Aix-Marseille Université
Master Informatique
Parcours Science et Ingénierie des Données

Stage M2

"Using deep learning to study children's multimodal behavior in face-to-face conversation"

Summary and skills required

The study of how children develop their conversational skills and how these skills help them learn from others is an important scientific frontier at the crossroad of social, cognitive, and linguistic development with important applications in health (e.g., mitigating communicative difficulties), education (e.g. improving teaching practices), and child-oriented AI (e.g., virtual learning companions). Recent advances in Natural Language Processing and Computer Vision allow going beyond the limitations of traditional research methods in the lab and advance formal theories of conversational development in real-life contexts. In this internship, we will leverage some of these recent techniques (e.g., multiscale recurrent neural network, see [1]) to build a model that mimics how children behave in face-to-face conversations with their caregivers and how this behavior develops across middle childhood. The intern will have access to the child-caregiver conversation data collected by our team [2]. The data has already been hand-annotated for non-verbal behavior (e.g., nods, smiles, and frowns) and is currently being transcribed for verbal data and processed for extraction of vocal/acoustic features. The interns will contribute to the development of a model (building on an existing pipeline in PyTorch) that aims at studying how multimodal cues from the vocal, visual, and verbal dimensions contribute to predicting the child's coordination behavior in conversation (e.g., turn-taking management, negotiating shared understanding with the interlocutor, and the ability for a coherent/contingent exchange). The intern will collaborate closely with several members of our team, involving computer scientists, psychologists, and linguists (see our website www.cocodev.fr) as well as members from the CoML team. Inquiries should be addressed to Abdellah Fourtassi (abdellah.fourtassi@gmail.com).

[1] Roddy, M., Skantez, & Harte (2018). Multimodal Continuous Turn-Taking Prediction Using Multiscale RNNs. *In Proceedings of the 20th ACM International Conference on Multimodal Interaction*

[2] Bodur, K., Nikolaus, M., Kassim, F., Prévot, L., & Fourtassi, A. (2021). ChiCo: A Multimodal Corpus for the Study of Child Conversation. *In Proceedings of the International Workshop on Corpora and Tools for Social Skills Annotation. 23rd ACM* International Conference on Multimodal Interaction

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Other Détails

Stage au Laboratoire Informatique et Systèmes, équipes TALEP & CoCoDev
Durée du stage : 5 à 6 mois
Localisation : LIS
Gratification : 600 euros/mois