ISIR, Sorbonne University is looking for a motivated candidate for a Ph.D. thesis on the topic:

Modeling Interpersonal Adaptation Dynamics for Human-Agent Interaction

Context

This thesis aims to develop a socially interactive agent SIA to provide assistance in a particular healthcare context. The SIA can facilitate the social attentional impairments of patients by reducing the human's natural multitude of social cues and providing only specific and relevant social information. It is possible to instantiate verbal/non-verbal behavior parameters depending on the health protocol without being influenced by the patients as a human would. Another of its major advantages is to control its turn-taking management skills. The thesis focuses on this latter question. One main objective of the Ph.D. is to develop an SIA able to adapt or not its non-verbal behaviors dynamically in the function of its interlocutor's behaviors. The adaptation model will capture intrapersonal and interpersonal coordination (Schmidt& Richardson, 2008; Woo et al., 2023a, 2023b). Prompt and feedback behaviors will have to be defined to ensure the participants are active (verbally and nonverbally) and engaged in the interaction.
After a review of the literature on communicative and social behaviors and on SIA models, 3 main steps are envisaged:
1) Analyzing corpus to identify behavior cues
2) Model turn-taking dynamism including intrapersonal and interpersonal adaptive mechanisms for the SIA using deep learning approaches
3) Conduct experimental studies: The SIA's turn-taking and adaptation mechanisms will be manipulated to measure its impact on the perception of the human participant as well as on the quality of the interaction. These measurements will be obtained through questionnaires and through analysis of the human participant's behavior while interacting with the SIA.
The SIA will be developed within the Greta agent platform (https://github.com/isir/greta).

The Ph.D. candidate will elaborate contributions in the field of neural multimodal interactive behavior generation of virtual agents.

Supervision team: Catherine Pelachaud and Ghiles Mostafaoui
The Ph.D. will be hosted at ISIR, Sorbonne University. It is financed by the ANR project Enhancer

Required Experiences and Skills
- Master or engineering degree in Computer Science or Human-Agent Interaction
- Strong knowledge of deep learning
- Proficient in Java
- Proficient in Python (NumPy, SciPy), TensorFlow/Pytorch environment, and distributed computation (GPU)
- High productivity, capacity for methodical and autonomous work, good communication skills.

Applications:

Date limit: November 1st 2023.
Starting date of the Ph.D.: end of 2023/early 2024

If interested, send CV, master M1 and M2 grades, motivation letters, and names of referees to Catherine Pelachaud (catherine.pelachaud@upmc.fr) and Ghiles Mostafaoui (ghiles.mostafaoui@u-cergy.fr)
Reference:

Schmidt, R. C., & Richardson, M. J. (2008). Dynamics of interpersonal coordination. In Coordination: Neural, behavioral and social dynamics (pp. 281-308). Berlin, Heidelberg: Springer Berlin Heidelberg.

Woo, J., Pelachaud, C., & Achard, C. (2023a). ASAP: Endowing Adaptation Capability to Agent in Human-Agent Interaction. In Proceedings of the 28th International Conference on Intelligent User Interfaces (pp. 464-475).

Woo, J., Grimaldi, M., Pelachaud, C., & Achard, C. (2023b). IAVA: Interactive and Adaptive Virtual Agent for Cognitive Behavioral Therapy. In Proceedings of the 23rd ACM International Conference on Intelligent Virtual Agents