Job Description & Key Responsibilities

We are inviting applications for a **Postdoctoral Fellow** position to join our dynamic and interdisciplinary team focused on developing a portable wireless reader. The successful candidate will work at the interface of reader hardware, interface software, point-of-care (POC) development, and biomedical diagnostics.

This role offers a unique opportunity to contribute to the development of a portable reader (hardware + firmware), interface software, and AI analytics integration required to convert multiplex electrochemical sensor signals into clinically meaningful outputs for primary/secondary care use.

Key Responsibilities:

- Reader Hardware and Embedded System:
    - Architect and prototype a portable electrochemical reader capable of multiplex acquisition: potentiostat front-end design, ADC strategy, noise control, calibration approach, battery management, enclosure constraints.
    - Develop embedded firmware for data acquisition, sensor control, and device self-tests. Implement logging and calibration routines.
- Software Platform, User Interface & AI Analytics Integration
    - Integrate AI analytics modules into the software platform and user interface for automated signal interpretation and clinically meaningful result presentation.
    - Implement secure wireless communication and reliable data transfer to the interface application.
    - Build interface software (mobile, tablet, and laptop) that supports test workflow, device pairing, data QA flags, and export to analytics pipelines.
    - Implement cybersecurity controls and associated documentation to ensure data integrity and system security.
    - Apply usability engineering principles appropriate for near-patient care environments to optimize workflow clarity and reliability.

Successful candidate will be offered a full time (contract) as a member of the laboratory.

Requirements

Qualifications:

- Ph.D. in Electrical Engineering, Computer Engineering, Biomedical Engineering, Computer Science, or a related discipline.
- Demonstrated experience designing embedded systems for measurement devices (analog front-end + firmware + data pipeline).
- Hands-on experience sufficient to integrate AI analytics modules into the software platform.
- Strong analytical skills with experience in data analysis and visualization tools for device performance evaluation.
- Excellent communication skills and the ability to collaborate effectively within interdisciplinary teams spanning engineering, biosensing, and clinical research.

Preferred Skills:

- Embedded systems development (microcontrollers, analog front-end circuits, wireless communication).
- Experience interfacing electrochemical sensors with portable hardware platforms.
- Signal processing for biosensor data (filtering, drift correction, feature extraction).
- Software development for device control, data visualization, and mobile/cloud integration.

To apply, please send your cover letter, CV and names of 3 references (name, institution, email) to Prof Lim Chwee Teck at ctlim@nus.edu.sg. Only shortlisted candidates will be contacted.