



**Offer #2023-06629**

## **PhD Position F/M The role of rapport in human-conversational agent interaction: Modeling conversation to improve task performance in human-agent interaction**

**Contract type** : Fixed-term contract

**Level of qualifications required** : Graduate degree or equivalent

**Other valued qualifications** : Ecole d'ingénieur (computer science or engineering degree)

**Fonction** : PhD Position

**Level of experience** : Recently graduated

### **Context**

The objective of this project is to build embodied conversational agents (also known as ECAs, or virtual humans, or chatbots, or multimodal dialogue systems) that have the ability to engage their users in both social and task talk, where the social talk serves to improve task performance. In order to achieve this objective, we model human-human conversation, and integrate the models into ECAs, and then evaluate their performance.

This project is located at the prestigious computer science institute INRIA in downtown Paris. It takes place in the context of the PRAIRIE Institute for Interdisciplinary Research on AI - one of the four 3IA institutes launched by the French government in 2019. For more information see

<<https://www.inria.fr/fr/inria-participe-la-creation-de-linstitut-prairie>>  
and  
<<https://prairie-institute.fr/>>

### **Assignment**

The doctoral student chosen for this project will acquire a broad range of skills in the analysis and synthesis of conversational behavior. S/he will build a corpus of data on the social aspects of human-human conversation within a particular domain, and annotate and analyze those data. He or she will derive computational models from the results of the data analysis as well as based on relevant prior literature, and refine those models using structural equation modeling and other tools. The doctoral student will integrate the computational models of social phenomena into a functioning ECA using machine learning approaches to dialogue systems, such as deep reinforcement learning and LSTM (among others), and will evaluate whether integrating the new models improves the performance of the ECA. Applications of the work will be as varied as virtual personal assistants such as Alexa, Siri, and Google Now and intelligent tutoring systems.

For more information on the project, potential candidates should look at the SARA (Socially-Aware Robot Assistant) website at <<http://articulab.hcii.cs.cmu.edu/projects/sara/>> and read some of the publications associated with the project, here <<http://articulab.hcii.cs.cmu.edu/publications/>>

### **Main activities**

- Design and carry out experiments
- Analyze their results
- Implement modules in working socially-aware dialogue systems
- Write articles
- Present work in conferences
- write a doctoral thesis

### **Skills**

Technical skills and level required :

Solid competence in deep learning applied to language (prior experience working with dialogue systems is a strong plus), competence in statistics, advanced competence in programming in language such as Python and C++, and use of tools such as Tensorflow and Pytorch.

Languages :

French and English

Relational skills :

ability to work in a team, and collaborate with others from different disciplines and backgrounds.

Other valued appreciated :

Theoretical background in one or several of the following: cognitive science, linguistics, conversational analysis, sociolinguistics, social cognition, learning science.

## Benefits package

- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking (after 6 months of employment) and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training

## General Information

- **Theme/Domain** : Language, Speech and Audio Statistics (Big data) (BAP E)
- **Town/city** : Paris
- **Inria Center** : [Centre Inria de Paris](#)
- **Starting date** : 2024-03-01
- **Duration of contract** : 3 years
- **Deadline to apply** : 2024-06-30

## Contacts

- **Inria Team** : [ALMANACH](#)
- **PhD Supervisor** :  
Cassell Justine / [justine.cassell@inria.fr](mailto:justine.cassell@inria.fr)

## About Inria

Inria is the French national research institute dedicated to digital science and technology. It employs 2,600 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

## The keys to success

- Passion for interdisciplinary research at the nexus of AI and Social Sciences
- Ability and desire to read prior work and to build upon it in one's own work
- Ability to work in a team and independently

**Warning** : you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.

## Instruction to apply

Documents required in the candidate's file :

- letter of motivation describing how the candidate's past experience prepares him/her to work on this topic
- CV
- A summary of grades (relevé de notes de Master)
- Names and contact information for 2 or 3 people who can write letters of recommendation

**Defence Security :**

This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST). Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

**Recruitment Policy :**

As part of its diversity policy, all Inria positions are accessible to people with disabilities.