

Job Profile

POSTDOC 24 months Project DISCOBOT — An engaging discussion robot for mental health preservation

1- Context

The École Nationale d'Ingénieurs de Brest (ENIB) operates under the supervision of the French Ministry of Higher Education and Research (MESR). Computer Science research in the school takes place at the CNRS UMR Lab-STICC: <https://labsticc.fr/en>.

The person recruited will carry out research at the Lab-STICC within the COMMEDIA (<https://labsticc.fr/fr/equipes/commedia>) and RAMBO (<https://labsticc.fr/fr/equipes/rambo>) teams, which are jointly leading this project.

The person recruited will work under the guidance of Anne-Gwenn Bosser (ENIB, Lab-STICC COMMEDIA), Mihai Andries and Christophe Lohr (IMT Atlantique, Lab-STICC RAMBO).

2- Project

The proportion of socially isolated elderly is rising steadily. Social isolation comes with accelerated cognitive decline. Lack of dialogue is a particular contributory factor, having an impact on the impoverishment of a person's vocabulary. One of the solutions being explored to solve this problem are conversational agents. Despite pilot studies on the use of conversational agents in clinical psychological therapy showing promises, there remains a high drop-out rate due to the lack of long-term commitment to communication with the conversational agent.

The aim of this project is to develop a long-term engaging conversational agent by combining a personality model and the ability to adapt to the user. The project will use a social robot as a platform (we have budgeted for both a Navel from Navel Robotics and a Furhat from Furhat Robotics).

Objectives :

The aim of the project is to develop a long-term, engaging conversational agent. This will be achieved through two techniques: (1) the definition of a personality model for the conversational agent and (2) its ability to collect, structure and reuse data learned about the speaker for the construction of an engaging dialogue.

The project will address the following scientific questions:

- How can we combat the negative consequences of social isolation on a human's mental health using a conversational agent?
- How can a person's biography be collected through empathetic interaction?
- How to produce an engaging dialogue from structured data on a person's life?

The project is based on several hypotheses:

- A conversational agent displaying its own personality traits and a certain empathy will arouse the interest of its interlocutor and maintain this interest in regular exchanges.
- Regular conversations, even with a technical object equipped with Artificial Intelligence, can maintain and even restimulate users' mental well-being.

Approaches

The project will combine Neural and symbolic approaches and techniques for meeting the challenge of long-term commitment.

- Knowledge graphs which offer a solution for managing both the agent's own personality and that of the user, which will then be learned by the system as the exchanges progress.
- a reactive planner to pilot dialogues: work on dialogue planning has provided a large number of fruitful approaches in terms of variability and personalization of the dialogues produced.
- models derived from inferential pragmatics, to faithfully represent the interlocutory dynamics of human conversation
- language models will be part of the operational pipeline.

3- Dates

We will consider all applications received by the 6th June 2024 and will continue to accept ongoing applications if recruitment is unsuccessful. The project will start upon recruitment, ideally by the 1st September 2024 and at the latest on the 2nd January 2025.

4- Application criteria

Eligibility criteria apply: applicants (1) must have spent at least 18 months out of France between 1 May 2020 and the start of the project, and (2) must have defended their PhD thesis less than 5 years ago.

Profile

The ideal candidate holds a PhD in computer science in the field of conversational agents or dialogue planning.

Desired Knowledge

Scientific English (reading, writing, speaking), Natural Language Processing, Knowledge Graphs, Dialogue Planning.

Desired Skills

Language processing libraries (e.g. spaCy, nltk), graphical databases (e.g. neo4j), ontologies (e.g. ConceptNet), use of Large Language Models, experience with ROS (optional).

Languages

Knowledge of English is required.

Knowledge of French is an advantage, but is neither necessary nor a selection criterion.

5- Keywords

Keywords characterizing the teams within which the research will take place are:

COMMEDIA: Adaptive Interfaces, Affective Computing, Cognitive Models, Computational Narratives, Embodiment, Animated Conversational Agents.

RAMBO: Cognitive Robotics, Ambient Assistance System, Human-Robot Interaction.

6- Main place of work

ENIB, European Center for Virtual Reality, Technopôle de Plouzané.

The school is located in the Technopôle Brest-Iroise, on the ocean front and a close neighbour to the IMT School where the other participants of the project are located.

Brest is a culturally active city with a strong seaside vibe. It has a well-developed public transportation network, and the cost of living regularly places it at the top of the rankings of least expensive student cities.

7- Salary

2850 € gross per month (approx. 2400 € net).

Benefits: Reimbursement of half of transportation pass.

Contacts, how to apply

Please send

- CV
- motivation letter
- PhD defence report or equivalent
- recommendation letter

by email with the subject "DISCOBOT application" to:

- Mihai Andries: mihai.andries[at]imt-atlantique.fr
- Anne-Gwenn Bosser: bosser[at]enib.fr
- Christophe Lohr: christophe.lohr[at]imt-atlantique.fr