



VET Studies Recommender for the Department of Education and Vocational Training

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The Department of Education and Vocational Training of the Government of Catalonia, with the support of IThinkUPC, has launched an innovative academic guidance solution based on artificial intelligence: the **VET Studies Recommender (FP PathFinder)**. This tool provides personalized and agile guidance for students, improves decision-making, and helps reduce dropout rates.

The Challenge

The Department of Education and Vocational Training of the Government of Catalonia faced the challenge of offering more efficient and personalized academic guidance to Vocational Education and Training (VET) students.

The lack of a fast, technological tool could lead to misinformation and hinder the proper choice of educational pathways, increasing the risk of dropout. The need was clear: to have a solution capable of providing immediate advice on qualifications, prerequisites, and regulations, while helping match each student's vocation with the available educational offer.

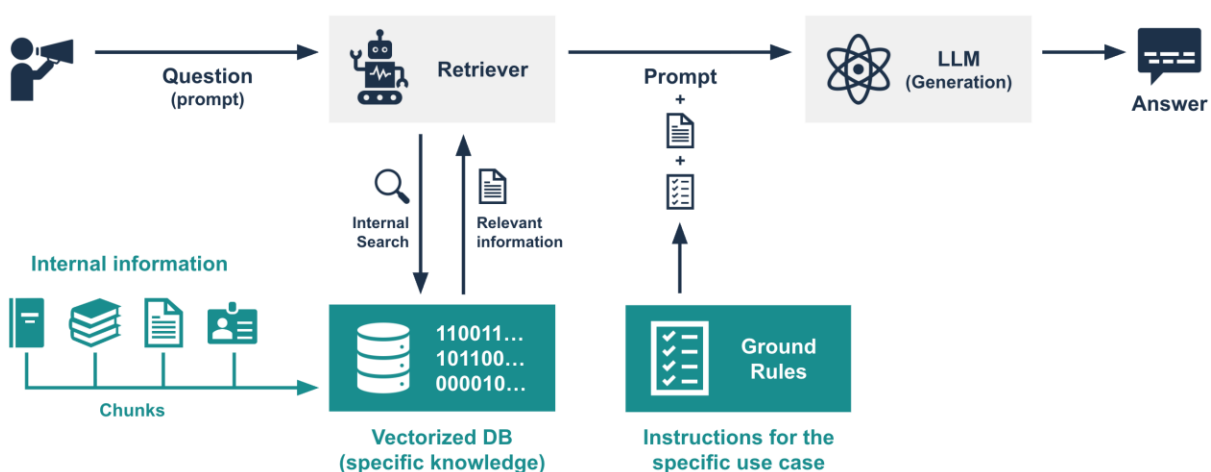
The Project

IThinkUPC designed and implemented an **intelligent chatbot** that, through artificial intelligence techniques and advanced language models (LLMs), can answer questions about VET study programs quickly, reliably, and in a personalized way.

To achieve this, several key actions were carried out:

- **Creation of the intelligent chatbot:** an interactive tool capable of guiding students before, during, and after pre-enrollment, answering questions and providing guidance on available learning pathways.
- **Knowledge management:** structured indexing and integration of official documentation and regulations into vector databases using a RAG (Retrieval-Augmented Generation) architecture.
- **Quality and consistency control:** definition of behavior rules and prompt design to ensure answers are aligned with the Department's needs. Up to five iterations of internal testing were conducted to guarantee reliability.
- **Detailed technical documentation:** ensuring the system's replicability and scalability in other educational contexts.

Chatbots with specific knowledge and behaviors



The diagram illustrates the RAG process, in which the information to be used has previously been indexed and stored, and the chatbot's behavioral instructions have been defined. When the user asks a question, the Retriever searches for the most relevant information within this database to answer it. The retrieved information is added to the prompt, along with the defined instructions, and passed to the LLM, which generates a coherent, precise response adapted to the knowledge and predefined rules.

The Results

The developed solution provides significant benefits for both the Department and students:

- **Impact on students:** personalized and immediate guidance, improved academic decision-making, and reduced risk of misinformation and dropout.
- **Strategic and operational impact:** the Department now has an innovative tool that proves the feasibility of AI in educational guidance and transforms the way students and schools access and manage information.
- **Transferability and scalability:** the system can be easily adapted to other educational contexts, establishing itself as a solution with great future potential.

Overall, the VET Studies Recommender, known as FP PathFinder, places the Department of Education and Vocational Training at the forefront of using digital technologies for academic guidance, reinforcing its commitment to a more personalized, efficient, and inclusive education.