Hack the North

10th Anniversary

September 15-17, 2023 • In-person event

Presented by:

TECHYON

Techyon is a nonprofit dedicated to empowering the next generation of tech leaders.

Techyon's vision is to foster an inclusive tech culture and community, with the mission to lower the barrier of entry to technology by bridging the gap between individuals and opportunities. Our goal is to have year-round representation of every specialization within technology. Whether your interests lie in hardware, software, design, product management, or data science, we want you to think of Techyon first. Feel free to reach out to hello@techyon.org to learn more!

WATERLOO | ENGINEERING

Our partner of over 10 years, Waterloo Engineering continues to support Hack the North to build a creative, diverse, and unique experience for hackers. The University of Waterloo is home to Canada's largest engineering school — a pipeline for engineering talent for the world's leading companies. Ranked among the top 50 engineering schools in the world, the school's reputation for excellence is built on the foundation of co-op education and a bold history of innovation.

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Welcome to
Hack the North 2023!

This weekend, we're celebrating 10 years of friendship, learning, connection and dreaming big! Whether you're joining us from overseas, or you walked a couple blocks to be here, Hack the North has something for everyone. This booklet contains information about where to find food and refreshments, a list of workshops and meetups, and key contact information.

Check out our activities from silent disco to therapy dogs and Hot Ones: Hack the North edition. Be sure to head to the RBC Oasis tent (E7 Parking lot) to check out our amazing food. We've got comfort classics like lasagna and smash burgers, and refreshing energy boosters like Açai bowls! Don't miss out on Hack the North's signature late-night poutine—a Canadian classic!

If you haven't found a team yet, check out the Team Formation workshop happening on Friday from 11 PM—12 AM in the Activities Room on the first floor.

We wish every hacker the absolute best for this weekend. Thanks so much for being here, and making the 10th year something truly special. If you require any assistance, please consult one of our organizers on floor patrol— we'll be wearing black and gray letterman jackets, and we're always happy to help 💙

Don’t forget to stay up to date this weekend through these channels:

hackthenorth.com

hackthenorth.slack.com

my.hackthenorth.com

— @hackthenorth

Important Information

Emergency contacts

University of Waterloo Police:	519-888-4911
Event Helpline:	519-888-4979
Hack the North:	hello@hackthenorth.com
Good2Talk (Mental Health Helpline):	866-925-5454

Internet connection

Network name: Hack the North
Password: HTNX2023

Slack and Communication

Join the Hack the North Slack to connect with other hackers, organizers, and sponsors. Slack will be the primary method of communication throughout the weekend, and will be used to relay important announcements, contests, and challenges.

Slack: hackthenorth.slack.com
An invite to Hack the North's event Slack was sent to your email before the event. If you have issues accessing our event Slack, please come to the Help Desk!

Attendee Dashboard: my.hackthenorth.com
Head to **my.hackthenorth.com** to view our live dashboard! Here you'll be able to view the schedule, and access important event tools.

QR codes and security

- You must have the QR code on your badge scanned to redeem food, attend activities and workshops.
- Your badge and your wristband must be worn at all times throughout the weekend for security purposes.
- Do not cut your wristband or lose your badge.

Help Desk

The help desk is located by the E7 entrance, and will be staffed by organizers that are ready to address any questions and concerns you may have throughout the weekend.

Food and water

This year, we have a wide variety of menu and snack items that we are eager for you to try! From a DIY Pancake Bar to Açai Bowls, we hope you find our meals nutritious and delicious.

We encourage you to use the refillable water bottles! If you don't have one, some of our lovely sponsors are giving water bottles! Water bottle filling stations can be found in the elevator lobbies on every floor.

All containers and cutlery are recyclable and compostable, so please throw your food waste in the compost bins found in the common area of every floor.

Napkins and stickers are **not** compostable— please recycle them instead!

Event-long activities

Event-long activities are available throughout the whole weekend! Check them out below.

Location: E7 1st floor, near help desk

Hacker world map: Tell us where you are from!
Hack the North puzzle: Collaborate with other hackers to finish a 500-piece puzzle!
Friendship bracelets: Customize your own bracelet and build new friendships!
Scavenger Hunt: Find posters around the premise to answer, and get prizes!

Hardware

Hardware Hacking Hub

HTN 10 is a great year to be a hardware hacker! This year, our dedicated hardware hacking space is better than ever, with features such as

- Large tables perfect for working on hardware hacks (lots of outlets everywhere!)
- Access to soldering irons, glue guns, and various hand tools
- Ever wanted to make a wearable hack? This year we have sewing materials up for grabs!
- Self serve station for wires, solder, fasteners and other basic components
- Oscilloscopes, multimeters, and power supplies for all your debugging needs
- Dedicated hardware mentors
- A drone room

- Hardware checkout and return open all weekend EXCEPT Saturday between 2 AM - 9 AM

Our Hardware Hacking Hub is located on the first floor of E7 in rooms 1427/1437. This is definitely the place to be to work on your next big idea, plus meet other builders!

Note: For hacker safety, using machine tools and soldering is permitted only in the Hardware Hacking Hub.

Hardware checkout
We have hundreds of different hardware items available for you to borrow for the weekend - microcontrollers, motors, sensors, and much much more are available by request. We also have some very special items that will be signed out via a lottery system like BCIs (Brain Computer Interfaces 🧠) and advanced microcontrollers 👀You can request items before hacking starts, or anytime throughout the weekend.

You must request items through the Hardware page on my.hackthenorth.com first! Once your items are ready, you'll receive an email and you can come to the hardware checkout desk in the Hardware Hacking Hub to pick up your items.

If the hardware you receive is defective or you think you have damaged it, please bring it back to the hardware checkout desk. Replacements may be available, but please always inform us if your hardware is broken so that we don't give it out to someone else. Hackers who explicitly misuse their hardware may be required to pay for damages, but regular wear and tear is fine.

Hardware checkout will start in the Hardware Hacking Hub at 10:00 PM on Friday and continue until the hacking period ends on Sunday at 8:00 AM. Special items will be signed out via a lottery system! Check out the hardware tool at my.hackthenorth.com for more details.

3D Printing and Laser Cutting

Have a design you want to bring to life? Maybe your hardware project needs a simple box/enclosure. Or you just want your project to look cool? This year, we have 24/7 access to 3D printing and laser cutting machines available to make your hardware hack shine! Check out our 3D printing lab, featuring 10+ Prusa printers and all the filament you can dream of! These are located in the 3D print lab on the second floor of E5, just past the organizer HQ. 3D printers are available on a first-come-first-served basis throughout the weekend, while laser cutting will be available ONLY on Saturday afternoon - timings to be announced via Slack. Visit the lab with your design ready to go in an STL file format and our volunteers can show you what to do next! Complete beginner to 3D printing and don't know where to start? Visit us anyways and we can help you get started.

Drone Policy

We are excited to give you the chance to hack on drones this year, but for the safety of all participants, we have a few strict rules: Drones may only be flown in a designated drone room, must be less than 250g, and must have propeller guards. There can only be one team in the drone room at a time. You may NOT under any circumstances:

- Fly drones that are larger than 250g

- Fly drones outdoors, in hallways, or anywhere other than the designated drone room.

Note: Under Canadian law, it is illegal to fly drones larger than 250g without proper documentation.

Mentorship

If you're in need of help throughout the weekend, our mentors have you covered! There will be an area for Space-specific mentors in each space on floors 1, 3, and 4. The 5th floor will have a general hacking space with general mentors to assist you while you're there! If you have a question, you can simply go up to an available mentor to get your questions answered. If you have a question, you can also submit a mentorship request through the Mentorship Tool on the Hacker Dashboard. Our mentors will be reviewing requests and you'll receive a notification on Slack when a mentor has claimed your request and is ready to meet with you.

Mentors will be wearing gray shirts and might be moving throughout the event when they're not on shift. As you're exploring different Spaces, feel free to ask any mentors you see the questions you have - they'll all be able to help you out!

Judging

This year, we are bringing back the option to come to Hack the North and work on a project that you've already started building out. While these projects aren't eligible for prizes, it's a great way to meet other people who are working on similar

projects, learn from veteran hackers, and start talking about the cool things you're building with other people in tech!

Whether you are in the new or existing project stream, all teams will get a chance to showcase their work to other hackers at the project showcase at the Engineering 5 (E5) Design Bay on Sunday, September 17 from 9:00 AM to 1:00 PM. Come over to see the awesome projects made by your fellow hackers! This event will also be open to non-contestants, so it's your chance to show off your efforts to the public!

This year, you can also select the spaces you feel fit your project best in your devpost submission, and we will use this information to prioritize matching you with a judge who can offer more in-depth and relevant feedback!

Submission Rules and Team Eligibility

- **Team Rules**
  - All members of your team must be accepted and registered as Hack the North 2022 participants.
  - Teams may have up to 4 members, all of whom must be in-person.
  - You may not be a part of more than one team.
  - Each team can only submit one project.
- **New Project Stream Competition Rules**
  - All code for your project must be written between 12:00 AM EST on Saturday, September 16, 2023, and 8:00 AM EST on Sunday, September 17, 2023.
  - All design assets for your project must be created between 12:00 AM EST on Saturday, September 16, 2023, and 8:00 AM EST on Sunday, September 17, 2023.

- You must submit your project at hackthenorth2023.devpost.com before 8:00am EST on Sunday, September 17 to be eligible to demo your project.
- It is permitted and recommended to install any necessary software in advance.
- It is permitted to plan your project out in advance.
- It is permitted to 3D-print parts or prepare other structural components for hardware projects in advance.
- Assembly of hardware projects in advance is not permitted.
- It is permitted to gather a data set for the purpose of being used as training data for a model in an AI project in advance.
- Training a model on data for an AI project in advance is not permitted.
- It is permitted to gather a data set for the purpose of being used as training data for a model in an AI project in advance.
- Training a model on data for an AI project in advance is not permitted.
- Plagiarism is not tolerated and any teams with plagiarized work will be disqualified.
- You may use any publically available libraries/packages/design assets.
- Please code with integrity! Final interpretation of these rules (including all rules on this page) is at the sole discretion of the Organizers, and potential violations will be dealt with on a case-by-case basis.
- **Existing Stream Eligibility Rules**
  - Existing stream projects cannot be submitted for any prizes and must indicate their stream on Devpost.

- **Submission Rules**
  - Submissions may not be submitted to multiple hackathons.
  - Submissions must include all design assets and source code created at Hack the North (e.g. via a link to your GitHub repository).
- **Hack the North Judging Rules**
  - You must be at your waiting room at your assigned time or your project will not be judged.
  - You will have 5 minutes to present once you're in the judging room. It is recommended that you leave time at the end for judges to ask questions and/or give feedback (at the discretion of the judges).
  - Your judging pitch should be focused on a live demo of the project, not a slideshow, product pitch, etc.
- **Sponsorship Judging Rules**
  - All projects that opt-in to any sponsor prizes must indicate so on their devpost submission.
  - You may submit your project to multiple API prizes.
  - Finally, remember that your participation at the event is subject to the Hack the North Code of Conduct.

