Project Reference: CTE_PGR_EEE_25_26_011

About the Project

This is an exciting 3-year PhD opportunity within the College of Technology and Environment (CTE) at London South Bank University (LSBU). Beginning in September 2025, the successful candidate will receive a tuition fee waiver and an annual tax-free 3-year stipend set at the UKRI rate for the project's duration.

Project Title

AI-Driven Electric Vehicle Charging Optimisation and Battery Health Management for Smart Urban Mobility

Project Overview

Considering the rapid rise in greenhouse gas emissions, urban societies are shifting towards achieving net-zero emissions, particularly in the transportation sector, one of the largest contributors to global emissions. In response, major urban cities like London are setting ambitious goals to transition to fully electric vehicles (EVs) by 2030. While crucial for reducing environmental impact, this mass adoption of EVs presents new challenges, particularly concerning the accessibility and management of EV charging infrastructure. The growing number of EVs in densely populated urban areas will significantly increase the demand for charging stations and parking spaces, making it increasingly difficult to locate available charging spots in real-time, aggravating congestion, and extending wait times. Furthermore, ensuring the health and performance of EV batteries over time becomes critical for maximising their lifespan and maintaining optimal operation.

This project aims to develop AI-driven charging network optimisation and smart battery health management systems for urban environments to support EV penetration via reliable solutions. The system will assist users in locating charging stations and parking spaces, and utilise Machine Learning and Deep Learning algorithms to monitor and predict the health state of EV batteries. The system will collect real-time GPS and charging station data, leading users to the most suitable charging station based on distance, battery status, parking space and queue length. AI models will predict health status and remaining useful battery life, ensuring human safety.

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.
- The candidate should have experience in comprehensive literature reviews and be willing to stay updated on the research area/subject.
- The candidate should be highly motivated, able to collaborate, and have good oral and written communication skills. Previous research experience in energy management, smart EV charging systems, machine learning, and deep learning is essential. A keen interest in electric vehicle system integration 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. Doctoral 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.

For Enquiry

Before applying, please contact the main supervisor, **Dr Zunaib Ali**, a Lecturer in the School of Engineering and Design at the College of Technology and Environment.

E-mail: aliz2@lsbu.ac.uk

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.

Funding

Standard stipend £21,622 p.a. 2025/26 rates (this includes London Weighting); full home or O/S tuition fees (as applicable); funding is available for 3 years (36 months). Your fourth writing-up year will not be funded, but you will receive a fee waiver.

How to apply

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

https://www.lsbu.ac.uk/study/course-finder/electronic-electrical-engineering-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 relevant supervisor.