

[uArch Workshop 2024](#)

Keynote 1 – Gabe Loh (AMD Research)



Gabriel H. Loh (he/him) is a Senior Fellow in AMD Research and Advanced Development at Advanced Micro Devices, Inc. Gabe received his Ph.D. and M.S. in computer science from Yale University in 2002 and 1999, respectively, and his B.Eng. in electrical engineering from the Cooper Union in 1998. Gabe was also a tenured associate professor in the College of Computing at the Georgia Institute of Technology, a visiting researcher at Microsoft Research, and a senior researcher at Intel Corporation. He is a Fellow of the ACM and IEEE, recipient of ACM SIGARCH's Maurice Wilkes Award, Hall of Fame member for the MICRO, ISCA, and HPCA conferences, (co-)inventor on over one hundred US patents, and a recipient of the US National Science Foundation Young Faculty CAREER Award.

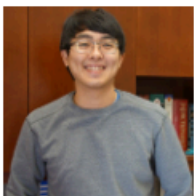
Undergrad → PhD → Prof → Industry

- Don't be shy about asking stuff
- Make your own opportunities
- Being prof – grain of salt (not for everyone)
- Luck is also a factor
- It's a marathon, not sprint – fit life in between everything
- *Culture* of the place you work/study for – important to look beyond technical aspect
- Research evolution – breadth is also important.
- Research is not just technical, it's also a social endeavor (build community and evangelizing at times to grow the program/culture)
- Side quests are cool – don't get too distracted but don't be afraid to take new opportunities
- Not everything can be planned but figure out what makes most sense in your context technically and non-technically
- Early years/new places can be challenging but great opportunities for impact. Tradeoff both ways
- It's helpful to make social connections and also helpful to meet different people from different places, different departments, etc!
- ***Breadth and Depth***
 - Find balance between these two
 - Need depth to excel in your current role
 - Breadth to position yourself for new opportunities
 - Tech and the industry keep evolving

- ***Fortuna Favet Audaci***
 - Take with grain of salt due to survivor bias
 - Imposter syndrome is to be expected – especially non-linear path but it's very natural. You are growing, so it's a good thing
 - Take measured risk – considered paths not planned
 - Ok to be afraid to be out of your comfort zone – but do it anyway!
 - Comfortable with unknown – research is a lot about dealing with unknown – go with your gut feeling
- Talk to as many people as you can – don't just attend all the talks – gather as much info as you can.

Panel 1 – Life in Grad School

11:00am -11:45am: Panel 1: "Life in Grad School"



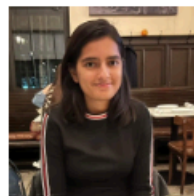
Ryan Wong
*University of
Illinois
Urbana-
Champaign*



Jaylen
Wang
*Carnegie
Mellon
University*



Muhamma
d Adnan
*University of
British
Columbia*



Ishita
Chaturvedi
*Princeton
University*



Marcelo
Orenes
Vera
*Princeton
University*

- Surprising thing about grad school
 - Going to conferences, giving talks, presentations – more like marketing/sales. Presenting research is as important as research itself. Soft skills are important.
 - Input:Output has proportionality in undergrad but not true in phd.
 - Freedom – opportunity to explore but crave your own path
- How to define your research / go about dealing with uncertainty
 - Know broad area, guidance from seniors/supervisor/collaborators
 - There is freedom to shift.
 - Talking to other people certainly helps