Judging Criteria

- WOW Factor: Does the project stand out?
- Technical Ability: How technically complex is the project?
- Originality: Is the project new or unique?
- Design: Does the project consider user experience?

Sleep & Shower & Toiletries

All sleeping spaces will have blankets, pillows, and air mattresses (except for the sleeping bag room).

E6: Open from Sat. 12am - Sun. 1pm

- Floor 1: male-only
- Floor 2: male-only
- Floor 3: female-only
- Floor 4: gender neutral
- Floor 5: female-only

E7: Open from Sat. 12am - Sun. 8am

- Design bay: gender neutral
- Room 1302 (quiet study room): Sleeping bag room (quiet carpeted area for hackers who brought their own sleeping bag)

Please go to the Help Desk by the E7 entrance if you need any of the following toiletries:

- Showering gel
- Shampoo
- Conditioner
- Toothbrush
- Toothpaste
- Mouth wash
- Hand sanitizer

Multifaith space/quiet area

The 7th floor lobby of E7 is a quiet space that can be used for prayer, meditation, or quiet contemplation. If you would like a more private space, please ask an organizer at the Help Desk.

Gender neutral + accessible washrooms

Gender neutral bathrooms are located on floors 1, 2, and 4 of E7, and are all wheelchair accessible.

Opening Ceremonies

Your journey at Hack the North starts at opening ceremonies, happening at 8 PM on Friday! During ceremonies, you'll get **essential information** about the event weekend including a preview of all the incredible events we have planned and a live demo of our awesome new hacker networking tool. You will also get a chance to hear from some incredible people in the tech space, including our keynote speaker and sponsor reps. Most importantly, you'll get a chance to earn some **exclusive Hack the North merch**, and see those **mysterious new bracelets** come to life! 😉

Community Bay

Community Bay is an **all-new experience** designed just for Hack the North this year! We've put together an all-star lineup of tech trailblazers and local leaders from our community in Waterloo for you to meet, chat with and learn from. So come down to Community Bay on Friday at 10 PM in the Conrad Room (Floor 2, Rooms 2317 & 2357) to **explore** more of what tech has to offer, get a jumpstart on ideation and find **what inspires you!**

Empowerment Lounge

The empowerment lounge returns this year at the pitch deck in E7 across the stairs from Sponsor Bay. This is where all meetups throughout the week will occur. Drop by any time for a cozy, safe space for all attendees—have conversations with other hackers, join in on activities, and remember that YOU belong in tech!

Volunteers

If you have any questions or just want to chat about something, feel free to talk to a friendly floor patrol volunteer or organizer! Volunteers can be easily distinguished by their brown t-shirt and are there to give you directions, answer questions, and more!

Please only enter the venue through the door near the University of Waterloo Engineering sign. All other doors are locked from the outside but may be used as an exit. Please do not prop the doors open.

Introduction to Spaces

For the 10th Anniversary of Hack the North, we want to foster a stronger sense of community among attendees, and provide deeper learning experiences that inspire hackers beyond the weekend of the event.

We dedicated extra time to talking with our community in a series of one-on-one chats, and analyzed past project submission data to predict the topics that would be most popular at Hack the North. They are:

- Hardware (i.e. robotics, mechanical & electrical projects)
- Artificial Intelligence (especially Natural Language Processing)
- Game development (including VR & AR)
- Blockchain & decentralized Systems
- Product development and entrepreneurship

We’ve dedicated physical hacking hubs in E7, or “spaces”, for each of them! If any of these topics are your thing, we encourage you to set up your hacking space in the corresponding location. Spaces will give you the opportunity to:

- Meet other like-minded individuals, so that instead of being heads-down in your team of 4, you can find a community of people to share ideas with and collaborate with.
- Have easy access to mentors that specialize in your topic of interest—they’ll be hanging out near the hacking hubs for each space!

Attend workshop series curated to each topic, so you can take a deep dive into something you've always wanted to learn about, and easily customize your Hack the North experience to fit your interests.

When it comes to judging, spaces have absolutely no influence on project submissions or criteria—they're purely here to help you explore topics you're interested in, connect with new people, and pick up exclusive stickers—more on that on page 60 and we encourage you to check out all of them!

If none of these topics are your thing, that's okay too! Hack the North is the place to build and learn anything you want. Don't be afraid to check out our spaces anyway— sometimes inspiration comes from the most unexpected places! Even if you don't visit a space this weekend, our hackers are always encouraged to use the 1,000 other people at the event as a learning resource :)

In the following pages, you'll find the location and itinerary for each space!

Artificial Intelligence Space

Artificial Intelligence Space

Apart from our exciting workshops, tech talks, and access to sponsor APIs, **we're also offering every hacker OpenAI credits for the duration of the event!** Check your inbox for a specific email on accessing your credits.

Workshops

An Introduction to Machine Learning
Friday 11:30 PM - Saturday 12:30 AM
Room 3B (E7 3353)

Looking to make your hack-a-thon projects 'smart'? Curious about what makes ChatGPT tick? Learn the fundamentals and start making models in this hour long introductory machine learning workshop covering topics such as exploratory data analysis, model building, evaluation, and deployment.

Cohere: Intro to Cohere and Large Language Models
Saturday 1:00 AM - 1:30 AM
Room 3B (E7 3353)

Cohere is an NLP toolkit that helps generate and analyze text to do things like write copy, moderate content, classify data, build a search engine, all at a massive scale. At the workshop, you will learn how to use our API to easily build machine learning into your application.

BentoML: OpenLLM, and everything about running LLMs in production
Saturday 2:00 AM - 2:30 AM
Room 3B (E7 3353)

This workshop will go into some of the challenges of running open-source LLMs and propose that maybe, running your own LLM is not as hard as it seems.

Zero to NLP Hero: Functional Introduction to Natural Language Processing and Semantic Embeddings
Saturday 10:00 AM - 11:00 AM
Room 3A (E7 3343)

Excited by Large Language Models like ChatGPT but have no idea how to actually use them? In this workshop, we will take a beginner-to-expert functional walkthrough of various applications of NLP techniques through an interactive Jupyter Notebook. In particular, we will have a focus on NLP Semantic Embeddings and their various applications in Search, Content/User Understanding, Topic Modelling and Semantic Clustering.

University of Waterloo Mathematics: Vector Search with OpenAI Embeddings API

Saturday 11:00 AM - 12:00 PM
Room 4C (E7 4417)

Join Professor Jimmy Lin, NLP researcher and chair at the University of Waterloo's School of Computer Science, and Josh McGrath, Founding Engineer at Distyl AI and former ML Engineer at Apple, for a workshop on embeddings and vector search. We've partnered with OpenAI to give all hackers OpenAI credits over the weekend! In this workshop, we'll use OpenAI's Embeddings API to help you understand the inner workings of natural language processing and give you the tools to manipulate sophisticated AI models.

Tech Talks & Panels

Cohere: Generative AI as a Building Block

Saturday 1:00 PM - 2:00 PM
Room 5B (E7 5353)

Chatting with a Large Language Model (LLM) is a good start. But where the promise really lies is in using LLMs as individual blocks to build the intelligent systems of the future. Learn how to utilize LLMs to their limits by using them in pipelines involving multiple steps of generation, chat, classification, semantic search, question answering, and retrieval-augmented generation (RAG).

Fine-tuning and Prompting Large Language Models

Saturday 2:00 PM - 3:00 PM
Room 3A (E7 3343)

Large language models have become the starting point for most tasks that involve text. In this workshop, we will go over some of the basics of large language models as well as how to prompt them and fine tune them for specific tasks. This workshop is open to anyone interested in natural language processing (NLP). Prior background in NLP and machine learning will be useful, but not necessary.

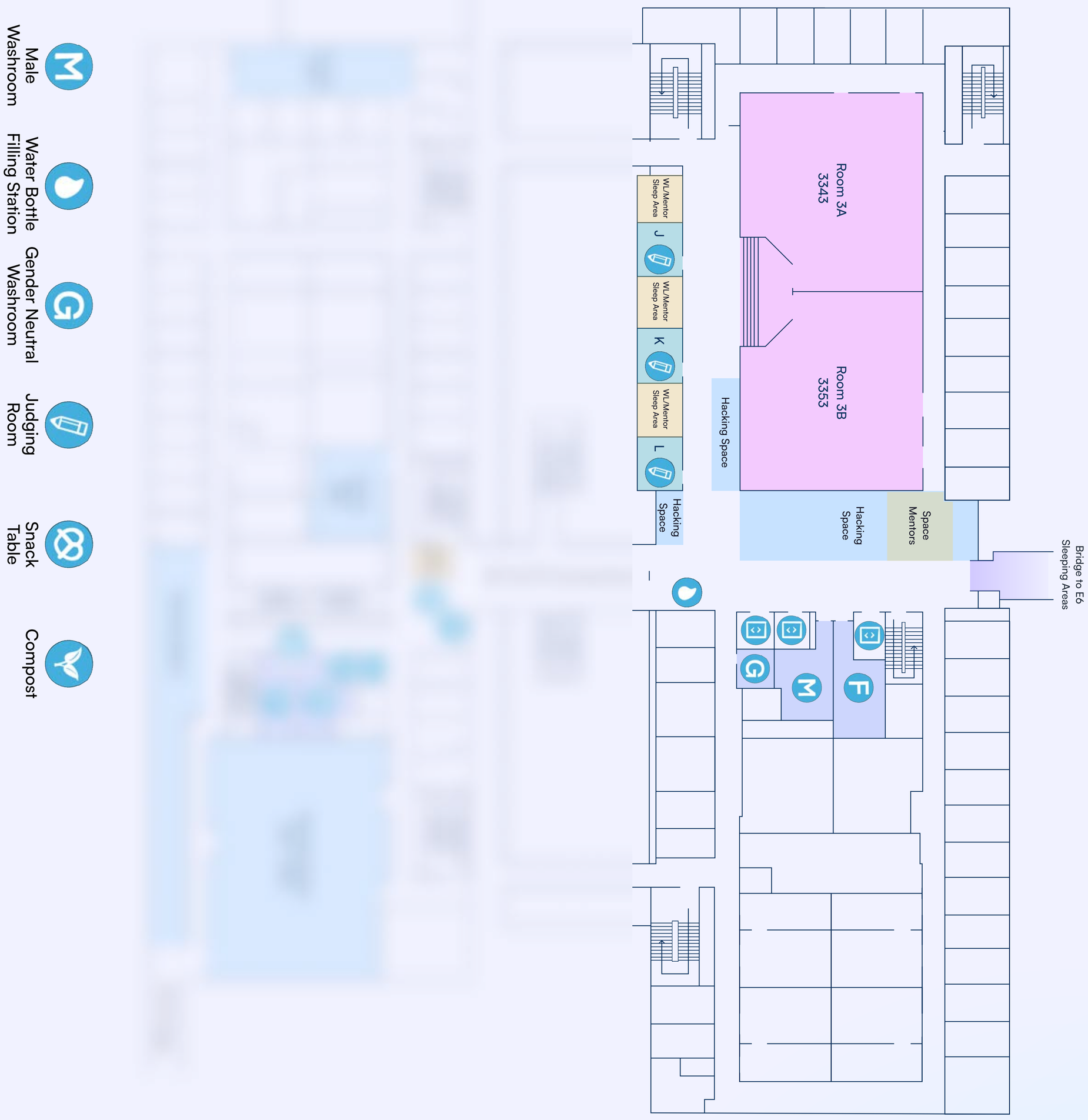
Replit: A Hackers Guide to Building with LLMs: How to hack, train, customize, and build with LLMs without requiring ridiculous resources

Saturday 4:00 PM - 4:30 PM
Room 3A (E7 3343)

Further details are on page 49.

