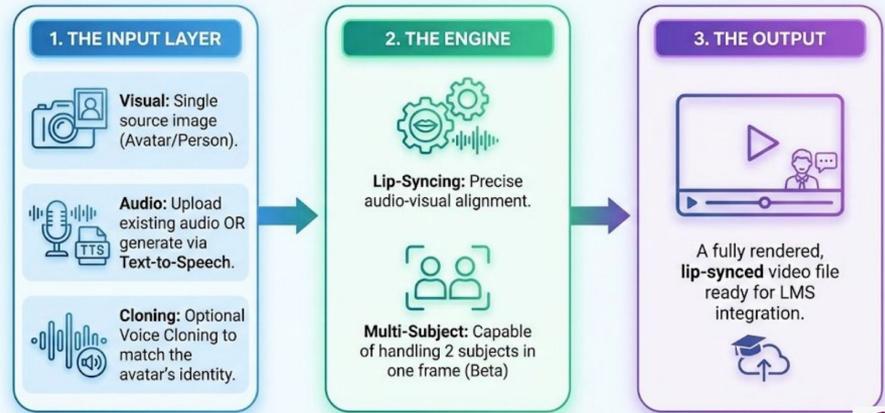
- Data preparation utilizes ChatGPT 5 alongside GWDG fallback models like Qwen3 VL and GLM 4.7
- GWDG Whisper allows for 500MB file uploads, bypassing the labor-intensive 25MB limits of commercial providers
- The system features a Scaffolding Mode to guide students through concepts rather than just providing direct answers
- All user interactions are anonymized and tracked via Langfuse in a strictly GDPR-conform manner



Pillar 3: VidGen (Scaling Academic Presence)

- VidGen was created to solve the "Content Bottleneck" caused by extreme faculty time scarcity
- The initial prototype uses RunPod, ComfyUI, and the Infinite Talk model based on the Wan 2.1 architecture
- The system requires only one source image and one audio file to generate a lip-synced video
- Chatterbox integration allows for advanced voice cloning using a reference image, an audio snippet, and raw text

THE VIDGEN WORKFLOW: INPUT → PROCESSING → OUTPUT



Automated Pipeline for Dynamic Academic Content



VidGen: Scaling to the Lecture Hall

- Full 45-minute lectures are processed using a "divide and conquer" method that stitches together one-minute chunks
- The team aims to move rendering from external cloud services to robust internal GWDG solutions
- GWDG Whisper is utilized to transcribe entire high-resolution course videos for the translation pipeline
- This pipeline enables the generation of multilingual scripts to give lectures a global educational reach

Pillar 4: The Community of Practice

- The community breaks down university silos using a "Digital Hallway" on the Element platform
- An Extended Core-Team drives decentralized innovation through project-based clusters
- Dedicated AI-Guides are stationed in every faculty to adapt central models into specific departmental workflows
- Knowledge and use cases are freely shared across the campus using HessenBox repositories

Conclusion: Building the Sovereign University

- Technology should empower the educator and make knowledge universally accessible, rather than replacing the human element
- Attendees are invited to contact the team to transfer these processes into their own research domains
- Attendees are encouraged to join the next AG-GKI community meeting to discuss departmental challenges
- **Together, we scale.**



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THANK YOU FOR LISTENING

