tact Total Communication Technologies to Support Accessible Communication

# PhD Student in Human-Computer Interaction

*Indicative (may not be final)*

**Expected Start Date**: October 2026

***Funding*** *– Full fee waiver and living stipend (expected to be ≥ £20,780)*

**Supervisor**: timothy.neate@kcl.ac.uk

**Supervisor Website**: tdjneate.github.io

**Based**: King's College London (Bush House), London, UK

## About

I am looking to recruit a PhD student at the Department of Informatics at King's College London. This is fully funded – i.e. will come with a full fee waiver and living stipend (3.5 years). We are open to candidates from all countries, but international (non-UK) fee waivers require exceptional candidates.

The successful PhD student will complement a UKRI Future Leaders Fellowship project *Total Communication Technologies to Support Accessible Communication (TACT)*, led by Dr Timothy Neate. The project aims to re-imagine technology-mediated communication for people with communication disabilities, with a focus on supporting both verbal and non-verbal communication.

You will have access to excellent resources for research development, travel, and equipment. You will be part of a collaborative environment that includes partners and mentors from academia, industry, and the charity sector. You will be situated in, and become a key member of, the human-centred computing group at King's, who are a closeknit interdisciplinary group of researchers with expertise in accessibility, health, visualisation and human-centred AI.

At King's you will have the opportunity to work directly in a team with myself, two postdoctoral researchers, another PhD student and a speech and language researcher. In addition, you will collaborate closely with with a wide network of academic, industry, and charity partners. These include Microsoft Research, Tobii Dynavox, Transport for London, Hidden Disabilities, Aphasia Re-Connect, Dyscover, and Speech and Language UK, as well as academic collaborators such as Prof. Madeline Cruice (City, University of London), Prof. Jonathan Lazar (University of Maryland), and Prof. Karyn Moffatt (McGill University).

## PhD Topic – Wearable AI for Total Communication Support

Communication is essential for connecting with loved ones, participating in communities, and engaging in work and hobbies. Effective communication involves both verbal (speaking, writing) and non-verbal (gestures, tone of voice) elements – together often referred to as *total communication*. Total communication is especially important for people with communication disabilities, who make up one-third of stroke survivors [1] and 2–3 children in every classroom [2].

Current technology design largely overlooks non-verbal communication, focusing primarily on verbal aspects. This affects both assistive technologies (i.e. technologies that support communication) and general communication platforms such as video conferencing. Moreover, existing assistive technologies, typically bulky devices like tablets or large computers, can contribute to social stigma and obstruct vital non-verbal communication pathways.

Our team has a strong track record in developing wearable technologies to support users with communication difficulties, including smartwatches [3], smart glasses [4], and smart badges [5], as well as in understanding video-mediated communication [6].

This PhD will investigate how emerging AI – particularly multimodal large language models – can be integrated with wearable technologies to support real-time communication. For example, imagine assisting someone with word-recall difficulties in a coffee shop, helping them and the barista communicate effectively through AI-driven contextual understanding. Your research will explore both the opportunities and risks of these technologies, focusing on how they can empower users while safeguarding privacy, safety, and individual needs.

You will conduct user-centred design research, develop and test innovative solutions in real-world settings, and contribute to improving communication for people with disabilities.

This project is part of Dr Neate's ~£2M Future Leaders Fellowship. Consequently, you will have exceptional support for equipment – e.g. access to a range of wearables, Apple Vision Pro headsets, AI credits, etc. You will also engage with an exceptional network of partners, collaborators, and advisors, including: Microsoft Research, Tobii Dynavox, Transport for London, Hidden Disabilities, Aphasia Re-Connect, Dyscover, Speech and Language UK, Prof. Jonathan Lazar (University of Maryland), and Prof. Karyn Moffatt (McGill University). The work will also be supported by Prof. Cruice (City St George's, University of London), a leading expert in speech and language therapy.

## About You

I am interested in students who can demonstrate technical skills (e.g. programming, electronics), HCI skills (e.g. running user studies, interviewing) and research skills (e.g. data analysis, paper writing).

I would also like to see some previous work in innovative human-computer interaction work (e.g., undergraduate or postgraduate projects in this area). King's expects students to have First-Class Honours at Undergraduate level or Distinction at Master's level (or its

international equivalent). If you do not meet these criteria, there might be alternative ways to demonstrate your competence. If you have experience of research projects, this will support your application. If you have published papers, then this is a bonus, but not expected.

I am keen for my PhD students to be highly engaged in the communities with which they work. In this project you will undertake extensive work in charities, working with end users with communication disabilities. You will also be given opportunities to volunteer at these charities to gain valuable skills in working with the key communities. As such, you should be a good communicator and an accepting person.

## Ideal Profile

If you are interested in this PhD project, please get in touch with:

- Your CV
- A paragraph on how your skillsets match the project
- A paragraph on what you think a PhD will involve and why you want to do one
- A sentence on your favourite animal and why
- Provide links to any online portfolio, papers, etc.