Location

E7, Floor 3



Blockchain Space

Blockchain Space

Workshops

An Introduction to Blockchain Mechanisms

Friday 11:30PM - Saturday 12:30 AM
Room 3A (E7 3343)

Discover the tech behind cryptocurrencies like Bitcoin. Join our workshop to explore blockchain basics, decentralization, consensus mechanisms, real-world use cases, and more. Whether new to tech or an enthusiast, gain insight into how blockchain reshapes data interactions and transactions.

ETHGlobal: Getting started with wagmi

Saturday 1:00AM - 1:30AM
Room 3A (E7 3343)

wagmi is React Hooks for Ethereum and makes building on blockchain easy at any skill level. Join this workshop to build your first React app connected to Ethereum, how to set up an Alchemy or Infura RPC node, learn about smart contracts and ABIs, make your first onchain transaction and get testnet ETH to build this weekend!

Solana: Solana Pay NFT Minter

Saturday 1:30AM - 2:00AM
Room 5B (E7 5353)

Learn to mint NFTs on the Solana blockchain by simply scanning QR codes! Solana Pay transaction requests allow for any Solana transaction to be represented as a URL which can then be encoded in QR codes or NFC tags. We'll cover key concepts when building on Solana including Solana's account model, and transactions and instructions.

ICP: Building on the Internet Computer Blockchain with Typescript and Python

Saturday 2:00 AM - 2:30 AM
Room 3A (E7 3343)

We will be teaching the basics of Internet Computer blockchain and decentralized web application development on the Internet Computer with TypeScript and Python. We'll cover the motivations for decentralized cloud computing, reading and writing to the heap and stable memory, the Candid interface definition language, and more.

Building NFT wallets using Token Bound Accounts on Ethereum

Saturday 11:00 AM - 12:30 PM
Room 3B (E7 3353)

Token Bound Accounts allow you to use any NFT as a wallet on Ethereum. They solve the problem of representing characters accumulating items in on-chain gaming, an investment portfolio of multiple assets, and airdrops where the requirement is owning an NFT. This workshop will take you from 0 to 100 on building with Token Bound Accounts.

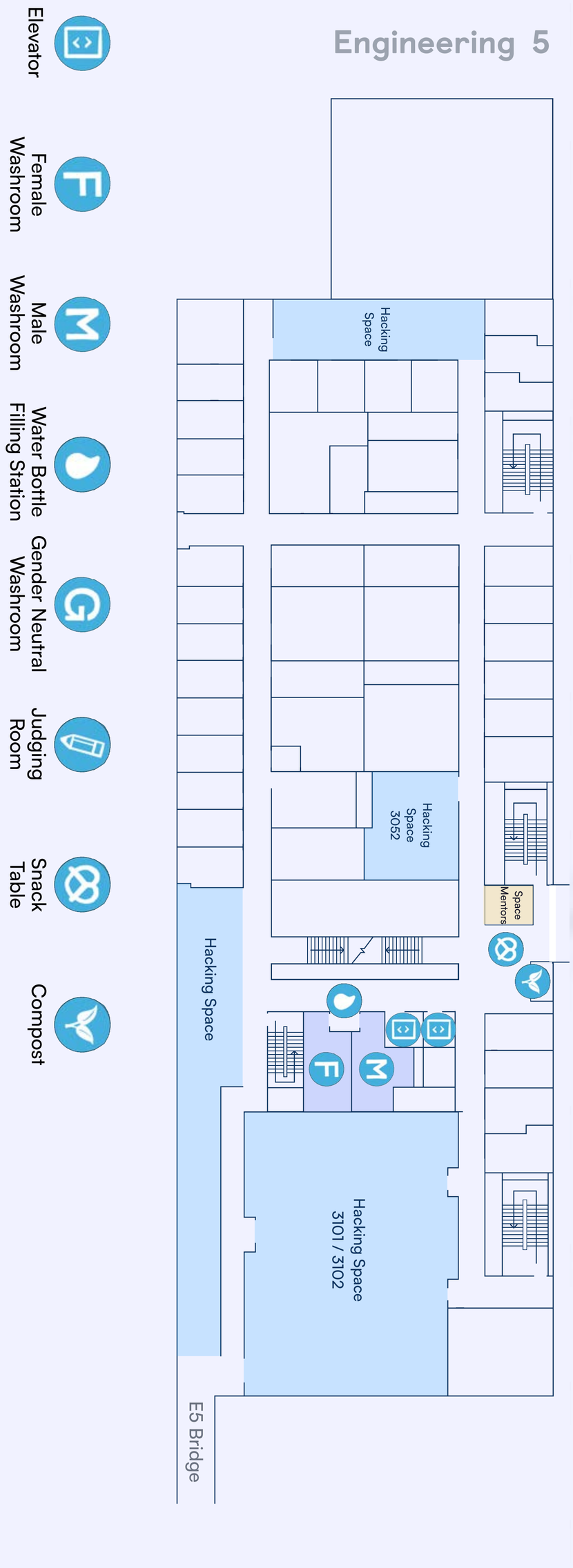
An Introduction to Zero-Knowledge Proofs

Saturday 3:00 PM - 4:00 PM
Room 3B (E7 3353)

Zero-knowledge proofs (ZKPs) offer a unique combination of privacy and verifiability in digital transactions. During this complete beginner-friendly workshop, we will learn what a ZKP is and how to integrate it into common web applications. In the end, you will have all the complete tools to masterfully use ZKPs in your own projects!

Location

E5, Floor 3



Product Space

Product Space

Workshops

A Hacker's Guide to UX Design

Saturday 2:00AM - 3:00AM
Room 4B (E7 4053)

Discover "A Hacker's Guide to UX Design" and unravel the art of crafting user-centered interfaces. This interactive workshop unveils the design process, fostering empathy with users, defining issues, innovating solutions, and expert prototyping. Elevate your skills as you master the integration of UX principles into your projects.

Figma Design → Dev Mode

Saturday 10:00AM - 11:00AM
Room 4B (E7 4053)

Hack faster, better, and more efficiently by mastering the sacred art of designer—developer collaboration. For designers and devs, beginners and veterans alike — bring your whole team to this interactive workshop for Figma and Dev Mode!

Tech Talks & Panels

Conrad Fireside Chat

Saturday 1:00PM - 2:00PM
Room 4C (E7 4417)

Finding new and innovative ways of tackling emerging societal challenges of increasing scale has never been more important. Everything, from political turmoil, hunger, poverty and financial instability dominates the news headlines and impacts lives all over the world. Join us for a fireside chat with Nada Basir, Assistant Professor at the Conrad School of Entrepreneurship and Business, and Masters of Business, Entrepreneurship and Technology (MBET) alumni Rachel Bartholomew Founder & CEO of Hyivy Health and Paula Sahyoun Manager, Systems Change and Social Finance Product Innovation at Social Venture Connexion (SVX) as they discuss the role of social innovation in addressing some of these challenges and crucially, how we might be able to make a difference.

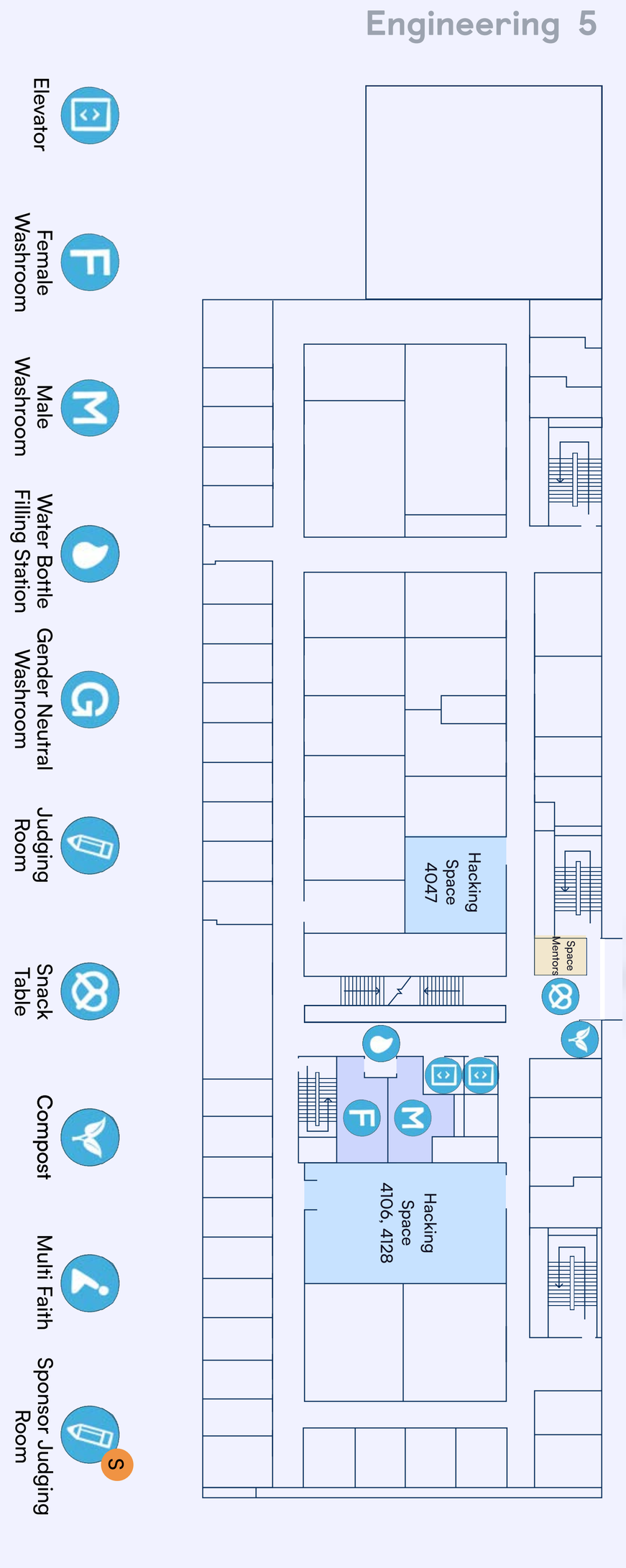
Neo Fireside Chat with Ali Partov

Saturday 9:00PM - 10:00PM
Room 4C (E7 4417)

Join us for an insightful fireside chat with Ali Partovi, founder & CEO of Neo and co-founder of Code.org, as he discusses entrepreneurship, reckless risk-taking, venture capital, and computer science education. In conversation with Advait Maybhate, a software engineer from Warp, Ali will share his invaluable perspectives into these key aspects of the tech landscape, his personal journey and how you should best carve your paths as budding innovators. Don't miss this opportunity to gain profound insights into the tech world from a renowned entrepreneur and investor!

