Research Fellow (multimodal biometric authentication on mobile devices) (NPC)
Singapore Institute of Technology

Job Title Research Fellow (multimodal biometric authentication on mobile devices) (NPC)
Department Infocomm Technology
Institution Singapore Institute of Technology
Singapore, , Singapore

Date Posted Apr. 28, 2025

Application Deadline Open until filled
Position Start Date Available immediately

Job Categories Graduate Student

Academic Field(s) Computer Science

Job Website https://careers.singaporetech.edu.sg/cw/en/job/498912/research-fellow-multimodal-biometric-authentication-on-mobile-devices-npc

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Job Description

Research Fellow (multimodal biometric authentication on mobile devices) (NPC)

Job no: 498912
Department: Infocomm Technology
Contract type: Contract
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As a University of Applied Learning, SIT works closely with industry in our research pursuits. Our research staff will have the opportunity to be equipped with applied research skill sets that are relevant to industry demands while working on research projects in SIT.

The primary responsibility of this role is to lead the research and development of a secure and privacy-preserving multimodal biometric authentication system for mobile devices using federated learning, supporting SIT's mission as a university of applied learning through translational research that advances real-world applications in mobile security and user identity verification.

Key Responsibilities:

- Lead and conduct research on federated learning methodologies for multimodal biometric authentication on mobile devices, with emphasis on privacy-preserving techniques and real-world deployment.
- Develop and evaluate federated models that operate under positive-label-only constraints on local devices, focusing on scenarios where user templates are authentic and unimodal/multimodal verification must be robust against spoofing or deepfakes.
- Collaborate closely with the Principal Investigator (PI) to execute the project's research plan, including literature review, algorithm design, experiment design, model training, evaluation, and benchmarking.
- Work with and supervise undergraduate or graduate student assistants, guiding them in data collection, software development, and research experiments.
- Contribute to the development of working prototypes and demonstrations for mobile biometric systems utilizing federated learning architectures.
- Prepare research documentation, including technical reports, conference/journal papers, and research grant progress updates.

Job Requirements:

- Ph.D. degree in Computer Science, Electrical/Electronic Engineering, Information Systems, or a related field with a strong research focus in machine learning, biometrics, or mobile computing.
- Proven experience in federated learning, privacy-preserving machine learning, or distributed AI systems.
- Familiarity with biometric authentication systems, especially involving multimodal signals such as face, voice, and fingerprint recognition.
- Proficient in programming languages and frameworks commonly used in ML research, such as Python, PyTorch, TensorFlow, and mobile development environments (e.g., Android Studio or

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Swift/Xcode).
- Demonstrated ability to conduct independent research, as evidenced by peer-reviewed publications in relevant top-tier conferences or journals.
- Strong analytical and problem-solving skills, with the ability to design, implement, and evaluate complex algorithms in practical settings.
- Experience mentoring students and working collaboratively in multi-disciplinary research teams.
- Excellent written and verbal communication skills, with the ability to produce technical documentation and contribute to academic writing.

Key Competencies

- Research Independence - Ability to design and lead experiments, analyze results, and iterate on solutions with minimal supervision.
- Technical Proficiency - Strong skills in machine learning, federated learning, and biometric systems, with practical coding proficiency in Python and relevant ML frameworks (e.g., PyTorch, TensorFlow).
- Problem Solving - Able to identify technical challenges and formulate innovative, scalable, and privacy-aware solutions in real-world mobile settings.
- Collaboration and Mentorship - Effective at working in multidisciplinary teams and mentoring student researchers to meet project goals.
- Communication Skills - Strong written and verbal communication skills for presenting research outcomes, writing academic papers, and liaising with collaborators.
- Project and Time Management - Ability to manage multiple tasks efficiently, meet deadlines, and contribute to grant deliverables.
- User-Centered Thinking - Appreciation for usability and the practical deployment of biometric systems on mobile devices.

Apply now
Advertised: 28 Apr 2025 Singapore Standard Time
Applications close: 31 Jul 2025 Singapore Standard Time

Contact Information

Please reference Academickeys in your cover letter when

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applying for or inquiring about this job announcement.

Contact

Singapore