I first became fascinated with systems security in the final year of my undergraduate studies at Hochiminh University of Technology, Vietnam, where I learned about the Spectre and Meltdown attacks, which shook the world in 2018. These attacks revealed how a performance feature like *out-of-order execution* could be twisted into a *side channel* to steal secrets. I was struck both by the hidden complexity of modern processors and by how fragile our security foundations can be. Being naturally drawn to such challenges, I delved deeper into cybersecurity, beginning with my Bachelor's thesis on secure data crowdsourcing. Coming from a developing country with limited access to advanced education, I looked for opportunities abroad, joining Systems Security Lab (SSLab) at Sungkyunkwan University (SKKU), South Korea, as a Ph.D. student.

From 2019 to 2025 at SSLab, I was trained as a system security researcher and made several contributions to systems security research. Along the way, I was recognized with the **Distinguished Paper Award at the ACM CCS 2023** and the Korean government's **BK21 Research Scholarship in 2024**. Most meaningful to me was returning to the problem that first sparked my interest: side-channel attacks. Our solution, titled IncognitOS, appeared at the **IEEE Symposium on Security and Privacy 2025** – a milestone that I had only dreamt of when I first began this journey. More than the recognition, though, these experiences taught me that lasting advances in security come from collaboration.

Meaningful progress in systems security is always collective, and collaborations only flourish when you seek them out and persist in nurturing them. As Richard Hamming noted in his lecture, the scientists who work doors open often make the most impactful contributions. Conducting research in a geographically isolated environment motivated me to independently seek out international collaborations, including a project with UBC's Systopia lab. Beyond research, I contributed to the broader field through service on artifact evaluation and poster committees at major conferences, and through open-source contributions to the Unikraft unikernel. Additionally, I created and shared tools for others, such as my open-source bibliography manager, bibli-ls. These efforts exposed me to like-minded researchers and built long-lasting connections that expanded beyond research. I am eager to continue this outreach trajectory at UBC, where cross-disciplinary engagement is the norm.

Teaching has been one of my most rewarding collaborations. As a teaching assistant for Computer Security and System Programming at SKKU, I developed `ctf.skku.edu`, a platform that enables students to participate in Capture-The-Flag (CTF) challenges modeled after real-world cybersecurity competitions. The platform sparked the interest of many students in cybersecurity, with some later joining SSLab. Maintaining the system required me to carefully balance usability, security, and scalability – concerns closely tied to my research – and showed me how creative representations make learning more engaging. Outside of the classroom, I also nurture this creativity through pixel art and interactive projects such as video games and security algorithm visualization. The effort invested in teaching is never wasted: it connects me with the next generation of researchers, strengthens my own understanding of complex concepts, and brings me the fulfillment of witnessing students' growth. I am excited to contribute to UBC's teaching mission by making notoriously complex subjects, such as operating systems, engaging through interactivity. To this end, I have already served as a guest lecturer in UBC's own CPSC 538M: Systems Security, and plan to do the same for its operating systems modules

Having come a long way since first encountering the Spectre and Meltdown attacks as an undergraduate student, I aspire to lead research that strengthens our security foundations and fosters an open and collaborative culture. The **Killam Postdoctoral Fellowship** offers a crucial opportunity to carry my mission forward at UBC, providing the stability needed to pursue ambitious research while contributing to the university's vibrant academic community.

1 Appendix: Guide

Address the following:

- Describe your research experience and relevant work experiences
- Describe your personal qualities through other activities such as athletic/artistic achievements, leadership activities, community engagements, volunteerism, etc.
- Describe your career aspirations
- Include details concerning what teaching, if any, you will be doing and how it is related to your work

2 Appendix: Evaluation criteria

The search is for candidates whose work is beyond "excellent" and whose research is convincingly ground-breaking.

Excellence in scholarly work and independent research - 60%

- quality of contributions to research to date
- scholarships and awards held
- duration of graduate studies, taking into account the nature of the program and relevant personal circumstances
- determination and ability to complete projects within an appropriate period of time
- critical thinking, judgment, and initiative
- resilience and flexibility in adjusting research plans, particularly in response to COVID-19 impacts

Quality of proposed research project - 30%

- originality in developing a research agenda
- merit, potential significance, clarity, feasibility of the proposed project
- relevance of applicant's work experience and academic training to field of proposed research
- suitability and quality of research environment (proposed supervisor, facilities, support of academic unit) Personal qualities of the applicant - 10%

Personal qualities of the applicant - 10%

- character: integrity, collegiality and respect for others
- communication skills
- leadership abilities as demonstrated by employment, athletic/artistic achievements, community engagement, volunteering, etc.
- Preference will be given to applicants who have not already held a postdoctoral award or fellowship.