Location

E5, Floor 4



Game Development Space

Game Development Space

Workshops

Intro to Game Dev

Friday 11:30PM - Saturday 1:00AM
Room 4A (E7 4043)

Ever wanted to make your games? You can do it the same way I did: by making your first game during a hackathon! Now I'm working as a game developer full time! In this workshop, I will teach you the basics of Game Development, from installing Unity to finishing and polishing your own game!

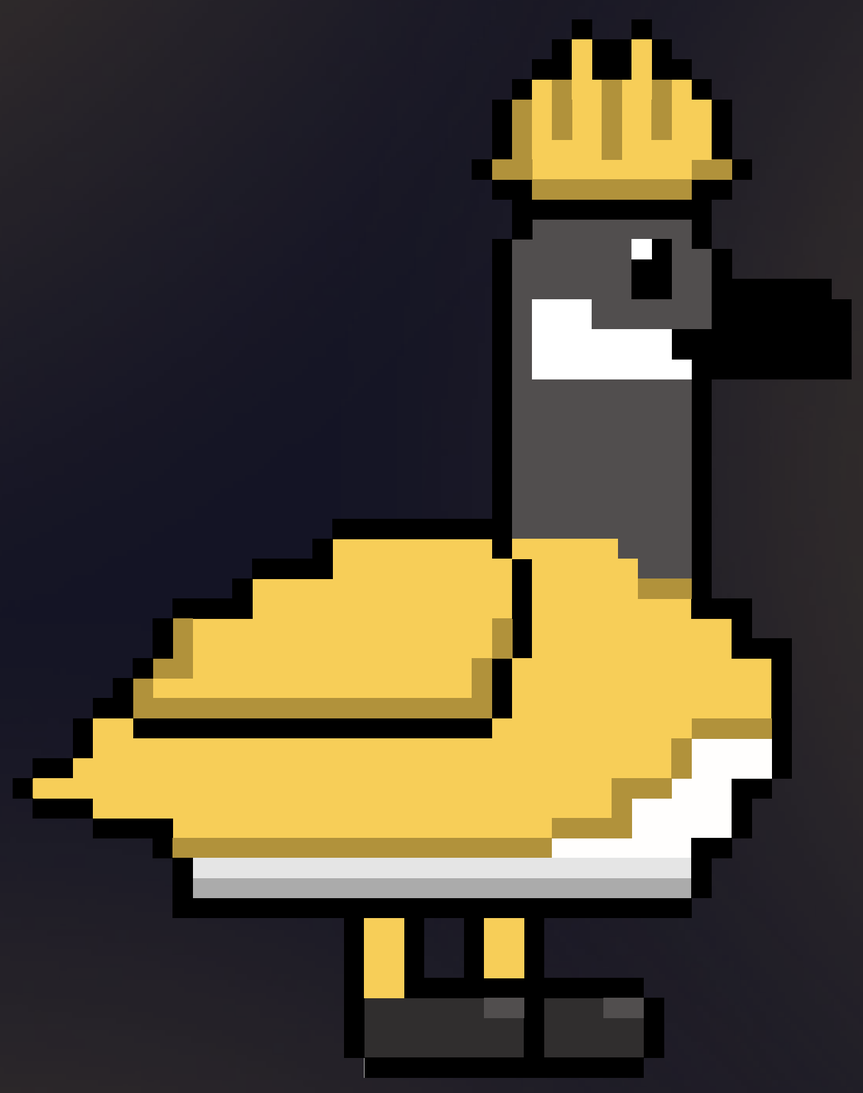
Actually Finishing Your Game, and Polishing It Too (in a Hackathon)

Saturday 1:00AM - 2:00AM
Room 4A (E7 4043)

This workshop is a practical guide for new and experienced hackers interested in using a Hackathon (or similar events) as a chance to build polished games to add to their Game Dev portfolio. The content of the workshop will cover scoping the project for a Hackathon, resources to add polish, and a hands-on activity to turn an idea into an actionable design.

Location

E7, Floor 4



Hardware Space

Hardware Space

Workshops

Viam: Making your robotics projects come to life

Friday 11:00PM - 11:30PM
Room 4B (E7 4053)

Make your robotics project come to life by harnessing the power of hardware abstraction, machine learning, and AI through a unified cloud-based platform, Viam. You'll get to know an autonomous drink delivery robot and learn about obstacle and person detection using machine learning. Then, you'll learn how to make your robot speech-controlled using a large language model!

Embedded Systems 101

Friday 11:30PM - Saturday 1:00AM
Room 4C (E7 4417)

This workshop is targeted toward beginners who have little to no experience with embedded software. In addition to informing the hackers about what embedded software is, hackers will get hands-on experience building a gesture detection device using an Arduino UNO. The device can be used by hackers as inspiration to build their own projects.

Intro to Robotics: Becoming RoboMaster Apprentices

Saturday 1:00AM - 2:00AM
Room 4B (E7 4053)

Do you want to work with robots but don't know where to start? In this workshop, we will talk about what a robot is, physically explore some of the elements of a robot, and then take some first steps in writing algorithms to control robots in the real world.

Adhawk API Workshop

Saturday 1:30AM - 2:00AM
Room 4C (E7 4417)

This API workshop will run through the operation of the AdHawk eye tracking glasses as well as the API and SDK, along with some examples.

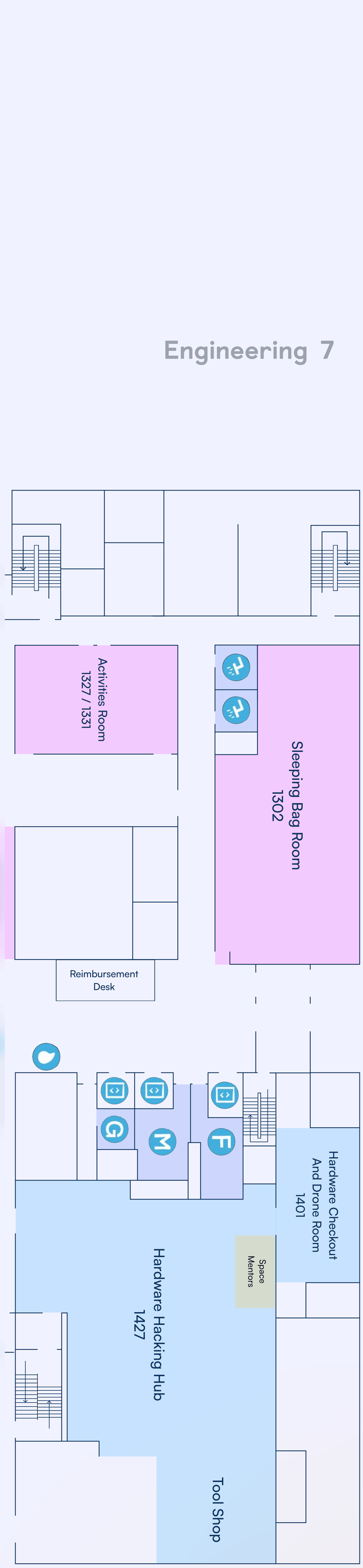
Hacking the Brain: An Intro to Software Development for Neurotechnology

Saturday 10:00AM - 11:00AM
Room 5A (E7 5343)

Explore the future of mind-machine interaction in this immersive workshop. Learn to decode brain signals, build brain-aware apps, and unlock the potential of neurotechnology.

Location

E7, Floor 1 (Hardware Hacking Hub)



Engineering 7

Community Bay

The Community Bay is a new initiative for Hack the North 2023! At this year's event, we'll be curating a physical space to help expose hackers to new problem spaces, and help inspire their Hack the North projects! Community Bay will help hackers see outside their own bubble, find topics and problem areas that inspire them, and form connections to their personal lives.

When and where: Conrad Room at 10:00pm-11:00pm EDT (Floor 2)

How will we accomplish this?

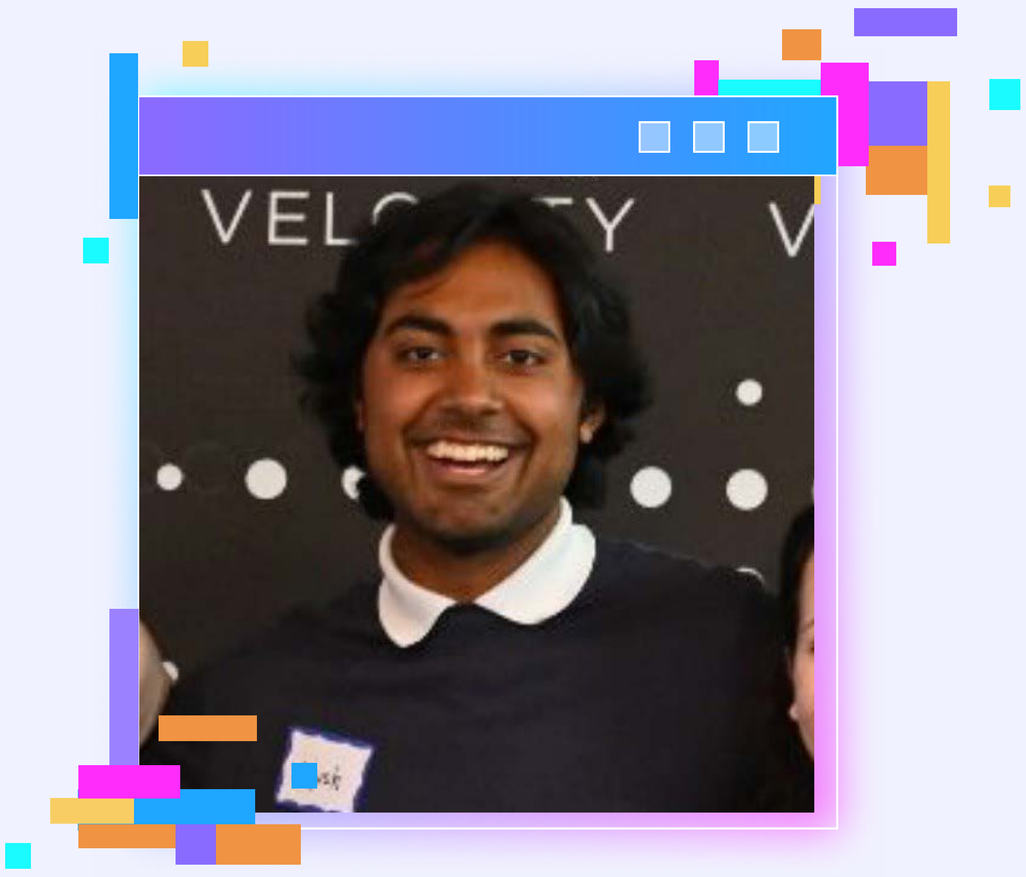
At Community Bay, we've brought together a group of Community Representatives that will help kick-start the ideation phase of the event. Community Representatives will help hackers discover new and exciting problem spaces and domains within tech, and connect those topics back to Hack the North and themselves.

