

## **NLP and AI techniques for matchmaking between use cases and AI assets**

The project concerns the creation of an algorithm capable of matching use cases with relevant Artificial Intelligence (AI) assets, that range from human experts to datasets. Both the use cases and the assets will be modeled as a mixture of structured and unstructured information (free text), therefore the algorithm will be based on state-of-the-art techniques from the research field of Natural Language Processing (NLP), and more broadly AI and Machine Learning (ML).

The project is situated in the context of the StairwAI project, financed by the European Union under the call H2020-ICT-2020-2, which has the purpose of improving the AI4EU on-demand platform through AI methods. The objective of StairwAI is to make the platform easily accessible, allowing users with low technical expertise to retrieve highly technical assets that match their requirements. More specifically, this project concerns Work Package 5, which is focused on the development of horizontal matchmaking services that allow the users to retrieve relevant assets based on their needs.

The data will include a broad range of formats, including free text and structured symbolic information, and an ontology will be available. The use case may be described and specified in the form of documents, queries, or through a dialogical interface. The matchmaking algorithm will therefore combine and exploit heterogeneous data to make a coherent choice. To do so, the algorithm must partially rely on neural-symbolic techniques, capable of exploiting information in multiple formats and highlighting relationships between them. High-level NLP techniques, such as Argument Mining, will be applied with the purpose of finding dependencies between the concepts contained in the ontology, and consequently improve the matchmaking algorithm.

### **Requirements**

Since the objective of the project is the development of tools that must be integrated into a bigger and complex informatic ecosystem, and due to the high level of expertise required, the project is destined to candidates with a PhD and a strong background in computer science or computer engineering.

The project requires a deep knowledge of state-of-the-art NLP neural architectures and techniques. Moreover, expertise with neural-symbolic (or similar) techniques, and high-level NLP relational tasks such as Argument Mining is required. Finally, since the query information to describe the use cases may be processed through a dialogical interface, previous experience with dialogue agents is preferred.