Call for Ph.D. thesis applications for

Role of auditory and somatosensory feedback
is the accuracy and regularity of speech articulation

RESEARCH FIELD: Neurosciences, Psychological sciences
SUPERVISION: Takayuki ITO, Pascal PERRIER, Fabrice SARLEGNA
SCIENTIFIC DEPARTMENT: GIPSA-lab (UMR 5216: primary) and ISM (UMR7287: secondary)
DOCTORAL SCHOOL: Ecole Doctorale Ingénierie pour la Santé, la Cognition et l'Environnement (EDISCE) in University of Grenoble Alps.

Envisioned start and duration: The funding will cover the 3 years of a PhD (2 135 €/month) in France, and start any time from November 2021 in 5 months.

Job description: The successful candidate will be expected to take a leading role in the implementation, execution, and interpretation of cognitive paradigms performed in normally-developed, and sensory-impaired individuals to examine a hypothesis concerning contributions and interactions of somatosensory and auditory feedback in on-line compensation for speech production stability. This position is related to a project funded by Agence Nationale de la Recherche (ANR).

Requested expertise: We expect a candidate with excellent verbal and written communication skills who is strongly motivated in speech science and neuroscience field and has substantial computer programming experience (in particular MATLAB and R). General engineering knowledge and skill are recommended, but not mandatory.

Eligibility criteria: Applicants must hold a Master’s degree (or be about to earn one) or have a university degree equivalent to a European Master’s (5-year duration).

Scientific description: Speech production stability, i.e. the accuracy and the regularity of underlying movements, is crucial for efficient speech communication in basic daily situations. While auditory and somatosensory feedback contribute to speech motor control, it is still unknown how these sensory inputs interact to ensure the required stability. Our hypotheses are 1) that somatosensory feedback plays a predominant role in quick on-line compensation due to shorter response latency than auditory feedback, and 2) that the somatosensory-based stability mechanism is acquired during speech development to achieve speech-relevant auditory goals. We examine those hypotheses by measuring tongue posture stabilization in sensory-intact and sensory-impaired individuals in behavioural tests using tongue perturbations and by comparing the performance across subject groups. The experimental methodology is based on a series of original paradigms developed in GIPSA-Lab, using a robotic device enabling to produce mechanical perturbation on the tongue in a precisely controlled way both in space and time. Our project will provide clues as to the mechanisms that enable speech production stability using sensory feedback.

Applications: Interested candidates should submit required documents (a cover letter describing their research experiences, interests, and goals, a curriculum vitae etc.) at https://bit.ly/2VfTR9F.

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