The ideation will be done in a coffee chat style environment to find issues that interest them and think through potential solutions. If you're passionate about a specific corner in tech and wish to explore more about it, come visit Community Bay!

Representatives

Name: Zenen Treadwell
Company: Kwartzlab
Space: Blockchain
Description: Self-hosted software and web interfaces. Important for implementing digital technologies that won't fail based on questionable internet access

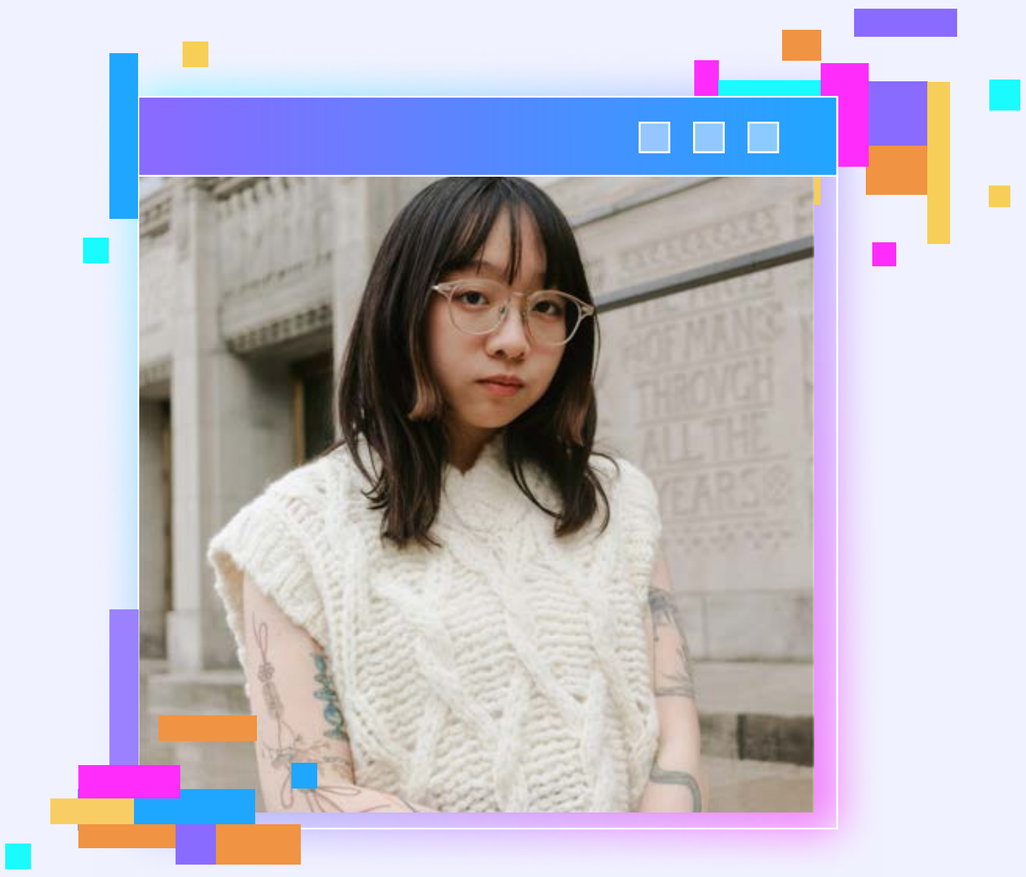
Name: Nivetha Balasubramanian
Company: Nasdaq
Space: AI
Description: Data Science in Fintech, ML usecases in Fintech



Name: Ayush Bhargava
Company: Scribenote
Space: Entrepreneurship
Description: Entrepreneurship/product ideas. Spent the last couple years building startups, most notably joined the Velocity Incubator in Kitchener and then sold the company during a gap year from school.

Name: Trevor Yu
Company: University of Waterloo
Space: AI
Description: My research is in medical AI, particularly on applying large language models to generating and processing electronic medical records.

Name: Amelia Kang
Company: Wealthsimple
Space: Blockchain, Entrepreneurship
Description: I (sort of) work in the crypto field and personally believe it has the potential to change the shape of the financial world in the long-term. Crypto is also based on technology/code, so it would be interesting for students to start exploring.



Name: Galaxia Wu
Company: Figma
Space: Entrepreneurship/Product
Description: Talk about design!

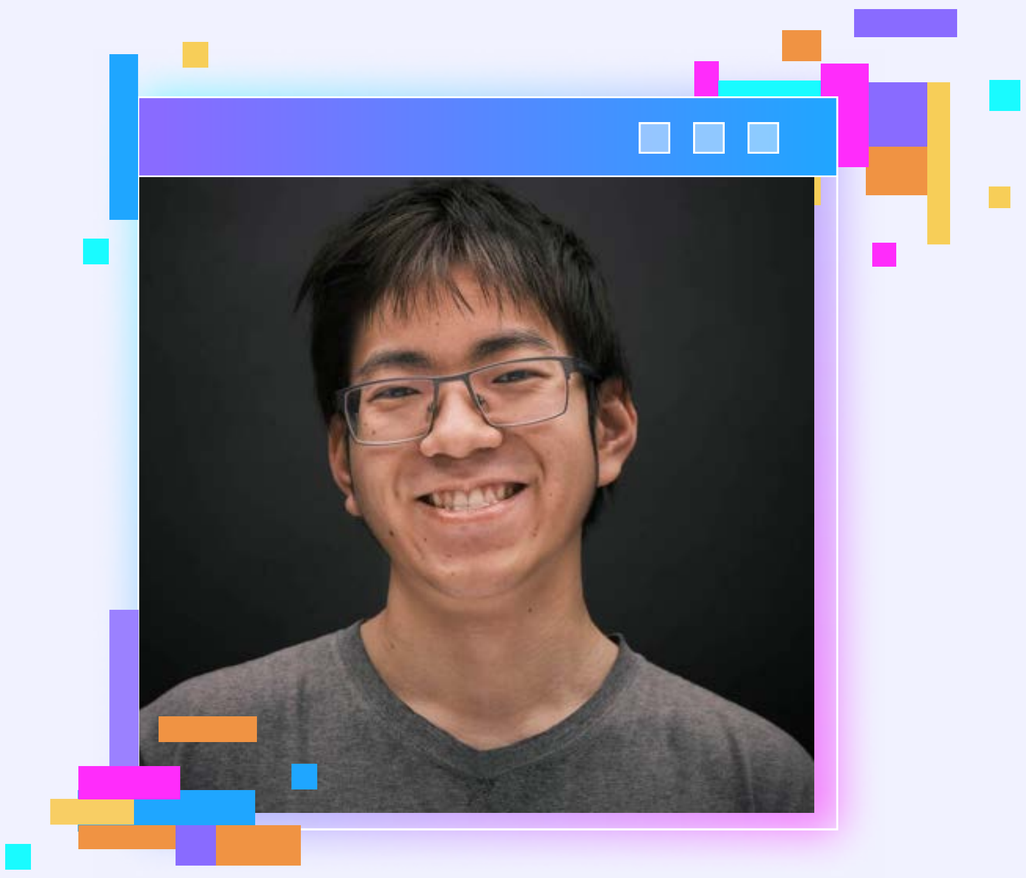
Name: Gabriel Wright
Company: Wealthsimple
Space: Entrepreneurship
Description: I've spent that past 10 years transitioning from a career in chemical engineering into software development. Coming from the legacy power industry, I've had to adapt to a new ways of working.

Name: Brandon DeHart
Company: University of Waterloo
Space: Hardware
Description: Talk about hardware!

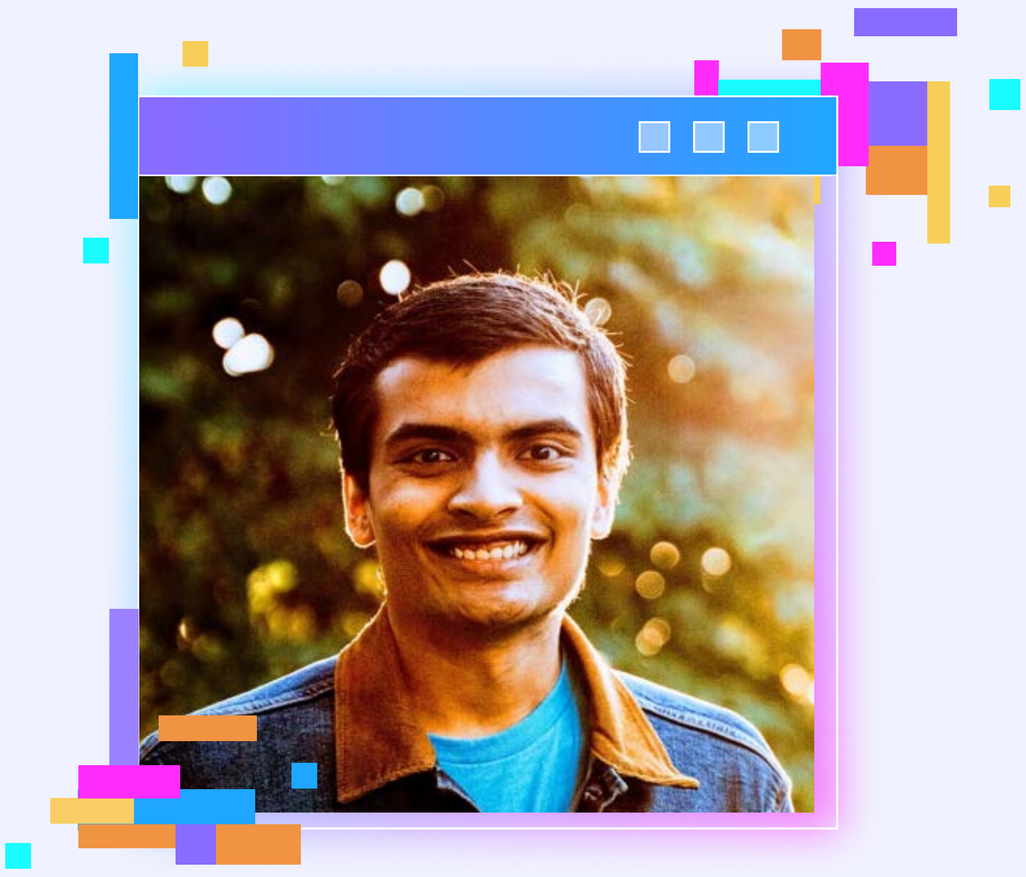
Name: Wayne Chang
Company: Conrad School of Entrepreneurship and Business, University of Waterloo
Space: Entrepreneurship
Description: I teach undergrad and master's grad courses in these topics listed, and coordinate co-op student program as mini-incubator called Enterprise Co-op here at UW.

