

When Should a Maths Major Go Abroad?

Year 3.

Which means the planning starts in Year 1.

三年級最好，但一年級就要開始準備。

What a term-long OAL exchange and a research summer each look like, when to apply for them, and what to do in the meantime.

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BSc Mathematics 2026 → MPhil, CUHK

UNIVERSITY OF WATERLOO · MAY – AUGUST 2025



Four months, one problem, one paper

A research summer in Canada. Four months was enough to come back with real work. 四個月，已經足夠帶回一份成果。

4

MONTHS

May – Aug 2025,
University of Waterloo

2×

PER WEEK

Meetings with Prof. Justin Wan

~20

PAPERS

Handed to me in the first
fortnight

1

PAPER OUT

Accepted at ICPR 2026, Lyon

A summer is the short version. A term abroad is the bigger one, and most of you should aim for that.

What I expected vs what actually happened

Before I left

- See how a strong overseas department really works
- Find out if I actually enjoy research before committing to a PhD
- Hopefully come back with something publishable
- Travelling

By the time I flew home

- A real problem: making generative-AI sampling far faster
- A paper accepted, and a supervisor who now writes references for me
- Two habits I did not have before: how to present, and how to chase detail
- Enjoying a different culture
- Networking

The one I never planned for: it was the first time I had ever lived on my own.

Two doors out, and you can take both

■ DOOR A · OAL EXCHANGE · THE MAIN ROAD

- One term, or a full academic year
- You enrol in courses; credits transfer back to CUHK
- Hundreds of partner universities, but the famous ones have very few places

■ DOOR B · COSINE · WHAT I HAPPENED TO DO

- One summer only, with no courses
- One supervisor, one research problem, no credits to transfer
- You come home with a paper rather than a transcript

These are not rivals. A term abroad is the bigger experience, so aim for that first. A research summer is what you add on top. The OAL colleagues here today can tell you how to do both.

COSINE

China & Overseas Summer Internship and Exchange, the Maths Department's own summer scheme

1 Who runs it

The CUHK Department of Mathematics. Worth knowing about alongside OAL.

2 Who can apply

MATH and MIEG undergraduates, not in your first year and not in your final.

3 The money

Placements outside Hong Kong are partly funded by the Department.

4 When

The call arrives by email. For my year the deadline was 15 January.

THE HONEST PART

My GPA was not the best in my year. What got me in was having already done research before I applied.

So start early, and start small.

What a week actually looked like

■ THE RHYTHM

Afternoons

In the department, coding and running experiments

Twice a week

1–2 hours with Prof. Wan, and a fresh deck each time

Evenings

Out. Friends, food, and the rest of Canada

■ THE ARC OF THE SUMMER

Weeks 1–2

Read ~20 papers. Report back. No research yet.

Week 3 on

My own project: a new way to precompute the hard part

Final week

Write it up. Nothing allowed to be called “obvious”

115×

faster than the standard method, at the same image quality.

Efficient Score Pre-Computation for Diffusion Models · Lau, Na & Wan · ICPR 2026

Waterloo

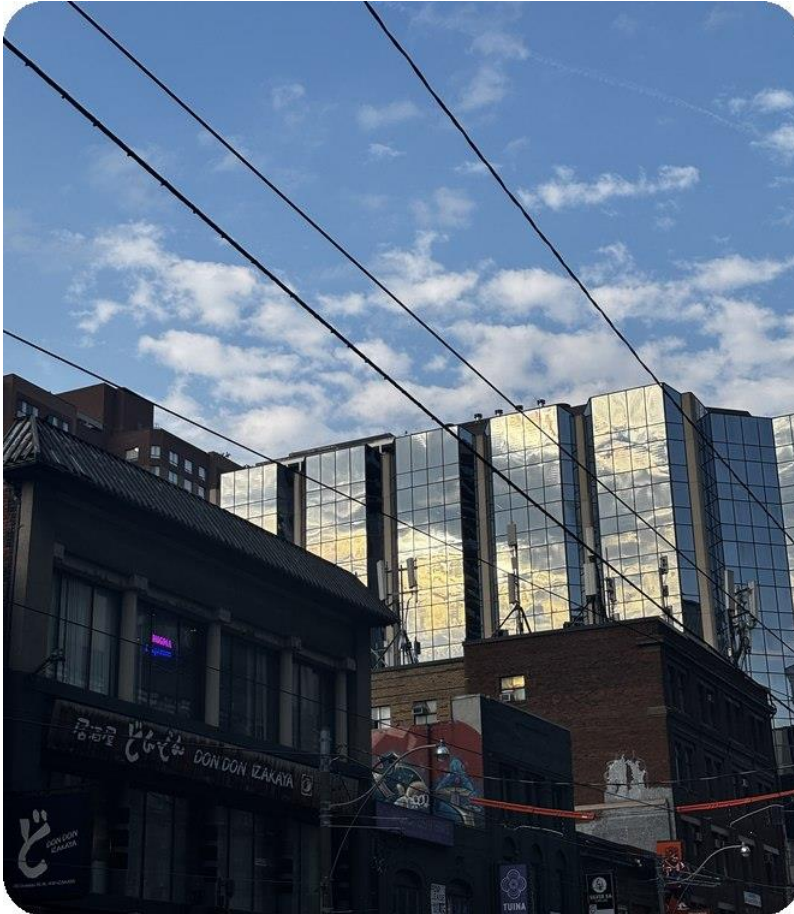
A small city an hour and a half west of Toronto, built around two universities. Quiet, green, and everything closes early.



