Alexander R. Hankin
Curriculum Vitae

PERSONAL INFORMATION
Name: Alexander Ross Hankin
Email: alexander.hankin@intel.com
Website: alexanderhankin.com

CURRENT POSITION
Research Scientist, Strategic CAD Lab (SCL), IP Design and Platforms Group (IDP), Intel Labs

EDUCATION
2016-2022   Ph.D. Electrical Engineering, Tufts University
2016-2018   M.S. Electrical Engineering, Tufts University
2012-2016   B.S. Computer Engineering (minor in Mathematics), Tufts University

AWARDS
2022   Greenough Fellow, Tufts University
2021   Best Project Award, I too can Quantum! (I2Q) Workshop at IEEE International Symposium on Computer Architecture (ISCA)
2015   5-Year Combined B.S. & M.S. Program, Tufts University
2015   Dean's List, Tufts University
2013   Dean's List, Tufts University

PROFESSIONAL CAREER
2022-present   Research Scientist, Intel Labs
2022-present   Associate, Harvard University
2022   Postdoctoral Fellow, Harvard University
2020   Research Intern, Intel
2019   Research Intern, Google
2017-2022   Research and Teaching Assistant, Tufts University

RESEARCH INTERESTS
Computer Systems and Architecture
Next Generation Computing Systems and Technologies
Analysis and Optimization Technologies for Computer Systems
Design and Modeling of Memory System Architectures
Analytical and Abstract Modeling of Program Behavior and Computer Systems
Emerging Non-Volatile Memory
Advanced On-Chip Thermal Hotspots
Trapped-Ion Quantum Computer Architecture
Microservices

PUBLICATIONS

under review

A. Hankin, A. Mahmoud, M. Hempstead, D. Brooks, and G. Y. Wei, "VelociTI: An Architecture-level Performance Modeling Framework for Trapped Ion Quantum Computers."

2023

A. Hankin*, L. Pentecost*, D. Min, D. Brooks, and G. Y. Wei **(*joint first authors)**, "Is the Future Cold or Tall: Design Space Exploration of Cryogenic and 3D Embedded Cache Memory," in 2023 IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS). April 23-25, 2023. Raleigh, North Carolina.

M. Amiraski, D. Werner, **A. Hankin**, J. Sebot, K. Vaidyanathan, M. Hempstead, "Boreas: A Cost-Effective Mitigation Method for Advanced Hotspots using Machine Learning and Hardware Telemetry," in 2023 IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS). April 23-25, 2023. Raleigh, North Carolina.

2022

A. Hankin, L. Pentecost, M. Donato, M. Hempstead, G. Y. Wei, and D. Brooks, "The Persistence of Non-Volatile Memory: Exploiting the Growing Design Space," in Computer Architecture Today, ACM SIGARCH, August 2022.

D. Werner, M. Amiraski, **A. Hankin**, J. Sebot, K. Vaidyanathan, and M. Hempstead, "Utilizing the HotGuage Framework for Hotspot Behavior Analysis," HotSpots Strike Back (HSSB) Workshop at ISCA 2022.

A. Hankin, "Evaluation of Embedded Non-Volatile Memories for Modern Computing Systems", Tufts University. 119 pages. ProQuest Dissertations and Theses. 2022.

L. Pentecost*, **A. Hankin***, M. Donato, M. Hempstead, G. Y. Wei, and D. Brooks **(*joint first authors)**, "NVMExplorer: A framework for cross-stack comparisons of embedded non-volatile memories," in 2022 IEEE International Symposium on High-Performance Computer Architecture (HPCA), 2022, pp. 938–956.

2021

A. Hankin*, D. Werner*, J. Sebot, K. Vaidyanathan, M. Amiraski, and M. Hempstead **(*joint first authors)**, "HotGauge: A Methodology for Characterizing Hotspots in Next Generation Processors," 2021 IEEE International Symposium on Workload Characterization (IISWC), November 2021.

A. Hankin and M. Hempstead, "Proposal for a Timing Model of Ion Trap Quantum Architectures," I too can Quantum! (I2Q) at ISCA 2021. **Best project award winner**.

A. Hankin, M. Amiraski, K. Sangaiah, and M. Hempstead, "Toward Faster and More Efficient Training on CPUs Using STT-RAM-based Last Level Cache," 12th Annual Non-Volatile Memories Workshop (NVMW), San Diego, CA, USA, 2021.

2019

A. Hankin, T. Shapira, K. Sangaiah, M. Lui and M. Hempstead, "Evaluation of Non-Volatile Memory Based Last Level Cache Given Modern Use Case Behavior," 2019 IEEE International Symposium on Workload Characterization (IISWC), Orlando, FL, USA, 2019, pp. 143-154, doi: 10.1109/IISWC47752-.2019.9042051.

TEACHING EXPERIENCE
2021   Teaching Assistant, Introduction to Circuits and Electronics (Fall), Tufts University
2021   Teaching Assistant, Advanced Computer Architecture (Spring), Tufts University
2020   Teaching Assistant, Electronics (Spring), Tufts University
2018   Teaching Assistant, Hardware-Software Image Processing (Fall), Tufts University
2018   Teaching Assistant, Machine-centric Approach to Programming (Fall), Tufts University

2018 Teaching Assistant, Advanced Computer Architecture (Spring), Tufts University
2017 Teaching Assistant, Computer Organization and Design (Fall), Tufts University

OPEN SOURCE SOFTWARE
2021 HotGauge
2021 NVMExplorer

WORKSHOPS, TUTORIALS
2022 NVMExplorer, International Symposium on Computer Architecture (ISCA)
2022 HotSpots Strike Back, International Symposium on Computer Architecture (ISCA)

CONFERENCE TALKS, WORKSHOP TALKS, POSTERS
2022 IEEE International Symposium on High-Performance Computer Architecture (HPCA)
2021 IEEE International Symposium on Workload Characterization (IISWC)
2021 I too can Quantum! at IEEE International Symposium on Computer Architecture (ISCA)
2021 12th Annual Non-Volatile Memories Workshop (NVMW)
2019 IEEE International Symposium on Workload Characterization (IISWC)

PROFESSIONAL SERVICE
2023 Program Committee, IEEE International Symposium on Workload Characterization (IISWC)
2023 Artifact Evaluation Committee, European Conference on Computer Systems (EuroSys)
2022 Program Committee, IEEE International Symposium on Workload Characterization (IISWC)