

I am actively seeking several (**up to 3**) new PhD students in computer science to be part of multiple funded research projects in the broad areas of embodied AI, low-power neuromorphic computing and edge AI and AI systems optimization. Researchers in the group routinely publish their work in the most prestigious research venues, spanning areas such as mobile/wearable systems (ACM IMWUT, ACM Sensys, IEEE Percom), robotics (ACM/IEEE HRI, IEEE ICRA/IROS) and AI (ACM Multimedia, CVPR). Successful candidates are anticipated to start at SMU in August 2026 (the Fall 2026 term). However, to support accelerated execution of research, the successful candidate may also be offered an additional full-time researcher position at SMU prior to the start of the formal PhD program.

One PhD student position is available as part of the five-year, NRF-supported ambitious research program, led by MIT/SMART, called Mens, Manus and Machina—How AI Empowers People, Institutions and Cities in Singapore (M3S)" <https://m3s.mit.edu/>. This PhD student will work in the broad area of **multi-modal AI comprehension and reasoning models**, focused at combining visual, verbal/textual, gestural and other (e.g., human cognitive attention) cues to support human-AI interaction in specific domains. Such work will seek to embed domain-specific knowledge via new neuro-symbolic approaches to multi-modal comprehension—while specific domains will be firmed up as the work progresses, we are actively exploring domains related to industrial equipment repair/operations and learning of elementary—middle school mathematical concepts. The work will also focus on context-aware optimization of such AI-based inference, so that the VLM-based comprehension models can be executed in near-real time on memory and processing constrained edge devices (e.g., an Nvidia Jetson ORIN). Key intended publication outlets for the work include IEEE ICRA, ACM Multimedia, CVPR, ICLR and AAAI.

A second PhD student position is available as part of the joint NRF-supported Singapore-France (CNRS) research program on Embodied AI that will be launched in February 2026. This multi-institution program focuses on developing new robotic foundation models (RFMs) that incorporate additional beyond-visual inputs (such as touch/force sensing), are cognizant of physical world properties and constraints, and are optimized to enable perception and planning for safe joint human-robot execution of a variety of industrial tasks. The PhD student will work in the broad area of **enhancing the accuracy, reliability and computational efficiency of RFMs** via (a) synthetic generation of joint human-robot manipulation datasets, (b) robust plan generation in physical environments characterized by higher dynamism and task/environment uncertainty, and (c) incorporation of memory of past actions and human preferences to enable low-latency, memory-efficient execution of RFMs on edge robotic platforms. The student will collaborate with other program team members building hierarchical RFM/world models and with industry partner organizations to apply the research advances to multiple tasks related to robot-augmented maintenance and repair of complex industrial equipment. Key intended publication outlets for the work include IEEE/RSJ IROS, IEEE ICRA, ACM Multimedia and AAAI.

A third PhD student position is available in the broad field of low-power neuromorphic computing, as part of a newly awarded multi-institution (SUTD, NUS and SMU) NRF CRP (Competitive Research Program) grant titled “Self-sustaining Embedded Electronics in Knitted Fabrics”. This project, to start in Feb 2026, aims to create breakthroughs in wearable fabrics for

health and wellness applications, with a special focus on tracking the mobility and joint motion of individuals with frailty challenges. While the SUTD and NUS PIs will develop self-sustaining, energy-efficient smart textiles that seamlessly integrate sensors and electronics into knitted fabrics, the PhD student at SMU will focus on **new ultra-low-power spiking neural network (SNN) based approaches for kinematic data processing**. Key research directions to be explore include (a) developing new multi-scale temporal SNN models to improve the accuracy of SNN-based human activity recognition, (b) developing new multi-modal SNN models that perform inference over triboelectric, piezoelectric and photovoltaic sensor data streams, and (c) developing new distributed/collaborative SNN frameworks that perform inference over sensor data captured by multiple body-worn wearable devices. Key intended publication outlets for the work include ACM Sensys, ACM Mobicys, IEEE Percom, ICLR and NeurIPS.

The successful candidates will officially be students in the School of Computing and Information Systems (SCIS) at SMU, which provides a generous stipend as well as other standard benefits. The position also offers access to ample computing resources, both at SMU and NRF CREATE, as well as access to a rich network of world-class research collaborators from multiple institutions, including Profs. Sanjay Sarma, Daniela Rus and Armando Solar-Lezama at MIT, Profs. Philippe Fraisse, Olivier Stasse and Vincent Bonnet from France, Profs. Lin Shao and Tural Khudiyev at NUS, Prof. Sounjanya Poria at NTU and Prof. Low Hong Yee at SUTD.

Required Qualifications

- B.S/B.Tech (ideally Master's), with good honors, in Computer Science or Electrical/Electronics Engineering from a well-regarded, academically rigorous institution.
- Experience in deep learning (audio, image) and/or spatial and 3D sensing and computing projects highly desired.
- Project-level, hands-on experience with Deep Learning frameworks, such as PyTorch and Tensorflow, is highly desired.
- Experience in training, executing and/or optimizing AI models on edge platforms (e.g., Nvidia Jetson devices) is highly desired.
- Record of publications and co-authorship in top-tier conferences and journals is desired but not essential.
- Competitive GRE score (as per SMU requirements)
- Strong communication and collaboration skills.

More details about SMU/SCIS's PhD application process and requirements, including a variety of additional scholarship opportunities, are available at: <https://scis.smu.edu.sg/phd>. Interested candidates are also welcome to contact Professor Archan Misra (archanm@smu.edu.sg; <https://sites.google.com/view/archan-misra>).