Home at dusk · the lake · the machine room · my desk

Weekends were for everywhere else

Four months is long enough to actually see a country, not just an airport and a lab.



Downtown canyons



Touchdown at YYZ



Under the streetcar wires

Living on my own for the first time

He helped me find a room before I even landed. I only had to ask. People help far more than you expect.



Dinner with Prof. Wan



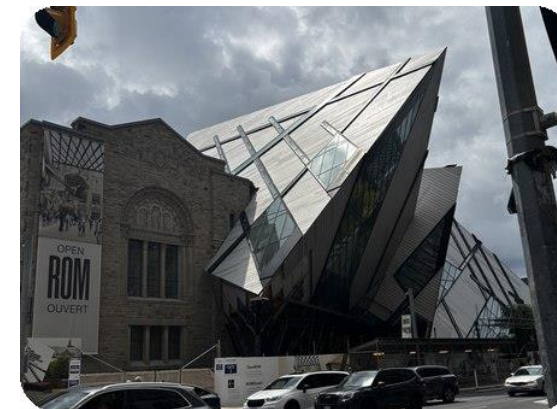
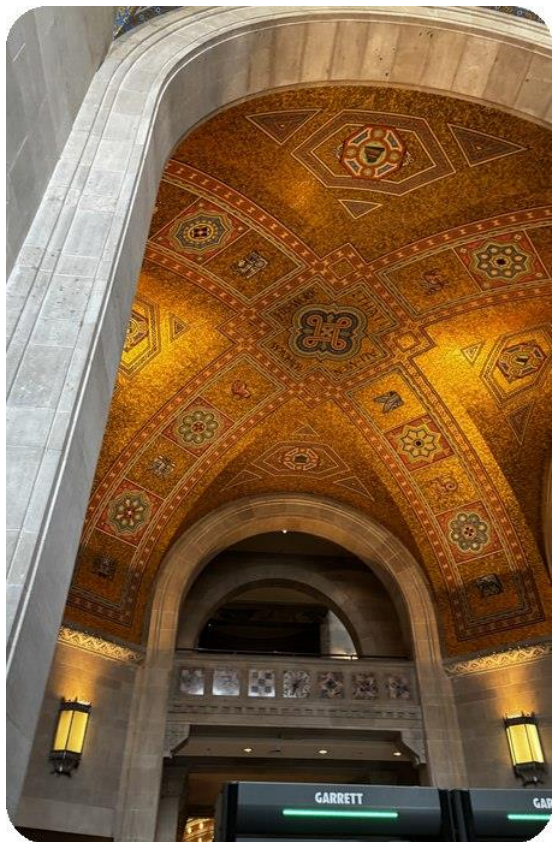
The cooking arc



Doing fine

The bits between the maths

Museums, golden ceilings, football Saturdays, and evenings that belonged to us.



That ceiling · game day · home at dusk · the ROM · an evening seminar

Going abroad is expensive. It is also very fundable.

What it cost me · rough figures

Return flight	HK\$8,000 – 12,000
Room (summer sublet)	CAD 600 – 1000 / mo
Food	CAD 800 – 1000 / mo
Getting around	Student transit pass

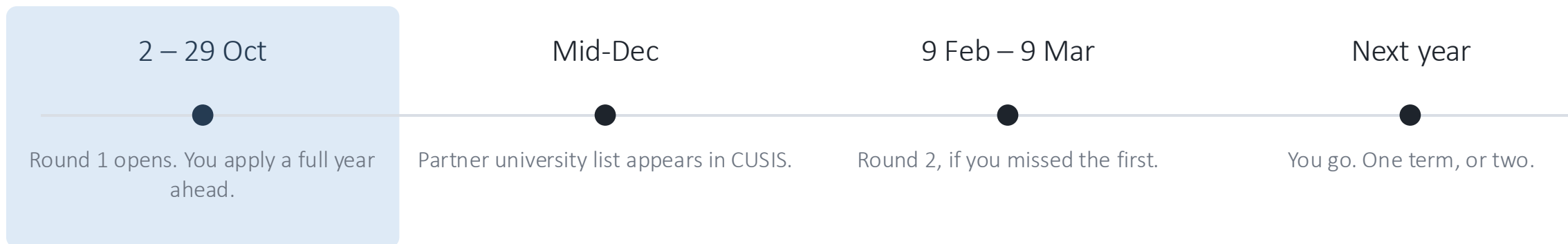
What paid for it

- Departmental support through COSINE
- 1978 Mathematics Alumnus Li Sze-lim Scholarship
- Reaching Out Award: HK\$10,000 from the HKSAR Government, open to every eligible local student
- Faculty and College exchange scholarships