Name: Michael Hanley
Company: Midnight Sun
Space: Hardware
Description: Talk to me about anything hardware!

Name: Hazem Aziz
Company: Game Hive
Space: Game Development
Description: Talk about game dev!



Name: Leon Si
Company: Tunnel
Space: Miscellaneous
Description: I'm aiming to discuss topics related to developer experience and developer productivity. One of my main motivators for building Tunnel is to make it easier for developers to collaborate and share projects with each other, especially in a team-based environment (which is a common struggle I hear amongst friends who are interning and working at software companies).

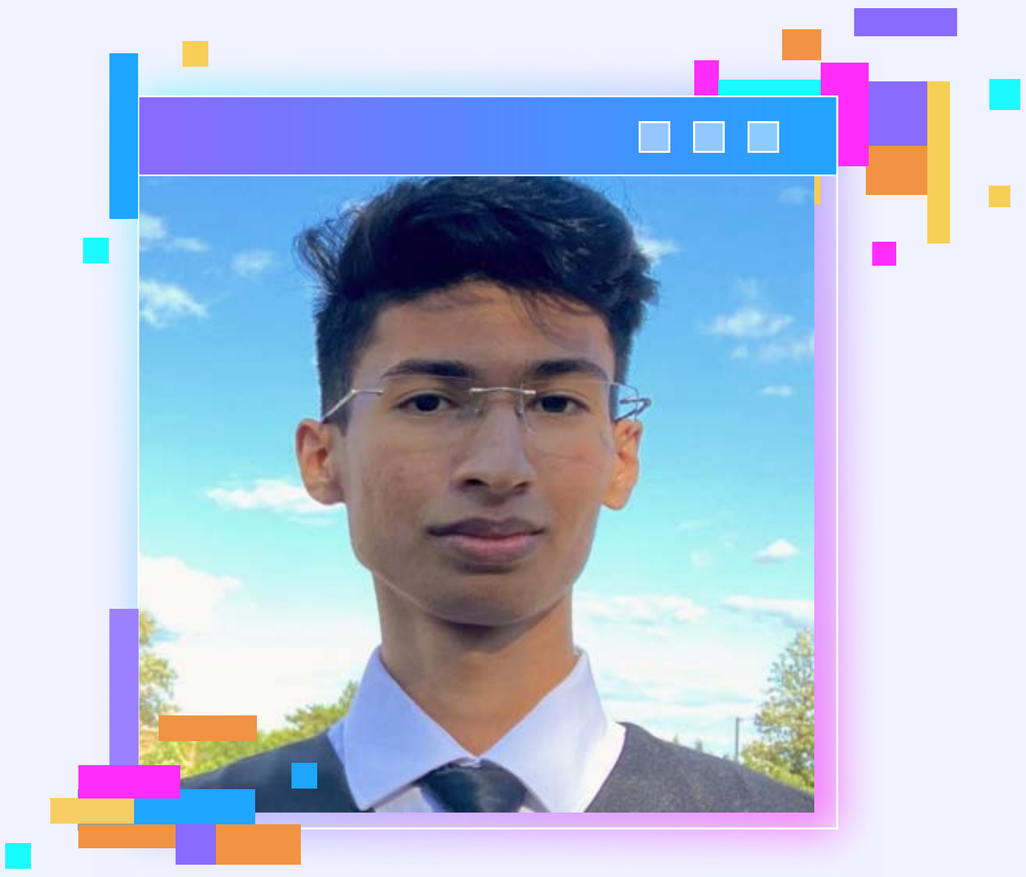


Name: Advait Maybhate
Company: Warp / Hack the North
Space: Miscellaneous
Description: Dev Tools - I work at Warp where we build a new terminal! I think it's super important to have awesome tools for developers to use so they can have minimal friction to build epic things!

Name: Chanakya Ramdev
Company: GreenHouse (Sweat Free)
Space: Miscellaneous
Description: Talk to me about climate change!

Name: Christopher Samra
Company: Cognixion
Space: Hardware
Description: Talk about hardware!

Name: Ralph Hempel
Company: LEGO Group
Space: Hardware
Description: Why is hacking important at all? It develops the skill of asking the right questions to move your project forward, and to not necessarily go all in with your first idea. It also promotes mentorship and asking for input/guidance without expecting full answers. Would be interested in hearing other viewpoints on what hacking has brought to their lives.



Name: Fahim Ahmed
Company: Axelar
Space: Blockchain
Description: Talk about blockchain!

Name: Damanpreet Kaur
Company: Sun Life
Space: AI
Description: I believe NLP is essential to improve human computer interaction, for doing sentiment analysis and even facilitating accessibility for people with disabilities. I reckon that learning AI and open doors to craft solutions that can revolutionize health care, improve how we connect and can even make our daily lives more convenient.

Name: Mike Morrice
Company: MP Kitchener Centre
Space: Miscellaneous
Description: Mike Morrice is the Member of Parliament for Kitchener Centre, elected in 2021.

Name: Pierre Arys
Company: Cherubic Ventures
Space: Blockchain, ML, AI
Description: Versed in many categories, happy to talk about anything!

Tech Talks & Panels

Conrad Fireside Chat

Saturday 1:30AM - 2:30AM
Room 5A (E7 5343

Finding new and innovative ways of tackling emerging societal challenges of increasing scale has never been more important. Everything, from political turmoil, hunger, poverty and financial instability dominates the news headlines and impacts lives all over the world. Join us for a fireside chat with Nada Basir, Assistant Professor at the Conrad School of Entrepreneurship and Business, and Masters of Business, Entrepreneurship and Technology (MBET) alumni Rachel Bartholomew Founder & CEO of Hyivy Health and Paula Sahyoun Manager, Systems Change and Social Finance Product Innovation at Social Venture Connexion (SVX) as they discuss the role of social innovation in addressing some of these challenges and crucially, how we might be able to make a difference.

Replit: A Hackers Guide to Building with LLMs: How to hack, train, customize, and build with LLMs without requiring ridiculous resources

Saturday 12:00PM - 1:00PM
Room 4B (E7 4053)

In this tech talk, Madhav Singhal, an AI Engineer at Replit, will show hackers how to customize LLMs for their AI projects, without requiring extensive resources. We'll get into SOTA techniques, practical tips, and overall approaches for building custom projects with open source LLMs. The talk will cover "hacking" across the stack: we will cover how to quickly assemble datasets for the custom problem, how to use and customize pre-trained models, train/tune efficiently without requiring extensive resources and deploy locally on easily available hardware with CPUs. We will show how techniques such as synthetic data generation, Evol-Instruct, PEFT, QLoRA and model quantization can be leveraged to hack with LLMs to ship a project.

The code walkthrough will show how to use the popular tooling of the Hugging Face ecosystem and some up and coming frameworks like GGML.

Neo Fireside Chat with Ali Partovi

Saturday 9:00PM - 10:00PM
Room 4A (E7 4043)

Join us for an insightful fireside chat with Ali Partovi, founder & CEO of Neo and co-founder of Code.org, as he discusses entrepreneurship, reckless risk-taking, venture capital, and computer science education. In conversation with Advait Maybhate, a software engineer from Warp, Ali will share his invaluable perspectives into these key aspects of the tech landscape, his personal journey and how you should best carve your paths as budding innovators. Don't miss this opportunity to gain profound insights into the tech world from a renowned entrepreneur and investor!

Cohere: Generative AI as a Building Block

Saturday 12:00PM - 1:00PM
Room 4B (E7 4053)

Join Jay Alammar (https://www.youtube.com/@arp_ai) and Eddie Kim (https://www.linkedin.com/in/eddotman/) for this tech talk!

Chatting with a Large Language Model (LLM) is a good start. But where the promise really lies is in using LLMs as individual blocks to build the intelligent systems of the future. Learn how to utilize LLMs to their limits by using them in pipelines involving multiple steps of generation, chat, classification, semantic search, question answering, and retrieval-augmented generation (RAG).

Jane Street: Why O'Caml

Saturday 12:00PM - 1:00PM
Room 4B (E7 4053)

Jane Street is a company that has staked its existence on functional programming. Specifically, we run a large and successful trading business on software written almost entirely in OCaml, a statically typed functional programming language. Relying on what is, frankly, an obscure corner of the programming language world is an unusual choice that demands some explanation. In this talk, one of our developers will discuss how and why we made that choice, and how we think it worked out.

Lightning Challenges

Lightning Challenges are a great way to take a break from hacking, showcase your creativity & problem solving and potentially earn some super cool prizes! This year we've got a particularly thrilling set of challenges from DRW, Sun Life and TD!

DRW: Trading Bot Challenge	Saturday 10:00 AM *Room 5B*
Sun Life: Currency Exchange Optimizer	Saturday 2:30 PM *Room 5A*
TD: Break the Vault Challenge	Saturday 4:00 *Room 5A*

Meetups

Blockchain Meetup	Saturday 6:00 PM - 7:00 PM *Activities Room*
WiCS Mentorshop Bubbles	Saturday 6:00 PM - 7:00 PM *Empowerment Lounge*
Entrepreneurship Meetup	Saturday 7:00 PM - 8:00 PM *Activities Room*
High School Hackers Meetup	Saturday 7:30 PM - 8:30 PM *Empowerment Lounge*
Design and Art Meetup	Saturday 8:30 PM - 9:30 PM *Activities Room*
2SLGBTQ+ Meetup	Saturday 9:30 PM - 10:30 PM *Empowerment Lounge*
Black in Tech Meetup	Saturday 10:30 PM - 11:30 PM *Activities Room*
Game Dev Meetup	Saturday 11:30 PM - 12:30 AM *Empowerment Lounge*

Judges and Speakers

Advait Maybhate	Warp *Software Engineer*
Alroy Almeida	Velocity *Director*
Andrew Zhou	Copilot *Co-founder*
Cat Noone	Stark *CEO & Co-founder*
Danielle Strachman	1517 Fund *Co-founder & GP*
Freeman Jiang	Agora Labs *Co-founder & CTO*
Henry Shi	Super.com *Co-founder*
Ivan Zhang	Cohere *Co-founder & CTO*
Jacob Willemsma	Lunchclub *Founding Engineer*
Jen Dewalt	Zube *Founder*
Kevin Yang	Warp *Software Engineer*
Leon Si	Tunnel *Co-founder*
Linden Tibbets	IFTTT *Founder & CEO*
Michael Gibson	1517 Fund *Co-founder & GP*
Mike Kirkup	EnPowere *CTO*

Nabil Fahel	Atomic *Director*
Pierre Arys	Cherubic Ventures *Partner*
Purya Sarmadi	MedMe Health *CEO & Co-founder*
Ralph Hempel	LEGO *Senior Manager*
Rohan Sampath	Copilot *Co-founder and CEO*
Tom Alterman	Notable *Head of Product*
Umesh Khanna	Middesk *Product Lead*

Sponsors

Tech@RBC

Hey Hacker!

