Project Reference: CTE_EMERC_Stephen_Dance_002_25_26

About the Project

This is an exciting PhD opportunity within the College of Technology and Environment (CTE) at London South Bank University (LSBU). The successful candidate will receive a tuition fee waiver beginning in September 2025 for 4 years, including the write-up year.

Project Title

New Technology for Audio, Acoustics and Hearing

Project Overview

The WHO states that 20% of the world's population has hearing loss, and 480 million need an intervention (WHO, 2025). Consumer-grade assisted hearing technology is coming to market (Apple, 2024) as well as new assistive devices, including remote microphones and transmission technologies (Auracast, 2025). A methodology is needed to independently assess the effectiveness of these emerging devices and technologies. They aim to reduce the potentially deleterious effects of airborne acoustics and background noise, increasing the limited 2-3m range of traditional hearing aids. This is achieved using either near-field microphones (lapel mics) or highly directional beam-forming microphones. The wanted signal (speech) is transmitted either by FM or Bluetooth technology directly to the user's hearing aids, or via an intermediary device such as a neck loop that then transmits the signal to the hearing aid. However, it appears the microphones often pick up the room's acoustics much more than is heard when listening naturally through the ear. Furthermore, the inherent latency of the digital signal processing and transmission technology introduces a delay to the received signal that can degrade intelligibility and potentially interfere with lip reading. These issues will need to be established systematically through the assessment of people with normal hearing, (assistive listening devices are also often used by this group) as well as a sample of hearing-impaired listeners, listening both in the aural environment and to the identical speech signal heard through assisted listening systems in simulated settings such as classroom and coffee shops. The hypothesis is that the electro-acoustic signal boosts the signal-to-noise ratio, but the in-ear 'loudspeaker' devices do not allow the brain to de-reverberate the signal. The project will create a reliable subjective assessment method to quantify how much the speech signal is degraded under different conditions and the potential improvement an assistive listening system can provide. This would be achieved through speech intelligibility tests using our existing pre-recorded word lists. The research results would feed into current and future technology standards such as IEC 63087 "Assistive listening devices and systems for active assisted living".

Who Are We Looking For?

- Open to any UK or international candidates. Starting in September 2025.
- The candidate must meet the minimum entry requirements for our PhD programme by clicking the 'Apply' link.
- Experience of acoustics, speech, hearing or sound measurements is essential.
- A keen interest in audiology, human interface and speech communication is highly desirable .

Selection Criteria:

- Academic Qualifications - You should normally have at least a 2.1 honours degree from a UK University or an equivalent qualification in engineering, computer science, etc.
  - Research and Analytical Skills – Ability to research subjects using libraries, the internet, and other information resources, ability to conduct comprehensive literature reviews, experience in qualitative and quantitative data collection and analysis, strong research design and methodology skills, ability to independently collaborate with stakeholders, and excellent academic writing and communication skills.

- **Professional Skills -** Project management and organisational skills, ability to work independently and as part of a team, problem-solving and critical thinking skills, and adaptability and willingness to learn new skills.
- Software and Modelling Experience - Experience developing and utilising spreadsheet-based models (e.g., Microsoft Excel) to an advanced level. Experience with other software packages relevant to the discipline would be an advantage.
- Communication Skills—The candidate should be highly motivated, able to collaborate, have good visual, oral, and written communication skills, and communicate the work's outcomes to commercial, industrial, and scientific audiences.
- Teamwork and Collaboration - Ability to work with industrial and academic supervisors.
- Language Proficiency - Overseas applicants must have a minimum English language IELTS score of 6.5, with at least 5.5 in any of the components.
- Understanding of Equality and Diversity - Able to demonstrate an understanding of equality and diversity and their practical applications.
- Visa and Legal Requirements - Non-EU/EEA nationals may need to apply to the Foreign and Commonwealth Office (FCO) for clearance from the Academic Technology Approval Scheme (ATAS).

Training & Development Opportunities

Doctoral students at London South Bank University (LSBU), through the London Doctoral College (LDC), benefit from a rich and structured training environment designed to support academic excellence and professional development. All PhD candidates are offered a comprehensive programme of workshops and seminars covering essential research skills, including research design, data analysis, academic writing, ethics, and project management. These sessions aim to support students through every stage of their doctoral journey—from literature review and methodology to thesis completion and viva preparation. Postgraduate researchers can access advanced, discipline-specific training aligned with their research focus. LSBU's doctoral training environment is designed to build deep expertise in a chosen research area and the broader skills necessary for successful careers in research, industry, and beyond.

About the College

The College of Technology and Environment (CTE) at London South Bank University (LSBU) is a newly formed academic college, launched in January following the university's recent reorganisation. Led by Executive Dean Professor Chris Harty, CTE brings together four schools: Architecture & Planning, Construction, Property & Surveying, Engineering & Design, and Computer Science & Digital Technologies. The college fosters a collaborative and interdisciplinary environment, addressing the complex challenges of the built and digital environments. CTE strongly emphasises research, with doctoral students playing a key role in shaping and contributing to the college's research agenda. CTE prepares students to become future leaders through innovation, industry partnerships, and a commitment to sustainability. With a focus on real-world impact and academic excellence, the college is set to drive forward LSBU's vision of delivering applied knowledge that transforms lives and communities locally and globally. The university has five centres, and any academic staff and students in the college can join. These research centres are described below.

About the Health and Wellbeing (HW) Research Centre

The Health and Wellbeing Research Centre promotes understanding how to protect and enhance health and wellbeing across all life stages. We focus on underserved populations and the services and professionals supporting them. Our research, grounded in social justice and inclusion, aims to reduce inequalities and improve outcomes through knowledge mobilisation and real-world application. Collaborating with academics across disciplines and health and social care partners, we explore lived experiences, service delivery, and workforce development. Our work informs policies and practices that support more effective, inclusive, and responsive health and social care systems.
For Enquiry

Contact Person

Before applying, please contact the main supervisor, Dr Stephen Dance, Professor in Acoustics in School of Engineering and Design, College of Technology and Environment.

E-mail: dances@lsbu.ac.uk
Phone: 07817597080

In your email, include:

- Details of your current level of study and academic background.
- A summary of any relevant experience.
- A brief paragraph about your motivation for pursuing this PhD project.

Fee Waiver

The fee waiver is available for 4 years (48 months), including the writing-up year, examination period, and submission of the corrected thesis.

How to apply

Applications should be submitted via the programme page using the links below:

https://www.lsbu.ac.uk/study/course-finder/engineering-built-environment-phd

You should upload the problem statement, qualifications, CV, and other relevant documentation to the application portal. Remember to state the correct reference number and the appropriate supervisor.