- Tagging along with senior grad students in junior years is helpful. Try as much as you can – try, fail, calibrate and loop until you find what you like. Kinda like reinforcement learning
- How did you find your research area – how did you land at it?
 - Talk to phd students around you and show interest in their research.
 - Finding what's not interesting to you is as useful as finding something interesting
 - Failures, failures, and then something works out – phd is great because your research doesn't need to align with any company/institution. Find your calling, don't go with hype.
 - Inspiration from collaborators, advisors, senior students
- How to choose your advisor?
 - Two options – see what works best for you and your work style
 - *Option 1:* Look at top names – established people
 - *Option 2:* New people in the field
 - Reach out to current and past students to know more about advisors' mentoring skills, trust, work well with.
 - Advisor is like an academic parent – Choose well, go with a vibe.
 - You can always find a collaborator even if your advisor doesn't work 100% in your field.
 - It's a two way interview, think about your questions, know your research and life expectations and communicate that well before starting to work with your advisor.
- Skills and Qualities advisors are looking for while recruiting phd students
 - Research experience is good – papers are not general expectations! Do interesting work
 - LOR – good ones are big plus!
 - Robust, good mindset, hardworking – phd is a long run so these are important
 - Grades are one aspect but not the complete application
 - Research interest match + aspect of timing/funding
- How to get collaborators
 - Talk to people, setup meetings, ask for collaborations, setup follow-up meetings
 - Meet people at conferences, events, etc
 - Part of it is also by chance – internships, advisor's network, keeping in contact
 - Utilize your advisor's network to get connection
- How to add structure to your problem statement and not be lost?
 - You can't always force structure, so get little comfortable with it
 - You can model structure in terms of weekly meetings with your group/advisor, discuss concrete next steps for the next week during the weekly meeting.
 - Meet your advisor whenever you feel lost and get their advice when you require
 - Groupmates/Labmates are great support systems – try to communicate with them about your research (litmus test of putting your work in words)

- How to maintain problem statement relevance wrt to industry
 - Look at long term benefits of your research
 - Things/Skills you learn during industry internships can be helpful during PhD
 - Skills are very transferable in most areas, especially in computer science
 - Look at people who are currently working in the industry in similar topic
- How do you keep yourself motivated during phd
 - Know why you wanna do it and keep the answer updated
 - Learn from ups and downs. Think about what you have gained till now (in terms of skills, people you meet, thinking process). It's not just about number of papers you publish
 - Have fun during the process, don't burn out. Keep the positive attitude through the process
- What's the best time to do phd?
 - When you can afford to –in terms of money, time, life, mental bandwidth – phd is a long process
 - No right or wrong time – do it when it feels like a natural step to do next – vibes!!
 - Everyone's story and path is different – choose and evaluate what works best for you. Neither rush into it nor wait too long.
- Concluding thoughts
 - Build your support system early – friends, advisors, mentors, people you can trust
 - Acknowledge your shortcomings, work on them
 - Have a hobby outside/things you enjoy doing outside work
 - Reach out to grad students, people and make informed decision
 - At early stages of phd or research, submit to workshops at conferences to get early feedback and utilize the feedback to improve your work.

Keynote 2 – Akshitha Sriraman (Prof, CMU)

11:45am - 12:30pm: Keynote Speech by Akshitha Sriraman



Akshitha Sriraman is an Assistant Professor in the Department of Electrical and Computer Engineering at Carnegie Mellon University. Her research interests are in the area of bridging computer architecture and systems software, with a focus on making hyperscale data centers more efficient (via solutions that span the systems stack). The central theme of her work is to design software that is aware of new hardware constraints/possibilities and architect hardware that efficiently supports new hyperscale software requirements.

Sriraman's systems solutions to improve hardware efficiency have been deployed in real hyperscale data centers and currently serve billions of users, saving millions of dollars and meaningfully reducing the global carbon footprint. Additionally, her hardware design proposals influenced the design of Intel's Alder Lake (Golden Cove and beyond) CPU architectures and Intel's Infrastructure Processing Unit.

Sriraman's research has been recognized with an IEEE Micro Top Picks distinction and the 2021 David J. Kuck Dissertation Prize. She was awarded a Facebook Fellowship, a Rackham Merit Ph.D. Fellowship, and a CIS Full-Tuition Scholarship. She was also named a 2019 Rising Star in EECS. Sriraman completed her Ph.D. in Computer Science and Engineering at the University of Michigan and her M.S. in Embedded Systems at the University of Pennsylvania.

