

**Marie Skłodowska Curie Action –Postdoctoral Fellowship 2024
(MSCA-PF-2024)**

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Department /Institute /Centre	Name	Information Processing Telecommunication Center ETSI de Telecomunicación
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Research Area		Information Science and Engineering (ENG)
Brief description of the Centre/Research Group		<p>https://blogs.upm.es/gthau/: The Speech Technology and Machine Learning Group (THAU) is part of the Department of Electronic Engineering (IEL), which belongs to the Universidad Politécnica de Madrid (UPM), at Escuela Técnica Superior de Ingenieros de Telecomunicación (ETSIT).</p> <p>Our research activities started in 1978, being our group devoted to research and development in various areas of speech science and technology, including speech synthesis and recognition, speaker diarization and identification, machine translation, conversational systems, and different aids for the handicapped. Inspired by the advances in M/LLMs pre-trained models for combining different modalities and information, our group is also researching with new modalities like using inertial sensor for detecting different health conditions, image, and video processing for sign language recognition and multimodal chatbots; as well as evaluating and generating emotional and common-sense responses or working with NLP techniques for reasoning and understanding on AI-based dialogue systems.</p>
Project description		<p>Current M/LLMs are incredibly powerful allowing a large progress in text, image, and video processing. These models are mainly pretrained on huge amounts of data and then aligned with instruction-based techniques. However, this process is time-consuming and very expensive, besides being limited in terms of controllability. In this project we will propose a new DNN-based architecture that can be used to develop more advanced AI chatbots that can be explicitly trained to follow goals and expectations, include planning, common-sense and theory-of-mind capabilities. The proposed project will be part of the activities of the EIC-PATHFINDER funded project ASTOUND in which consciousness and awareness are being developed in chatbots. The project will have three main phases: a) creation and evaluation of a novel dataset for training the proposed chatbot, b) design and implementation of the DNN architecture that combine self and other goals and reasoning, as well as short and long-term planning and memorability, and c) the objective and subjective evaluation of the system. The candidate will publish in at least one top journal/conference for each phase. Finally, the candidate will implement a PoC demo for further commercial and research applications for creating a larger scientific and industry impact.</p>
Applications: documents to be submitted and deadlines		<p>Applicants must send a detailed curriculum vitae with emphasis in publications and experience on DL/ML techniques, a letter of motivation, at least two reference letters with contact details of the referees, and detailed transcripts for bachelor, master, and PhD. Experience with proposing new DL architectures, training and fine-tuning M/LLMs, dataset creation and annotations, will be considered an important plus. Deadline: April 30, 2024.</p>