

From argumentative-based recommendations to an interactive AI experience

Within the RESTART – “Telecommunications of the Future” programme (NRRP – NextGenerationEU), Logogramma’s research connects **Argumentation-Based Dialogue (ABD)** with deployable conversational recommender systems.

By modelling users’ preferences and beliefs, the system provides personalized recommendations supported by appropriate arguments, making recommendations more transparent, explainable and aligned with users’ interests.

INTELLIGENCE

Reason about preferences

A hybrid conversational recommender combines user profiling, Knowledge Graphs, Bayesian belief modeling, recommendation logic and LLM dialogue.

EXPERIENCE

Turn reasoning into interaction

PoC/Demo #3 integrates the developed modules into an Interactive Virtual Assistant, including web services, holographic-display testing and interaction design.

UNDERSTAND

REASON

EXPLAIN

One research path: understand what the user values, build a structured belief model, select a recommendation and explain it through natural dialogue – then expose the experience through a working demonstrator.

Make recommendations discussable

The first project phase focuses on a domain-independent conversational recommender where personalization and explainability are built into the reasoning process.

01 / PROFILE

Capture preferences

A user-initiative pre-profiling module lets people freely express the preferences they want to share.

02 / INTERPRET

Extract beliefs

LLMs identify beliefs, sentiment intensity and predicates. such as LIKES, and their corresponding predicates.

03 / ARGUE

Explain the choice

Graph reasoning, Bayesian belief modeling and argument selection support adaptive recommendations with transparent justifications.

What is inside the hybrid engine

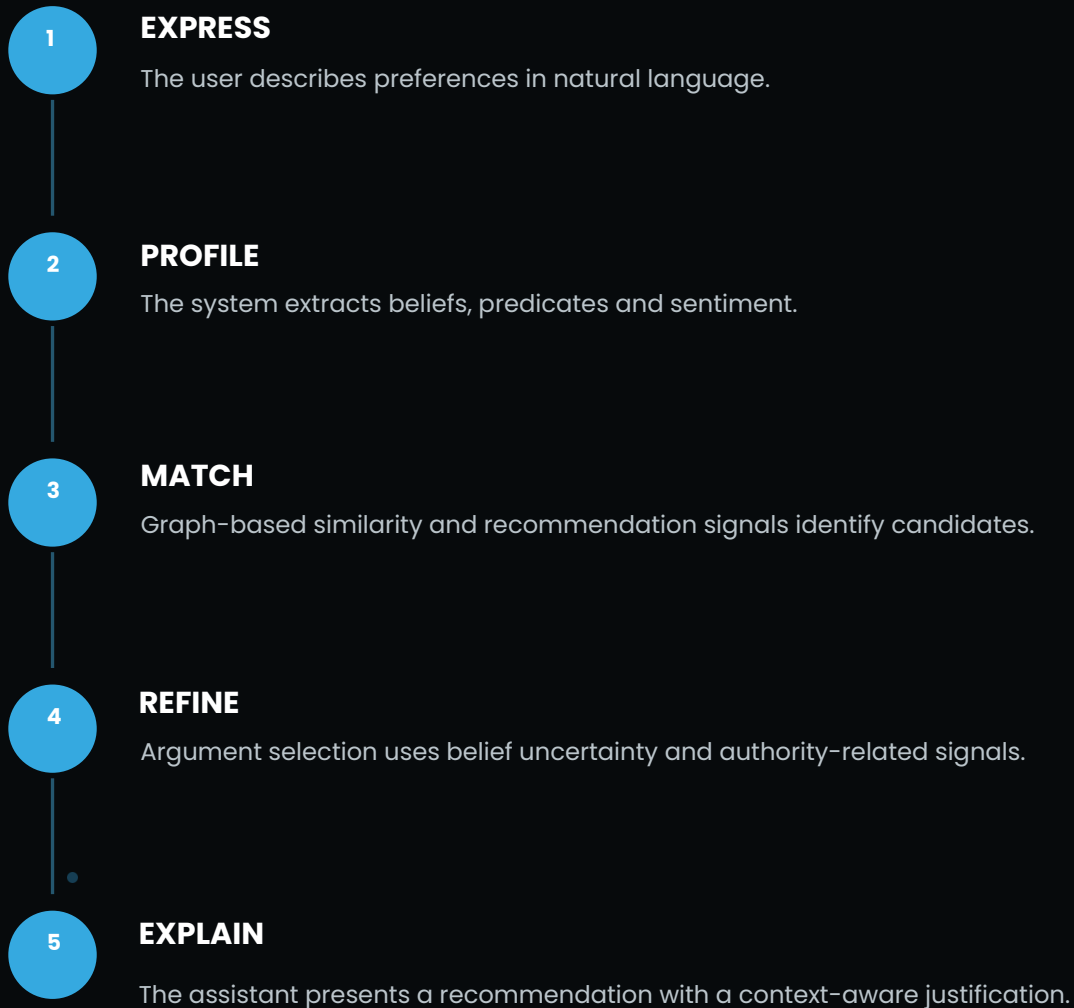


REPORTED OUTCOME

More transparent, engaging and adaptable recommendations

Evaluation across two domains reported improved transparency, engagement and cross-domain adaptability, while identifying scalability, prompt reliance and evaluation diversity as open challenges.

A clearer path from preference to explanation



DESIGN PRINCIPLE

Keep the reasoning visible without exposing technical complexity

The goal is not to make users inspect the model, but to make the recommendation understandable, contestable and easier to trust.

From research modules to a working virtual assistant

This projects phase integrates the conversational AI components into a PoC and extends the work toward deployment, interaction design and holographic presentation.

INTEGRATION

Integrated AI modules

The developed modules are brought together in the main infrastructure and the web services are dockerized.

INTERACTION

Experience design

Further work addresses interaction design for XR-oriented experiences and incorporates findings from conducted tests.

DISPLAY R&D

Transparent LCD prototype

Testing focused on transparent LCD systems, frontal-surface use, light-source positioning and a gate-style support infrastructure.

TECHNICAL SETUP

Prototype components

Extra-clear glass, HDMI/video decoding, LED illumination, Raspberry Pi 5 control hardware and an MPU-6050 gyroscope.

Key references

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