Titolo: Conversational Agents: Mastering, Evaluating, Optimizing (CAMEO)

Codice Progetto: 2022ZLL7MW

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Durata: 28/09/2023 - 27/09/2025 (24 mesi)

Budget totale progetto: 214.442,00 €

Budget UNIPD: 95.114,00 €

Abstract del progetto: Conversational agents have overwhelmingly gained importance in the last years, being widely used in chatbots, smartphones, and smart home devices, e.g., Google Home, Amazon Alexa, Apple Siri. However, they still lack the capability to understand and support real-time conversations between humans and digital counterparts in a natural, diverse and engaging way.

CAMEO aims at enhancing conversational agents through an innovative use of user contextual information. In CAMEO, the user contextual information context becomes the internal knowledge of the system, including a representation of relevant information collected during past interactions of the user with the system. Such contextual information, enriched with external knowledge from the application domain considered, will be exploited to extract actionable insights enabling a rich and satisfying user interaction through advanced dialogue management, query answering, personalized search and recommendation. Moreover, CAMEO will, for the first time, jointly leverage search and recommendation approaches to improve conversational agents, also developing a principled unifying theoretical framework. Finally, CAMEO will provide researchers with better evaluation methodologies and a visual analytics environment for exploration and explanation of conversational agents behavior in order to better support them in the design, implementation, and optimization of such systems.

CAMEO will be driven and validated by a real-world use case (intent letter signed with the supporting company). The Industry 4.0 use case concerns remote support to field workers in maintenance operations on industrial machines.

CAMEO will deliver the following measurable results:

(R1) unifying theoretical framework and algorithms for conversational agents: a theoretical framework unifying conversational search and recommendation, better modelling the dialog context and the interaction with the user.

(**R2) visual analytics environment:** innovative visualization solutions to support the conversational agent and dialog explanation as well as description and exploration of their performance.

(R3) open public evaluation contest: an open public evaluation contest, where participants from industry and academia will challenge their solutions against the identified use cases. Datasets will be shared according to Open Science and FAIR principles, and integrated into EOSC.

(R4) Industry 4.0 application: a demo application to support the maintenance of industrial appliances where users application interact with a conversational agent helping them in the diagnostic and decision making processes.

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