Debunking myths about what it takes to do a PhD

- Your undergrad must be from a reputed institution
 - Make most of what you have, where you are
- You should have extensive project/research experience
 - Teach yourself. Never take “no” for an answer
- Any success is based on effort alone
 - Luck plays an important role. People do have a lot of context in their journey. Don't compare yourself and feel bad. Maybe they were just luckier at that time.
 - Everyone goes through a lucky phase. When you have your lucky phase, stay humble and make most of it

- You should have a perfect GPA to get into a PhD programs
 - It's okay to get a B+ as far as you are challenging yourself and learning
 - Put yourself out there and ask instructor for research opportunities if you are interested in the area (regardless of the grade)
 - Don't give up, especially when the odds are against you
- You should have research publication before applying for a PhD
 - Focus on enjoying what you do, the results is automatically better
 - If others have pubs, they might get more offers but at the end, everyone (including you) just need one offer
- Women students have it "easier" because of diversity hiring
 - Ridiculous!!
 - People project their insecurity with these comments → never do that yourself (don't be a jerk)
 - Create a support system of people who are strong allies – they help when you need to make significant switches or going through negative comments
- You must have strong implementation skills for a CS PhD
 - Don't run away!!
 - Take a project with a massive implementation piece – open source the code
 - Start. Build systems that can be deployed.
 - Aggressively do the thing that gives you trouble, rather than running away from it and declaring that you're not good
- You must publish a LOT in grad school
 - Submissions are more important than acceptances. Celebrate submissions!
 - Two types of PhDs (that generally stand out):
 - Expose a problem – the new big problem
 - Solve a problem it in the best way possible (follow a decades of research and say it is now solves, so world can move on)
 - Be more strategic about "what" research you do than "how much" you publish. Not a numbers game!
- Being a lone genius
 - Collaborations are a great value-add and good exposure + support
 - The most successful PhD students know how to seek help (and help others)
 - Working with others is important and absolutely necessary skill.
- A PhD student should always know what they're talking about
 - It's okay to be super intimated – you are there to learn.
 - Fake it till you make it.
 - Put yourself in uncomfortable situations until you are comfortable
- Your advisor helps make your PhDs (true to some extent)
 - Meet other profs, think outside of the box
 - Create opportunities even when it feels none exists

- You must work ALL the time during your PhD
 - Have a life outside research
 - Good work-life balance goes long way

Panel 2 – Applying to Grad School

2:00pm - 3:00pm: Panel 2: "Applying to Grad School"



Baris Kasikci

*University of
Washington*



Alberto Ros

*University of Murcia
(Universidad de
Murcia), Spain*



Lizy John

*University of Texas,
Austin*



Jonathan Balkind

*University of
California, Santa
Barbara*



Tamara Lehman

*University of
Colorado, Boulder*

- What is a definition of motivation
 - Eager to learn, enthusiastic, looking for new ideas
 - Seeking out, taking advantage of opportunities
 - Can do for long time, enjoy doing something and struggling
 - Something in past where you worked on and wrapped – concrete example
 - Informed motivation – know the tradeoff, talk to others in grad school
 - PhD is more vague, harder than undergrad, long time commitment, confident to face rejections – not easy path
- What metrics do you look at more objectively?
 - Grades in relevant classes are important but that is sanity check mostly
 - What it takes to succeed in grad school is very different from what it takes to succeed in undergrad class
 - Letters are very important – letters with more personalisation
 - Vibes – if I am able to work with person (based on letters, interview)
- Funding?
 - Do your research before/while applying (googling, etc)
 - Talk to current students, alums from your current school
 - Many schools keep recruiting from the same schools
 - Research country based fellowships/grants
 - Most PhDs are fully funded in the US. In Europe, contact advisors.
 - Teaching/Graduate Assistantships can help too.

