

 ANITA B.ORG 2023
GRACE HOPPER
CELEBRATION

THE WAY
FORWARD



I'm a Student Again: Heading to Graduate School After a Break

Anna Johnston | Juniper Networks

Kyla McMullen | University of Florida & CRA-WP Board

About Anna - Work



Industry



Cryptographic Researcher, since 2016



Raytheon
An RTX Business

Engineering Fellow, Raytheon (4 years)

Academia

- Washington State University, Assistant Professor
- Johns Hopkins University, Adjunct
- Dublin City University,, Post-Doc

Government/Research Labs

- Sandia National Labs (8 years)
- IDA/Center for Computing Sciences (8 years)
- NSA (4 years)

Education Timeline

PhD, Information Security,
University of London, Royal
Holloway (2006)

MS, Mathematical Optimization,
George Washington University
(1988)

BS, Math: University of Hawaii,
Washington State University,
University of Colorado (1984)

Kyla McMullen

- Education

- B.S. in C.S. - University of Maryland, Baltimore County, 2005
- M.S. in C.S.E - University of Michigan, 2007
- Ph.D. in C.S.E - University of Michigan, 2012

- Professional

- Industry Internships (IBM(x2), eOriginal)

- Current

- Associate Professor - University of Florida

- Research

- Immersive Audio, Virtual Reality, Augmented Reality
- Computer Science Education, Broadening Participation in Computing

- Personal

- Married with 0.275 kids

- Hobbies:

- Dance, Travel, Watching Bad Movies, Meme Curation, Theatre, Bad Art, Podcasting, Cosplay

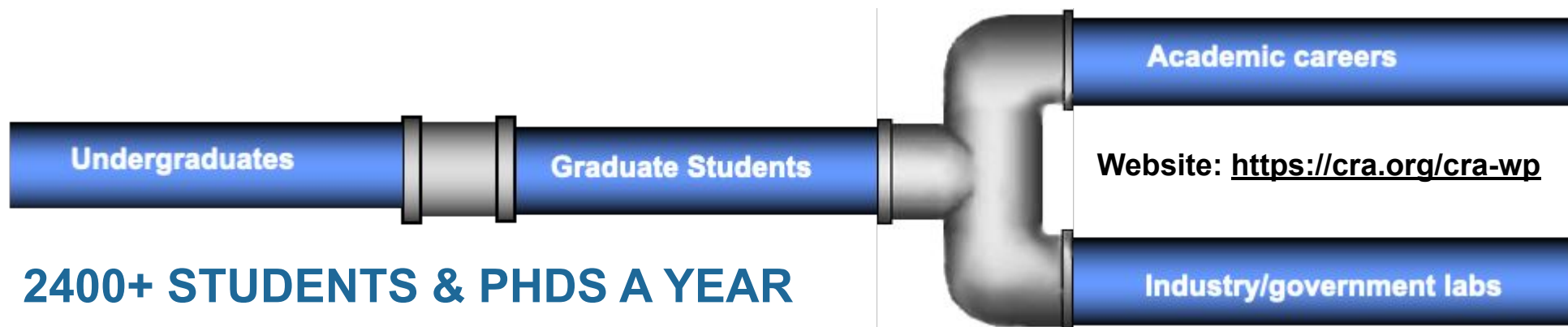


What Is CRA-WP?

Individual & Group Research Mentoring

Our mission is to widen the participation and improve the access, opportunities, and positive experiences of individuals from populations underrepresented in computing research and education. We individual and group research mentoring provide for:

- *Undergrads* — Undergraduate Research Experiences (DREU), Scholarships for Women Studying Information Security (SWSIS)
- *Grad Students* — CSGrad4US Fellowships, Grad Cohort for IDEALS, Grad Cohort for Women, Mentoring Tracks at GHC, and Scholarships for Women Studying Information Security (SWSIS)
- *Academics/PhD Researchers* — Career Mentoring Workshop (CMW), CSGrad4US Mentoring Program, and Mentoring Tracks at GHC



GRAD SCHOOL VS UNDERGRAD

Coursework

Undergrad

- take ~4 classes a term in many subjects
- emphasis on exams
- care about grades
- lots of breadth with some depth

Grad

- take ~2 classes a term in narrow subject areas
- emphasis on projects
- do not care about grades
- depth with little breadth

Program Structure

Undergrad

- Each semester is a sprint
 - lots of little deadlines
 - different professors every semester
- Lots of structure in your week with classes and meetings

Grad

- Marathon, not a sprint
 - infrequent deadlines
 - work with advisor(s) the whole time!
- Little structure in PhD programs - can be dangerous!

