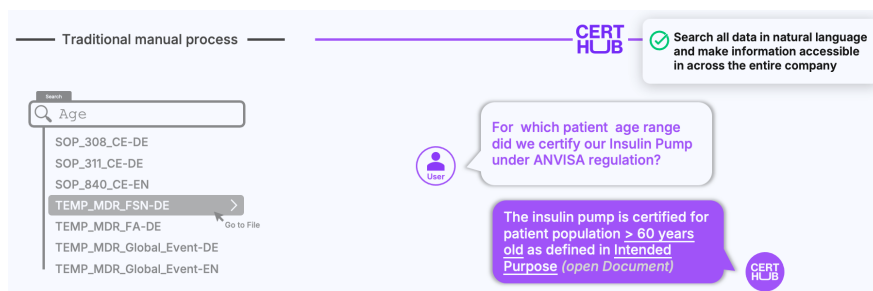


IDP / Project Study Proposal : Smart Assistant utilizing Retrieval Augmented Generation

We are a tech startup based in Munich building an end-to-end platform for the continuous certification of medical products and thus improving the healthcare provision for patients. The CertHub software helps to bring medical products years faster and easier to patients by digitizing and automating regulatory processes of manufacturers with our AI-fueled software, based on our +10 years of experience in regulated industries. Founded by an highly motivated team from TUM, LMU and UnternehmerTUM that values curiosity in our everyday work, we're committed to create a tangible real world impact and shape the future of the healthcare industry.

Project Goals

The main objective of the IDP Project is to design and implement a Smart Assistant functionality to assist our users to retrieve and generate relevant information from their existing data in seconds. We already have a technical concept leveraging the LangChain framework together with a milvus vector database to store our document-split embeddings for Q&A on the customers' newest structured quality and product data. Using the technique of retrieval augmented generation we enable the LLM to generate relevant, tailored and explainable responses.



- **WP 1 Data Preprocessing:** Prepare and clean a dataset from our pilot customers which can be used for testing of the algorithms in a later stage.
- **WP 2 Methods & Concept Evaluation:** We defined a concept and preselected several suitable algorithms for the process steps founded on LangChain. We expect the students to challenge the approach, evaluate qualitatively and decide for a approach based on the requirements and current academic literature.
- **WP 3 Retrieval Algorithm:** Heart of the service: Query, Search and Retrieve relevant Information
- **WP 4 Query Algorithm:** Query a pre-trained LLM for relevant natural language responses displayed to the software user
- **WP 5 Documentation and Data Generation:** Using predefined templates, the model can create detailed outputs for reports or code documentation. Further it can produce new data inputs such as product requirements tailored to the user's product context

⚡ Your benefits

🏢 **Secure TUM supervisor & ECTS:** thanks to our university network your academic supervisor at ERI is already assured, which grants you the ECTS for your project study



Vibrant and dynamic teams: Thriving in an environment that encourages collaboration and values each contribution

🎯 **Hands-on experience:** Apply your knowledge in LLM, data structures, Machine & Deep Learning and UX to create a real world impact

🦁 Your Profile



You'll fit perfectly if you study a technical subject such as Informatics, Robotics & AI, Electrical Engineering, MedTech, etc. and are already experienced with Python (or JavaScript) and optionally the LangChain framework



We are searching for highly motivated, innovation-minded students who prefer to work in a structured and proactive way, who have a growth mindset and an intrinsic motivation for learning.



Software/IT: DataBases: MongoDB; Analytics and Backend: Python and Django; Frontend: Next.Js and Vercel

👥 Who are we & how to reach us



StartUp **Certhub**, connected to TUM Entrepreneurship Research Institute, Chair of Biomedical Electronics Prof. Oliver Hayden (TUM CIT School) and UnternehmerTUM



Project Advisors: We already supervised several student projects and final theses. We are very much aware of the IDPs and practical courses formats since we have done them ourselves during our TUM study times. We want to offer a great learning experience to current students



The project study is offered in a **full-time or part-time** format for **2-4 students** with regular check-in meetings and milestones to track your progress.

If you are interested in pursuing this project study with us, we would love to hear what's your **motivation** and how your **skills** & background make you a suitable candidate (2-3 sentences or 1min video). Please contact **Leon** via leon.kobinger@certhub.de.

We look forward to working with talented and motivated students who are eager to tackle this exciting challenge!