Romain Nith

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EDUCATION

The University of Chicago — 2023 – Current
Ph.D., Computer Science — Expected grad: 06/2026
Advisor: Professor Pedro Lopes — Chicago, IL

The University of Chicago — 2020 – 2023
M.S., Computer Science — Chicago, IL
Advisor: Professor Pedro Lopes

McGill University — 2013 – 2019
B.Eng., Computer Engineering — Montreal, Canada
Advisor: Professor Jeremy Cooperstock

PROFESSIONAL EXPERIENCE

Meta, Reality Lab Research — Redmond, WA
Haptics Research Scientist Intern — June 2024 – December 2024

- Prototyped a wearable ring for capturing hand-based haptic interactions using an IMU, microphone, and custom nail-mounted force sensor, implemented on custom PCBs and 3D-printed enclosure
- Implemented robust wired (USB serial) and wireless (WiFi) communication protocols using *Protobuf* for data transfer, with an on-device (ESP32-hosted) webserver accessible from mobile and desktop devices.
- Developed and validated full signal-processing pipeline and characterized device performance by reproducing captured haptic events on vibrotactile actuators in VR

Sony, Computer Science Laboratories — Tokyo, Japan
Research Assistant Intern, Professor Jun Rekimoto — May 2018 – August 2018

- Developed tethered drone system for human augmentation, enabling extended flight duration by delivering power through a lightweight tether connected to a user-wearable battery pack
- Implemented a 48V grounded power delivery system with a DC-DC converter to reduce cable gauge and stabilize tethered operation
- Integrated a *Parrot Bebop* drone controlled via ROS, using HTC Vive trackers for localization through Unity3D
- Designed functional gesture-based controls for switching operating modes (e.g., telepresence, *follow-me*)

Sony, Computer Science Laboratories — Tokyo, Japan
Research Assistant Intern, Professor Jun Rekimoto — May 2017 – August 2017

- Implemented a drone telepresence system that enhanced human abilities by mapping a user's head motion to quadcopter control, lowering the skill barrier for UAV piloting and creating an immersive first-person experience via head-mounted visual feedback
- Implemented and tuned PID-controller for *user-drone follower* on Unity3D using HTC Vive trackers
- Created Android communication interface enabling data exchange between a DJI drone API and a PC server for real-time control and video streaming via OSC communication protocol

SKILLS

Programming Languages	Python, C/C++, C#
Frameworks	embedded firmware, low-power wireless systems, serial protocols, real-time control systems (PID, sensor fusion), machine learning (PyTorch)
Embedded systems	PCB design, Arduino, ESP32 (BLE/WiFi), Nordic nRF52 (BLE), ARM Cortex-M (SAMD)
Software	KiCAD, Altium Designer, Siemens NX, Fusion360, Unity3D
Prototyping	3D printing (FDM/SLA), soldering & rework, laser/waterjet cutting, woodworking, machine shop (lathe/mill)

RESEARCH EXPERIENCE

TMW Center for Early Learning + Public Health — Chicago, IL
Part-time Research Assistant — Oct 2020 – Jun 2024
- Co-designed and supported manufacturing of a child-safe wearable microphone for quantifying daily word exposure in a consumer language-development product
- Designed and implemented QA hardware test jigs, conducting safety validation for UL certification

Human Computer Integration Lab – **University of Chicago** — Chicago, IL
Visiting Research Assistant in HCI, Professor Pedro Lopes — June – August 2019

Shared Reality Lab – McGill University — Montreal, Canada
Capstone research project, Professor Jeremy Cooperstock and Professor Pedro Lopes — January – December 2018

TEACHING EXPERIENCE

Engineering Interactive Electronics onto PCB (CMSC 23230/33230) — Spring 2025, Spring 2024, Winter 2022
Department of Computer Science, The University of Chicago
Instructor: Professor Pedro Lopes

Inventing, Engineering and Understanding Interactive Devices (CMSC 23220) — Spring 2021
Department of Computer Science, The University of Chicago
Instructor: Professor Pedro Lopes

Introduction to Human Computer Interaction (CMSC 20300) — Fall 2020
Department of Computer Science, The University of Chicago
Instructor: Professor Pedro Lopes

Services

Program Committee	ACM CHI Late-Breaking Work AC (2023 and 2024) ACM Augmented Humans Paper AC (2025)
Paper Reviewer (over 80 reviews)	ACM CHI, UIST, DIS, ISWC, TEI, SUI, AHs, SIGGRAPH, SIGGRAPH ASIA Recognitions: 5 × **Outstanding Reviewer** (CHI) and 2 × **Outstanding Reviewer** (UIST)
Student volunteer	ACM UIST 2021 (virtual)

EXTRACURRICULAR

McGill Formula Racing Team FSAE — Montreal, Canada
SAE International Formula Program is an engineering design competition consisting of designing, building, and racing a formula race car

Electronics Advisor of electric engine (EV) racing car — 2018 – 2019
Electronics Subteam Leader of combustion engine racing car — 2016 – 2018
Electronics Subteam Member of combustion engine racing car — 2013 – 2016

SELECTED PRESS COVERAGE

Guinness World Records. Featured for Most Precise Bionic Hand Controller. (2023 Edition)

IEEE Spectrum. "Video Friday: Multitasking." (May 2024)

CBS News. "Chicago neuroscientist helps woman with no sense of touch learn more about condition." (Feb 2023)

UChicago News. "High School Students Find Their Place in Computing Through Wearables Workshop." (Jan 2023)

New Scientist. "Mechanical backpack boosts the sensation of jumping in virtual reality." (May 2023)

Hackaday. "Adding Brakes to Actuated Fingers." (Nov 2021)

SELECTED PUBLICATION

[5] Generative Muscle Stimulation: Providing Users with Physical Assistance by Constraining Multimodal-AI with Muscle Stimulation Knowledge
Romain Nith*, Yun Ho*, Peili Jiang, Steven He, Bruno Felalaga, Shan-Yuan Teng, Rhea Seeralan, Pedro Lopes
ACM CHI 2026 Paper– **Best Paper Award** (top 1%)

[4] Adaptive Electrical Muscle Stimulation Improves Muscle Memory
Romain Nith*, Siya Choudhary*, Yun Ho*, Jas Brooks, Mithil Guruvugari, Pedro Lopes
ACM CHI 2025 Paper

[3] SplitBody: Reducing Mental Workload while Multitasking via Muscle Stimulation
Romain Nith, Yun Ho Pedro Lopes
ACM CHI 2024 Paper– **Best Paper Award** (top 1%)

[2] JumpMod: Haptic Backpack that Modifies Users' Perceived Jump
Romain Nith, Jacob Serfaty, Samual Shatzkin, Alan Shen and Pedro Lopes
ACM CHI 2023 Paper

[1] DextrEMS: Increasing Dexterity in Electrical Muscle Stimulation by Combining it with Brakes
Romain Nith, Shan-Yuan Teng, Pengyu Li, Yujie Tao, Pedro Lopes
ACM UIST 2021 Paper – **Best Demo Award** **(people's choice)**
Guinness World Record for ***Most Precise Bionic Hand Controller***