- PhD with or without Masters – directly after undergrad?
 - Different places/universities have different rules
 - Some places have Masters+PhD options
 - Opportunities to work with people weighs more than stipend
- LOR – industry vs academia?
 - Vary but academia letters are good
 - Letter writer should have some story to tell about you beyond grades
 - Letters from people who you are applying to trust are quite valuable. Somewhat inequality but there is a path to come inequity as well (be persistent)
- Nomenclature differences, especially international programs?
 - Admissions team does the equivalence at some places
 - Some historic databases of the past students who applied/studied from that particular school/university/country
 - In terms of lack of information, people try to go with positive biases
- General advice on SOPs
 - Don't use ChatGPT – very recognisable!
 - Good narrative – eventual goal, things done, how this program fits in the goal
 - For emailing based SOPs, be personal (right salutation). Mention motivation, etc
- How much clarity in terms of research ideas do you look into in SOPs?
 - Email should be personalized and well informed. Talk about their research and have a deliberate ask/call. Do your homework before your email and call.
 - Not expected to have this clarity – that's the part of learning during PhD
- Expectations from undergraduate vs expectations from Master's student?
 - No – depends on individual's story and how they narrate it
 - People remember things unique to you, not your resumes, perfect scores, etc
 - Mentioning weakness/dislikes and how you plan to overcome weaknesses
 - Your SOP should be an addition to other stuff and not a summary of your profile
- Opportunities through reaching out
 - Should do – good thing and prof's are open to collaborations
 - Understand tradeoff and be okay with them
 - Be meticulous with your time commitment once you get the opportunity
- Europe vs USA?
 - Group matters more
 - Some operational differences – TAing, courseworks, etc
 - Difference in length – might be difference in speculation
 - Other reasons could be personal choices – location, weather, etc

Panel 3 – Life after Grad School

3:20pm - 4:00pm: Panel 3: "Life After Grad School"



Aamer Jaleel
Nvidia



Deeksha Dangwal
Meta



Elba Garza
University of Washington



Thaleia Dimitra Doudali
IMDEA, Spain



Amir Yazdanbakhsh
Google Research



Dimitrios Skarlatos
Carnegie Mellon University

- Skills that helped you during grad school to get first job
 - Being Honest about not knowing something
 - PhD is an opportunity to overcome weaknesses like writing, technical skills, etc
 - Technical skills like coding, work with large infrastructures, simulators.
- Day in your life
 - *Teaching Prof*: Teaching mainly, some research. Emails, prep lectures, meetings, working with TAs
 - *Prof at CMU*: Generally adv courses, some meetings. Research meetings with whiteboard/brainstorming. Working on papers, grants depending on deadlines.
 - *Research Prof*: Researching, working with students. Be part of the program committee: organizing, reading papers.
 - *Research Scientist at Google*: Bridge b/w research and product team. Collab meetings with the product team, understanding challenges they face. Meetings with external collaborators (profs, students). Later half focused on writing, coding, articulating ideas, addressing comments
 - *Scientist at Nvidia*: Balance b/w work from home and office. Focus on research influencing products over publications. Hands-on work later in the day.
- How do you know your job is right for you?
 - Teaching – Did phd for teaching, working with students. Experienced teaching as TA and grad teaching and enjoyed it
 - Summer experience influences – working both with junior students and in industry. Put things together and see what makes you more happy
 - During PhD, explore what part you enjoy the most – teaching, research part (solving problem and writing/presenting), coding (industry/working with product teams)
 - Think about what you wanna do in life in the long run. Find your calling to see what brings joy and isn't influenced by family, money, peers, etc

- Sometimes also about how things work out and you can also switch between roles when it feels like
- Good time to do internship during PhD
 - First year could be more software dev focused. After second/third year, look for research internship to gain more experience
 - Look for internships to learn skills during undergrad, masters. For PhD, first year can be focused on personal development – research lab work, complete coursework, and narrowing down problems you plan to work on.
- Industry PhDs?
 - Some companies allow you to do PhD and be a full time alongside – It can be challenging to manage between both.
 - Generally companies are supportive of higher education
 - Some programs allow you to do industry-collaborative PhDs where you can work with a company while doing the PhD
- Things you would do differently during your PhD
 - Manage emotions better – work life balance, seek help
 - Be more open to feedback. Listen to others more productively. Use it to grow.
 - Attend more conferences, events, meet with people
 - Talk to people, talk about ideas you are interested in, learn from others. Talk to grad students, seniors, etc
 - Use travel grants and benefit from them.

“Success is not linear. Define your own path.”