LONDON'S GLOBAL UNIVERSITY

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To Whom It May Concern

I am delighted to invite Dr Christine Nussbaum to visit UCL Speech, Hearing and Phonetic Sciences (SHaPS) on the PRIME Program funded by DAAD.

Dr Nussbaum has recently published a landmark paper in *Trends in Cognitive Neurosciences* that proposes a cognitive framework within which to understand perceptions of voice naturalness. For the PRIME program, she has outlined a series of experimental studies to test this framework, by measuring how experience with atypical voices – specifically, synthetic voices – might impact on listeners' perceptions of naturalness and other person characteristics from audio voice samples.

I will act as Dr Nussbaum's mentor at UCL for this research visit. My lab and department are perfectly placed to host Dr Nussbaum for the proposed fellowship. The London Vocal Communication Laboratory (VoCoLab: https://www.vocolab.net/) comprises a multi-site team of academics, research fellows and research students across UCL and Queen Mary University of London, using methods from experimental psychology, speech science, and engineering to address questions about how humans express and perceive information in voices. Between the two PIs - myself and Dr Nadine Lavan - we have published several of the most influential theoretical and empirical works on voice identity perception and expression of the last decade. We have a specific line of interest in the perception of synthetic and AI-generated voices, and I have recently completed a Mid-Career Fellowship funded by the British Academy that investigated human perception of voice clones (i.e. AI-generated audio "deepfakes" of human identities). My fellowship work did not specifically address naturalness perception, and I am eager to work with Dr Nussbaum to ask new questions about this specific aspect of synthetic voice perception through her DAAD award. We will in return provide Dr Nussbaum with advice and experience in: linguistic and phonetic considerations for stimulus selection, acoustic processing of voices, and approaches to large-scale online data collection.

Crucial for Dr Nussbaum's planned research activities, we have an institutional licence for Gorilla Experiment Builder to support online data collection. The state-of-the-art research facilities at UCL Chandler House include several sound-treated rooms and specialist equipment for auditory perception experiments, and can be used at no charge for the planned in-person Study 2 of the PRIME research proposal. Our world-leading MSc programme in Language Sciences has recently launched a successful strand in Speech Technology, and I would suggest that Dr Nussbaum will benefit from auditing relevant modules on this strand during her visit (e.g. PALS0039 Introduction to Deep Learning for Speech and Language Processing; PALS0051 Advanced Speech Data Processing in R). As a member of the broader Division of Psychology and Language Sciences at UCL, Dr Nussbaum will also have the opportunity to attend regular seminars in Experimental Psychology, the Institute of Cognitive Neuroscience, and more. In practical terms, Dr Nussbaum will have access to a work station, computing and library facilities, and the wider libraries, museums and study spaces of UCL.

UCL SHaPS is a globally-renowned centre of excellence for the study of human vocal communication, bringing together researchers from phonetics and linguistics, experimental psychology and neuroscience, as well as engineering and computer science. The department is a highly desirable destination for research visitors from around the globe, and as a result it is the policy of our Head of Research Department that we cannot accommodate every request that is made by potential visitors without establishing that the visit will bring a clear benefit to the department. It is very clear to us that Dr Nussbaum will both benefit from *and enhance* the research culture of the VoCoLab and of UCL SHaPS. She will participate in our regular VoCoLab meetings, where we pitch research plans, present our findings, and discuss latest developments – key to these contributions will of course be Dr Nussbaum's highly relevant perspectives on conceptual and methodological (e.g. voice morphing) approaches to the study of synthetic voice perception. She will also assist with supervision of research project students on BSc and MSc programmes in the department, as well as provide mentorship to our 3 full-time PhD students in the VoCoLab – this will be extremely beneficial for the PhD students, given we currently have only 1 postdoctoral colleague to offer this support. We also run an internationally-respected seminar series in speech science – the UCL Speech Science Forum – and I propose that Dr Nussbaum contributes a talk to this series during her stay at UCL.

I am confident that a research stay at UCL as part of DAAD's PRIME Program will be of great benefit to Dr Nussbaum's personal career development, and will enhance our own experience through our shared research enterprise. On behalf of the lab and the department, I express my strongest support for Dr Nussbaum's application.

Yours faithfully,

Prof Carolyn McGettigan
Chair in Speech and Hearing Sciences

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To Whom It May Concern,

I am very pleased to support Dr Christine Nussbaum's application to the DAAD PRIME program and to invite her to visit the London Vocal Communication Laboratory (VoCoLab), which spans the research groups at the Department of Psychology at Queen Mary University of London and Speech, Hearing and Phonetic Sciences at UCL. Our lab is ideally suited to host her for this fellowship as the VoCoLab (https://www.vocolab.net/) is a collaborative, multi-institutional team of researchers working across experimental psychology, speech science, and cognitive neuroscience.

During Dr Nussbaum's research revisit, she will be primarily based at University College London, although I will act as Dr Nussbaum's mentor, alongside Prof Carolyn McGettigan. We have a strong research focus on the perception of human and synthetic or AI-generated voices. I am particularly excited about the opportunity to collaborate with Dr Nussbaum on her proposed work on synthetic voices and voice naturalness. Her work complements ongoing projects in our lab in which we examine how human-like or natural synthetic voices sound. We will support Dr Nussbaum with our expertise in stimulus design, acoustic analysis, and large-scale online data collection. She will also be an active participant in our regular lab meetings, where we discuss research plans, share findings, and engage with the latest developments in the field. In return, Dr Nussbaum will share with us her expertise in acoustic manipulations of naturalness via voice morphing algorithms.

In sum, Dr Nussbaum's proposed studies form an ambitious program of research that will open up new avenues for understanding how listeners engage with synthetic voices. I am confident that Dr Nussbaum's visit will be mutually enriching, will contribute significantly to our shared research goals, and I would greatly enjoy the opportunity to be a mentor to Dr Nussbaum if this application is funded.

Sincerely,

Nadine Lavan