

HAMIDREZA SAGHIR

Principal Applied Scientist | Agentic AI & LLM Systems | Machine Learning Systems

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Summary

Principal Applied Scientist with deep expertise in agentic system design, LLM systems, machine learning, and production ML systems. Builds agent architectures and the evaluation systems used to improve and ship them. At Microsoft, established the evaluation standard adopted by 20+ Security Copilot skill teams and redesigned orchestrator planning, improving orchestration performance by 25%. Creator of **Looplet**, an open-source agent harness with evaluation built into the development lifecycle. Earlier work includes entity intelligence shipped to all X users, Alexa NLU deployed in OEM vehicles after an 80% footprint reduction, and fraud detection at RBC.

Core Expertise

Agentic AI and LLM systems: Agent harnesses, planning and orchestration, tool use, context and memory, LLM evaluation, LLM-as-judge, coding agents, RAG

Machine learning: NLP/NLU, retrieval, deep learning, model compression, knowledge graphs, semi-supervised ML, computer vision

ML systems: Production ML, evaluation infrastructure, distributed training, edge deployment, Python, PyTorch

Experience

Principal Applied Scientist | [Microsoft](#)

Apr 2023 -- Present | Toronto, ON / Irvine, CA

- Established the evaluation standard for the Security Copilot orchestrator: defined the approach, built the framework, drove adoption across **20+ skill teams**, and took it from design through **public-preview launch**.
- Created the first systematic evaluation for the Microsoft Defender investigation agent. Shipped an LLM-as-judge pipeline for **private preview** that became the team's quality standard and cut iteration cycles by **40%** versus manual review.
- Redesigned the orchestrator's agent-planning architecture, improving task-orchestration performance by **25%**.
- Directed intern research in LLM robustness and coding-agent evaluation; resulting work was published at **ACL 2025** and **COLM 2026**. Across roles, mentored **6+** scientists and interns, with three contributing to publications.

Senior ML Engineer, Lead | [X \(Twitter\)](#)

Jan 2022 -- Jan 2023 | Toronto, ON

- Identified an unmet need for business customers and created a new entity-linking product. Set the technical direction, aligned multiple teams, and led delivery from concept to a knowledge-graph-based v1.
- Shipped entity-aware multilingual topic classification to **all X users**, increasing topic coverage by **30%** over the prior production system.
- Designed the multi-stage re-scoring behind entity linking across localized, multilingual, and personalized contexts.

Applied Scientist | [Amazon](#)

Nov 2019 -- Dec 2021 | Toronto, ON

- Set and owned the scientific roadmap for Alexa edge NLU in Automotive; models shipped on **OEM vehicles** with Alexa built-in.
- Created a model-compression method that reduced on-device NLU footprint by **80%** with minimal quality loss and shipped on Alexa edge devices. Published at **InterSpeech 2021** and **The Web Conference 2021**.
- Mentored interns and junior scientists on research and delivery.

Machine Learning Researcher | [Borealis AI \(RBC\)](#)

May 2017 -- Nov 2019 | Toronto, ON

- Built a cross-domain neural coherence model, published at **ACL 2019**.
- Developed transformer-based paraphrase identification with multi-task learning and calibration.
- Built a semi-supervised fraud-detection system from unlabeled transaction data; **30% improvement** over the production baseline while holding the false-positive bar.

Experience, continued

Co-Founder & CEO | [Recreate Robotics](#)

Apr 2014 -- Dec 2016 | Toronto, ON

- Founded and led the company; raised early-stage funding, hired a team, and took a real-time robotic goalkeeper from prototype to paid deployments. Built the CNN vision system for ball tracking and led the product from hardware design to revenue.

Research Assistant (Ph.D.) | [Holland Bloorview Kids Rehab Hospital](#)

Sep 2013 -- May 2017 | Toronto, ON

- Developed algorithms for detection and clustering of pathological states from ECG/EEG signals. Published in Physical Review E, IEEE TBME, and multiple conferences.

Research Intern | [Italian Institute of Technology \(IIT\)](#)

Jan 2013 -- Sep 2013 | Genova, Italy

- Developed motion-planning methods for the HyQ quadruped robot. Optimized center-of-gravity trajectories for agile locomotion; C++ on physical hardware.

Selected Agent Systems Work

Looplet | github.com/hsaghir/looplet

Creator of an open-source, test-driven agent harness for Python tool-calling agents, with evaluation as a first-class capability (Apache-2.0, on PyPI). Looplet provides an iterator-owned execution loop, composable hooks, reviewable agent cartridges, model and tool-step capture, captured-response replay, and outcome-grounded evals in pytest and CI. Its portable reference harness moves tools, policy hooks, shared state, and model access behind explicit process boundaries.

Selected Publications

1. X. Xu, **H. Saghir**, et al. "The Devil Is in the Interface: Evaluating How Tool Architecture Shapes Coding Agent Behavior." **COLM 2026**.
2. J. Niu et al. incl. **H. Saghir**. "Llama See, Llama Do: Contextual Entrainment and Distraction in LLMs." **ACL 2025**.
3. M. Mirbagheri, **H. Saghir**, T. Chau. "Mimicking Linguistic Features of Atypical Speech Transcripts." **IEEE TASLP**, 2025.
4. L. Hebert et al. incl. **H. Saghir**. "Robust Candidate Generation for Entity Linking on Short Social Media." **WNUT @ COLING 2022**.
5. **H. Saghir**, S. Choudhary, S. Eghbali, C. Chung. "Factorization-Aware Training of Transformers for NLU on the Edge." **InterSpeech 2021**.
6. H. Tu, S. Choudhary, **H. Saghir**, R. McGowan. "Multilingual Neural Language Models for On-Device NLU." **WWW 2021**.
7. P. Xu, **H. Saghir**, et al. "A Cross-Domain Transferable Neural Coherence Model." **ACL 2019**.

Additional publications and one US patent: [Google Scholar profile](#)

Education

Ph.D., Biomedical Engineering | [University of Toronto](#)

2013 -- 2018 | ML for biosignal analysis, time series, and unsupervised learning

M.Sc., Mechatronics | [Sharif University of Technology](#)

2008 -- 2011 | Reinforcement learning, intelligent control, and policy optimization

B.Sc., Mechanical Engineering | [Ferdowsi University of Mashhad](#)

2004 -- 2008

Selected Honors

Ontario Trillium Scholarship | \$160K over four years; 15 awarded annually across Ontario

Connaught International Scholarship | University of Toronto doctoral studies, 2013; 20 awarded annually