You may know that RBC is Canada's largest bank, with 89,000+ employees and 17 million clients globally. But did you know that we're also one of Canada's most prominent tech employers? With over 10,000 employees, our tech teams apply imagination, insight, and cutting-edge technology to help our clients thrive, and communities prosper.
Tech @ RBC offers hundreds of student and new grad roles, with opportunities to learn, grow, and work purposefully.

From Developers to Data Scientists, from Cyber Threat Hunters to AI and ML Specialists, we inspire the next generation of brilliant minds like yours to be the future of tech.

If you want to explore a broad range of exciting technology career paths, connect with us this weekend! Check out our booth or attend our Women in Tech event to get some cool swag and explore your future in tech.

See you there!
Tech @ RBC

General Workshops

Presented by Hack the North

Giving Go a Go

Saturday 1:30AM - 2:30AM
Room 5A (E7 5343

Get a head start on your hackathon project by building a REST API with Go! In this workshop, you will gain experience creating web applications that can communicate with other services and exchange data—a fundamental skill—all while learning Golang, a very powerful and in-demand programming language.

What They Don't Tell You About Technical Interviews

Saturday 1:00PM - 2:00PM
Room 4A (E7 4043)

It's easy to think that technical interviews are just about your knowledge of data structures and algorithms, but they really aren't. There's so many other aspects to them, but these aspects often get left out in our discussions around technical interviews. That is what we'll explore with this workshop.

Intro to Cloud and Azure AI

Saturday 12:00PM - 1:00PM
Room 4B (E7 4053)

The workshop will give an overview of how and why to use cloud, especially if you have in mind scaling your personal project to a real-world startup. Brief introduction of AI Cognitive services on Azure and how to connect them with the web application.

Hacking the Code of Life: An Introduction to Biotech and Computational Biology

Saturday 3:00PM - 4:00PM
Room 5B (E7 5353)

Biology governs how we work and function, but we don’t understand enough of it. In this workshop, you will learn about the exciting field of biotechnology and gain insight into how you can use your engineering and tech skills to solve the toughest problems in biology and medicine. No past biology knowledge or coding experience required.

Sponsor Workshops

Gold

The Future of Banking: Tech @ RBC Challenge

RBC

Unleash your innovation in the Tech @ RBC Banking API Challenge! In a competitive industry, banks need to provide a customer experience that's contextual, personalized, and tailored. Leverage our API and integrate it with your own idea to unlock a world of possibilities. Build apps for seamless transactions, improving financial literacy, or bringing transparency to banking. Code your way to our cash prizes, shape fintech's future, and revolutionize banking's digital frontier. Join us and code for a smarter financial world!

Silver

Build a Full Stack App with CockroachDB serverless and Python

Cockroach Labs

In this workshop, we'll get you started with CockroachDB serverless by walking you through creating your own serverless cluster. We'll then provide an introduction to SQL focusing on statements that will assist you with your project. You'll learn how to create a database schema and access your data while implementing simple username and password authentication using the FAbRiC stack (FastAPI, React, and CockroachDB). This workshop will be hands on, so bring your laptops. You'll leave with a working full stack application powered by CockroachDB serverless and Replit!

Getting started with wagmi

ETHGlobal

wagmi is React Hooks for Ethereum and makes building on blockchain easy at any skill level. Join this workshop to build your first React app connected to Ethereum, how to set up an Alchemy or Infura RPC node, learn about smart contracts and ABIs, make your first onchain transaction and get testnet ETH to build this weekend!

Intro to Cohere and Large Language Models

Cohere

Cohere is an NLP toolkit that helps generate and analyze text to do things like write copy, moderate content, classify data, build a search engine, all at a massive scale. At the workshop, you will learn how to use our API to easily build machine learning into your application.

Vector Search with OpenAI Embeddings API

University of Waterloo Mathematics ft. OpenAI

Join Professor Jimmy Lin, NLP researcher and chair at the University of Waterloo's School of Computer Science, and Josh McGrath, Founding Engineer at Distyl AI and former ML Engineer at Apple, for a workshop on embeddings and vector search. We've partnered with OpenAI to give all hackers OpenAI credits over the weekend! In this workshop, we'll use OpenAI's Embeddings API to help you understand the inner workings of natural language processing and give you the tools to manipulate sophisticated AI models.

How to become a 10x developer using the terminal

Warp

In this workshop, we'll dive deep into terminal tips and tricks to increase your developer productivity. From beginners to terminal veterans, we'll have something for everyone. This workshop is brought to you by the terminal experts at Warp, a blazingly-fast terminal app for the 21st century. Bring your laptops!

Solana Pay NFT Minter

Solana

Learn to mint NFTs on the Solana blockchain by simply scanning QR codes! Solana Pay transaction requests allow for any Solana transaction to be represented as a URL which can then be encoded in QR codes or NFC tags. We'll cover key concepts when building on Solana including Solana's account model, and transactions and instructions.

Bronze

Replit Workshop: Turn Your Idea into a Project in Minutes

Replit

Connect to hundreds of APIs securely and seamlessly with Replit! We'll show you how to get started with Replit in minutes, so you can spend your hackathon building, collaborating, and deploying instead of worrying about setting up your development environment.

AdHawk Workshop

Adhawk

This API workshop will run through the operation of the AdHawk eye tracking glasses as well as the API and SDK, along with some examples.

Empowering Empathetic Experiences - Unleashing the Power of Genesys Cloud APIs

Genesys

Genesys Cloud offers a plethora of APIs that open up a world of possibilities to create empathetic experiences for customers. With the ability to send customer surveys, perform sentiment analysis, topics detection, and various other features we have an opportunity to revolutionize end user experiences. Join us on this journey to push the boundaries of innovation and redefine customer engagement! We invite participants to explore the endless potential of these APIs and develop solutions that enhance customer experiences, facilitate insightful data analysis, and ultimately, revolutionize how businesses engage with their customers.

Making your robotics projects come to life

Viam

Make your robotics project come to life by harnessing the power of hardware abstraction, machine learning, and AI through a unified cloud-based platform, Viam. You'll get to know an autonomous drink delivery robot and learn about obstacle and person detection using machine learning. Then, you'll learn how to make your robot speech-controlled using a large language model!

Building on the Internet Computer Blockchain with Typescript and Python

ICP

We will be teaching the basics of Internet Computer blockchain and decentralized web application development on the Internet Computer with TypeScript and Python. We'll cover the motivations for decentralized cloud computing, reading and writing to the heap and stable memory, the Candid interface definition language, and more.

Startup

How to become a 10x developer using the terminal

Warp

In this workshop, we'll dive deep into terminal tips and tricks to increase your developer productivity. From beginners to terminal veterans, we'll have something for everyone. This workshop is brought to you by the terminal experts at Warp, a blazingly-fast terminal app for the 21st century. Bring your laptops!

OpenLLM, and everything about running LLMs in production

BentoML

This workshop will go into some of the challenges of running open-source LLMs and propose that maybe, running your own LLM is not as hard as it seems.

Unlocking Security: Diving into Syro's Secrets Management API

Syro

Join us to master the art of safeguarding sensitive data and credentials. Learn how to securely store, retrieve, and manage secrets. Elevate your cybersecurity skills and unleash the power of API-driven security for your projects.

Scavenger Hunt

The Scavenger Hunt is a fun activity and chance to explore the Hack the North buildings and spaces. Visit each of the 5 spaces to find colourful posters containing a QR code. If you answer 2 questions and attend 1 workshop from a space, you'll get an exclusive sticker for that space! Once you've collected stickers from 3 of the 5 total spaces, head over to the Help Desk on the first floor to collect your prize. Everyone who completes the Scavenger Hunt also gets a special shoutout at closing ceremonies!

Visit your Attendee Dashboard at my.hackthenorth.com to find a Scavenger Hunt portal. There, you can scan, browse, and answer the questions. Check out the workshop schedule to find out when and where each space workshop is happening. Look at the floor maps for each space to find where each of the posters are located.

Rules

To qualify for a specific space sticker

- **Per space:** Answer one question by scanning the QR code on the poster in the space
- **Per space:** Attend one workshop and answer the question on the poster at the end of the workshop (there will be volunteer stations in front of each workshop to scan your attendance)
- **Per space:** Answer the sticker poster located at the main foyer of each space
- Once you've completed all 3 of the above, you can head to the main foyer of each space to receive the space sticker. Show the volunteer at the main foyer the questions you've answered for that space and receive the sticker from them!

- e.g. In the AI space, find and answer an AI poster + attend 1 AI workshop and respond to the workshop poster presented at the workshop. After completing these two requirements, go to the main foyer of the AI space and answer the AI sticker poster. At last, the volunteer stationed there will give you the AI space sticker :) (FYI, you don't have to complete the requirements in any particular order to qualify for the prizes.)