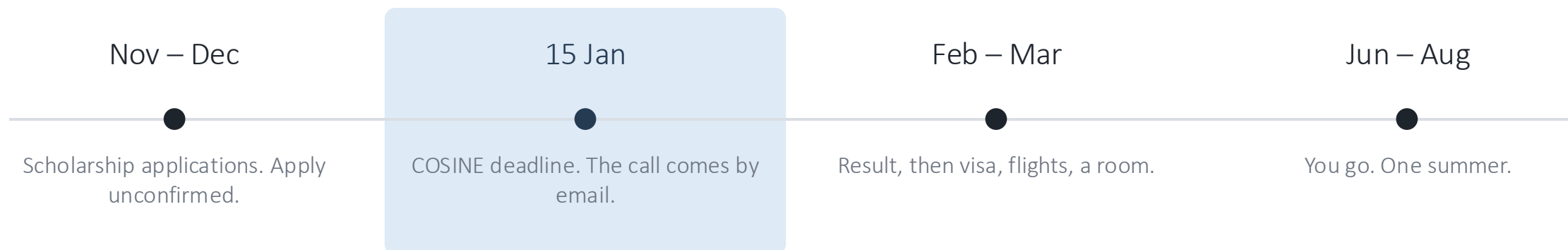
Apply before you are accepted. The Reaching Out Award states in writing that it will consider you even if your programme has not confirmed you yet.

Both roads start about a year before you leave

DOOR A · OAL EXCHANGE · A TERM OR A YEAR



DOOR B · COSINE · A RESEARCH SUMMER



So if you want to go in Year 3, you're applying in October of Year 2.

If I were starting Year 1 again

1 I would take the honours courses seriously.

The famous universities have only a handful of places each, and GPA decides who gets them. Honours maths is where yours is built.

2 I would build the foundation before chasing research.

Analysis and algebra first. With them, a single summer is enough to produce something real.

3 I would get to know two professors properly.

They are the door into research, and later they write the letters for your postgraduate applications. Email several. Silence is not rejection.

4 I would put October of Year 2 in my calendar today.

That is when applications open. Scholarships close November to January, and you can apply before anyone has confirmed you.

What this summer actually taught me

1 How to live on my own.

I was nervous before I flew. It is not that scary, and people help far more than you expect.

2 How to present.

Two slide decks a week for four months. Stage fright does not survive that.

3 How to belong somewhere new.

Football games, museums, small talk with strangers. Some of them are my network now.

4 How to find the money.

Scholarships reward whoever starts first. Apply before you are confirmed, and simply ask.

5 What I want next.

I came home certain about research, and about the MPhil I start this month.

■ ONE LAST THING

Go and see the world,
even if all you want
to do is maths.

出去看看世界，即使你只想做研究。



MY WEBSITE



NEWSLETTER



THESE SLIDES

P.S. · MATHS GOES ANYWHERE

The other paper I wrote that year analysed 1,900 Hatsune Miku songs. Same tools, completely different question. Ask me afterwards.

Kai Kwan Lau · kaikwan.lau@link.cuhk.edu.hk



Ask me anything.

■ THE USUAL SUSPECTS

Is my English good enough?

What if my GPA is just average?

Can I do both OAL and a research summer?

Which country should I pick?

How much did it all cost?

Was it lonely?



MY WEBSITE



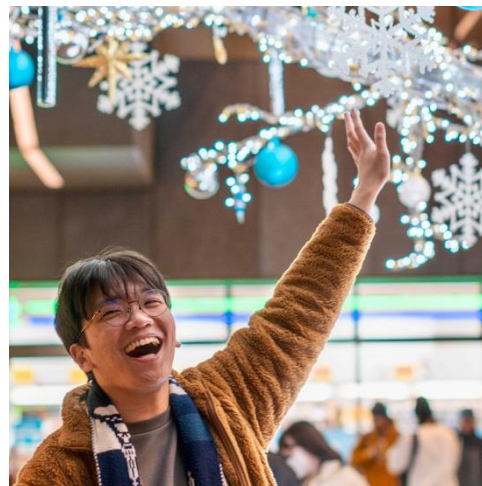
NEWSLETTER



THESE SLIDES

ALSO FAIR GAME

Plenty of my friends took the OAL route: Japan, Korea, Germany, Singapore, Toronto, the US. Ask about Door A too. I have heard all the stories.



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See you at the OAL table afterwards.