

ELOQUENCE Project Advances Multilingual Conversational AI for Safety-Critical Applications

July 12, 2024

ELOQUENCE, a Horizon Europe project, enhances conversational AI for safety-critical applications such as emergency response and healthcare. Supported by the European Commission, it boosts AI reliability across multiple languages and aligns with EU ethical standards to improve human-machine interactions.

Launched in January 2024, the [ELOQUENCE](#) project aims to **integrate European linguistic diversity and ethical values into AI technologies**. Leveraging innovative speech and language understanding technologies, ELOQUENCE targets critical needs in safety-related applications. The project emphasizes developing dialogue systems that are technically proficient and align with EU standards of privacy, inclusivity, and trust.

“Our aim is to develop AI systems that seamlessly integrate into safety-critical applications, enhancing response times and accuracy across Europe’s diverse linguistic landscape,” said **Dr. Jordi Luque, Coordinator** of the ELOQUENCE Project and Senior Research Scientist at Telefónica Research. “By focusing on multilingual and ethical AI, ELOQUENCE not only improves operational efficiencies but also establishes technical and ethical benchmarks that embody European values. This approach ensures AI complements rather than replaces human intelligence.”

ELOQUENCE introduces several key innovations to the field of conversational AI, leveraging a robust methodology that integrates advanced **machine learning and data analytics**. The project emphasizes iterative testing and validation across a broad spectrum of European languages, incorporating **self-supervised learning and human-in-the-loop systems** to ensure AI robustness and ethical compliance. By integrating cutting-edge speech and language understanding technologies into **safety-critical applications**, ELOQUENCE enhances **support for multilingual and multimodal environments**, including under-resourced

languages. This strategic approach enables real-time feedback and continuous refinement of AI models through pilot implementations, ensuring the solutions effectively meet the diverse needs of communities across Europe.

An essential aim of the ELOQUENCE project is to demonstrate the practical application and market viability of its AI technologies in real-world settings. Dr. Luque emphasizes the critical role of industrial partners, stating, “Our industrial partners are integral to the project, contributing both expertise and real-world testing environments to ensure that the solutions developed are robust and applicable.”

“Our work leverages multilingual and multimodal speech foundation models to boost conversational AI across all EU languages, particularly those less resourced,” said **Alessio Brutti, Tenured Researcher at FBK and Scientific Coordinator of the ELOQUENCE Project**. “Integrating transfer learning, self-supervised, and unsupervised learning with dynamic neural architectures, we are developing robust AI technologies that meet diverse data needs, advancing speech technology in collaboration with Europe’s top researchers.”

To foster market adoption and social acceptance, ELOQUENCE engages stakeholders through pilot projects in emergency call centers and smart home environments, supported by an independent Community of Experts. This essential testing in real-world settings is enhanced by community building, workshops, and discussions on AI benefits and ethics, ensuring alignment with European values.

Led by Telefónica Innovation, ELOQUENCE unites experts from academia, industry, and healthcare to drive innovation in AI. The project consortium includes notable European research institutes and tech companies, committed to delivering AI solutions that are robust and trustworthy, particularly for safety-critical applications.

For further details on the project and its developments, visit [eloquenceai.eu](https://magazine.fbk.eu/en/news/eloquence-project-advances-multilingual-conversational-ai-for-safety-critical-applications/).

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