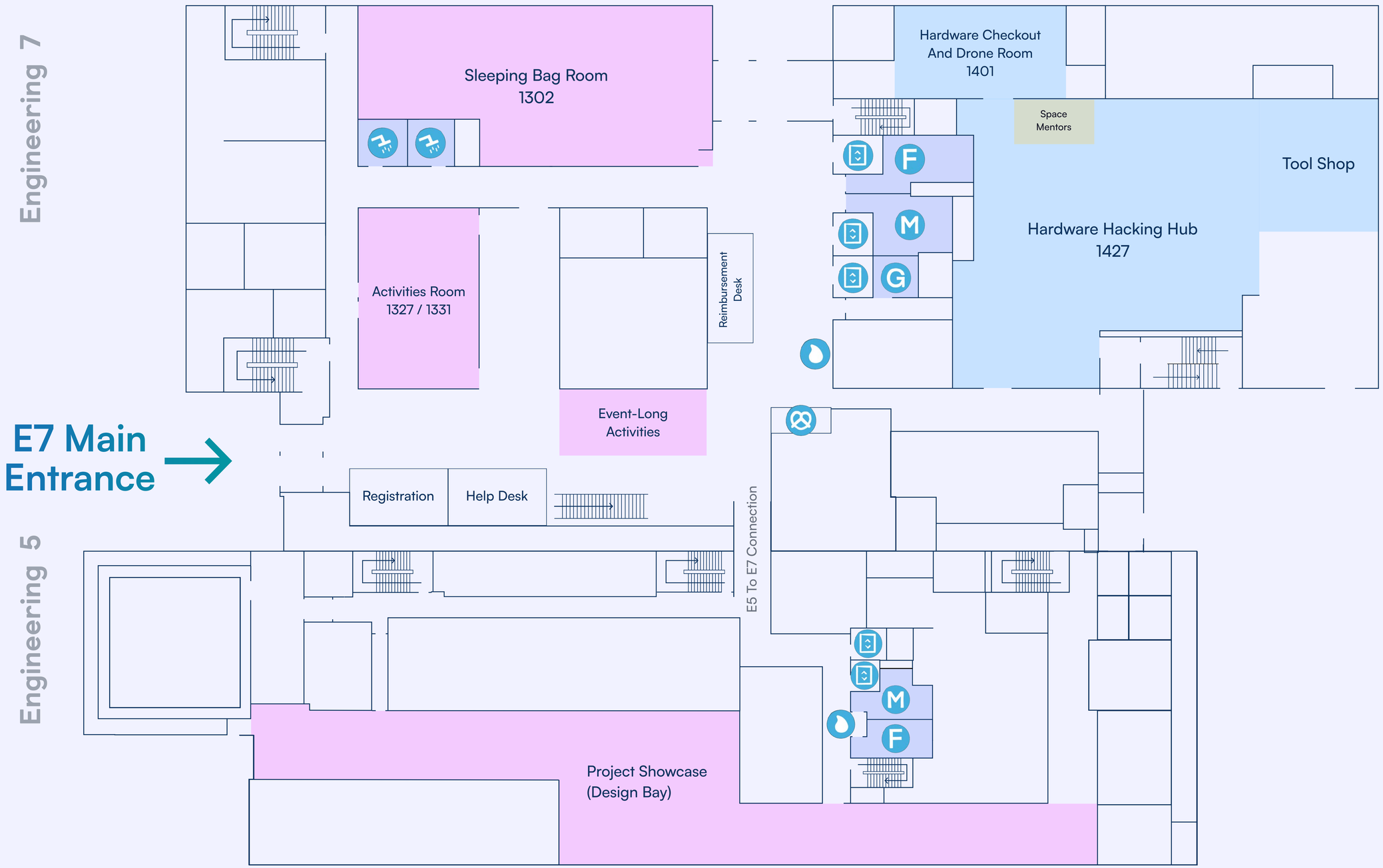
In order to qualify for a prize as well as a shout out at closing ceremonies, **collect 3 out of 5** space stickers! **Please note that prizes are available while supplies last.**

The deadline to redeem your stickers and prize at the help desk is **Saturday, September 16 @ 5 PM.**

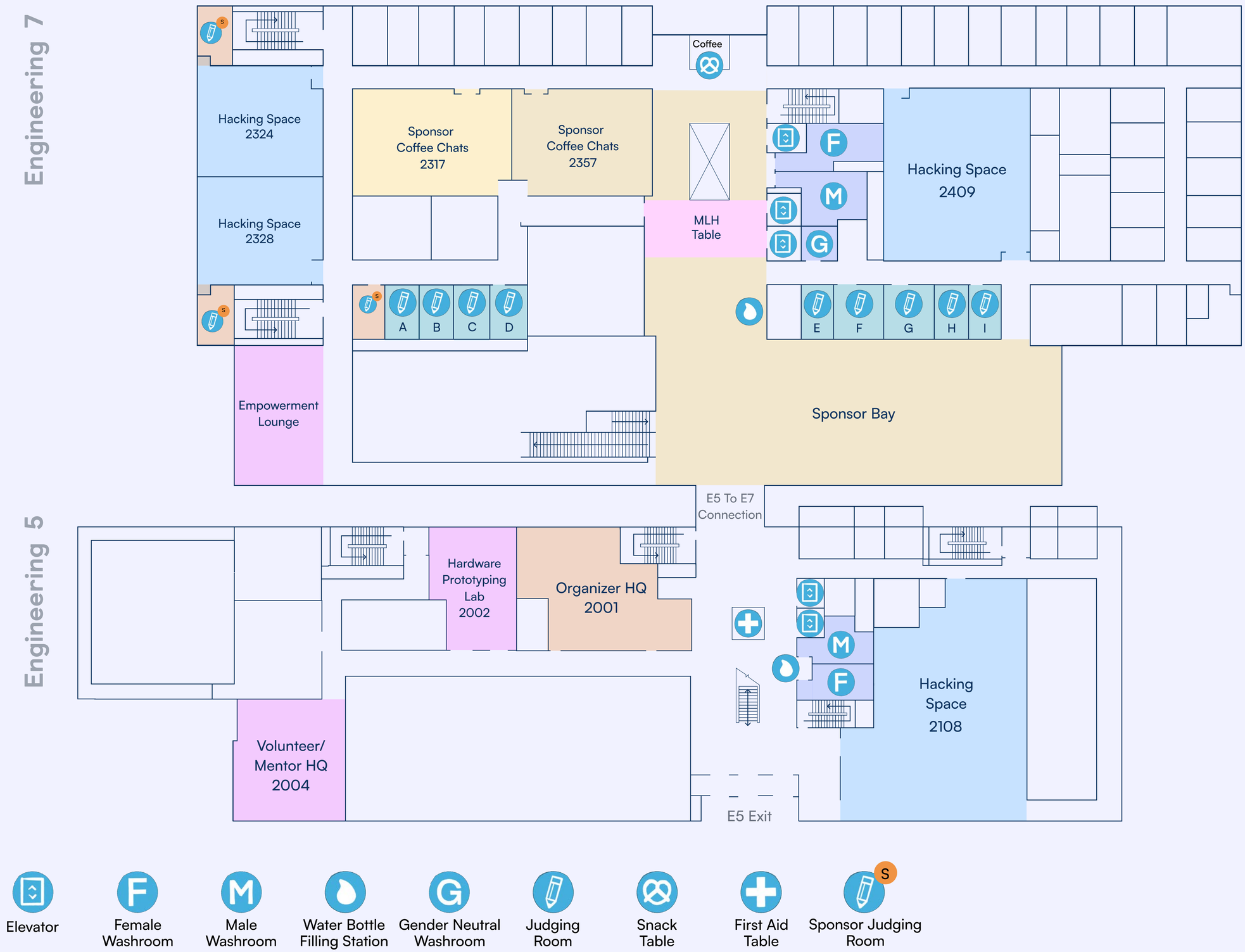
You can check out all the responses and data projected at the Empowerment Lounge, or on charts.hackthenorth.com

Reimbursements

Just a reminder to get reimbursed, you must attend our event and submit a project! Even if your project isn't fully complete at the time of submission, we'll love seeing anything that you put your time and effort into creating 😄!



E5 and E7 Floor 1



E5 and E7 Floor 2

Elevator | Female Washroom | Male Washroom | Water Bottle Filling Station | Gender Neutral Washroom | Judging Room | Snack Table | Compost

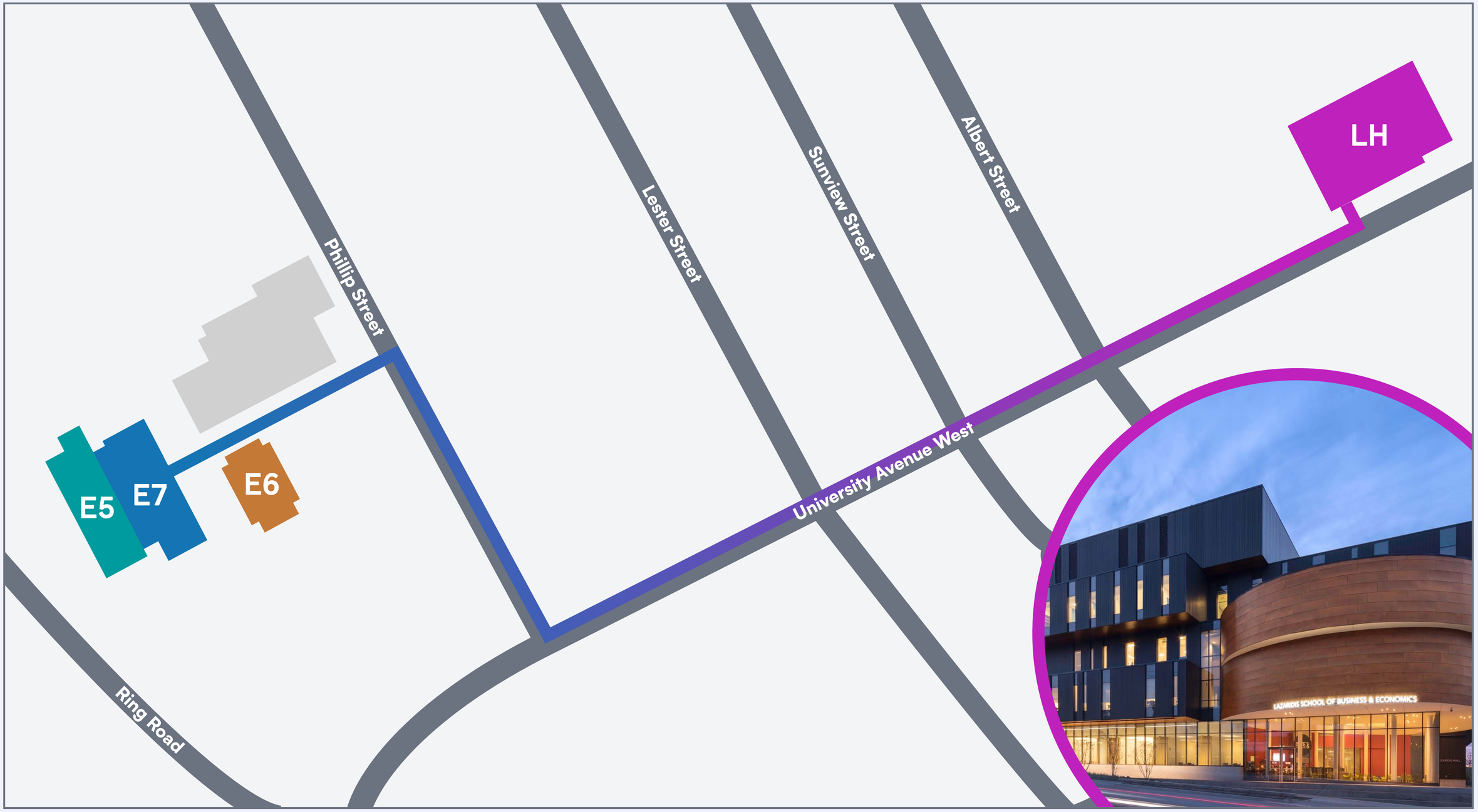
E5 and E7 Floor 3

Elevator | Female Washroom | Male Washroom | Water Bottle Filling Station | Gender Neutral Washroom | Judging Room | Snack Table | Compost | Multi Faith | Sponsor Judging Room

E5 and E7 Floor 4

E5 and E7 Floor 5

E5 and E7 Floor 6



E5 Engineering 5 E7 Engineering 7 E6 Engineering 6 LH Lazaridis Hall

Route to Ceremonies

E7 to Opening and Closing Ceremonies

E5 Engineering 5 E7 Engineering 7 E6 Engineering 6 VG V1 Green

Route to Bubble Soccer

E5 to V1 Green

Welcome to

10 Years of

Friendship,

Learning,

Collaboration,

Connection,

Dreaming Big,

Hack the North