PHD VS MASTERS

Program Structure

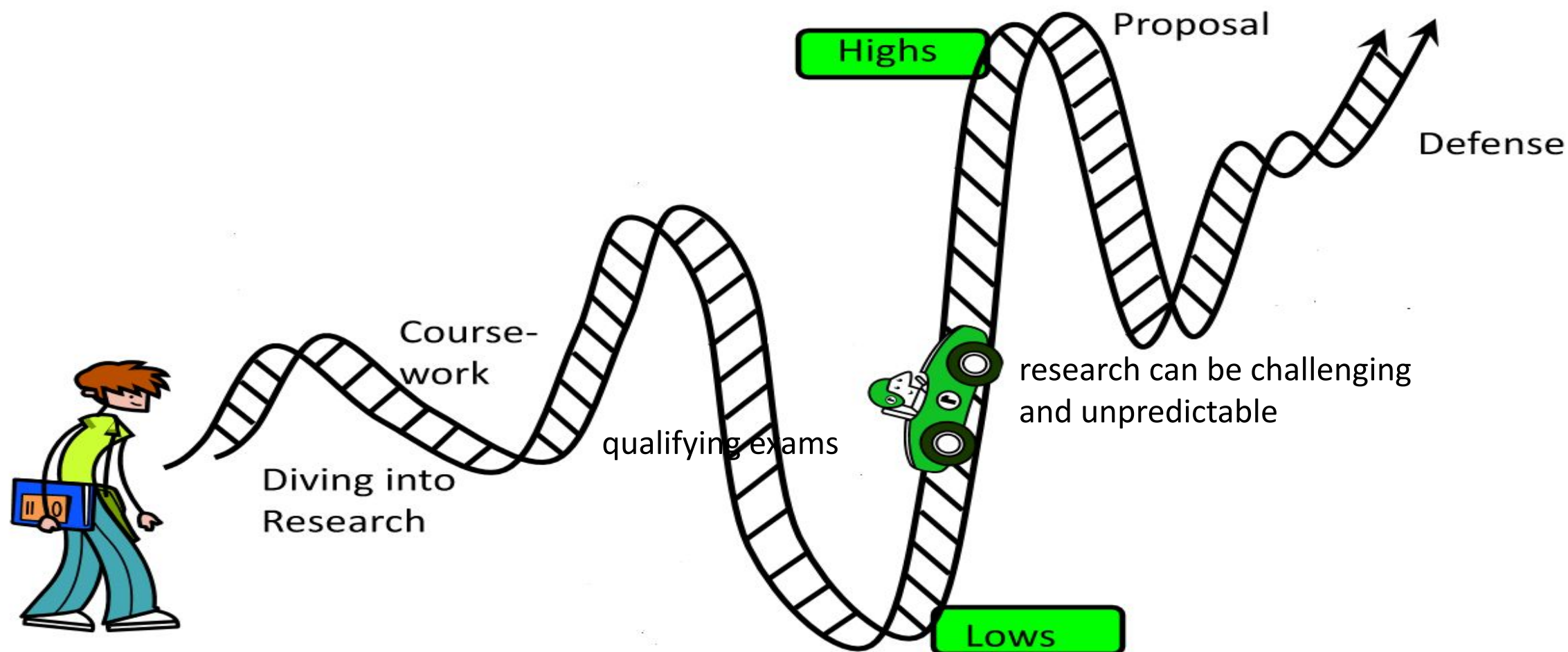
Masters

- 1-2 years
 - part-time or full-time
- course heavy
 - ~ 14 classes
- research is optional
- funding varies
- internships are expected

PhD

- 5-6 years, full-time
- emphasis on research
- few classes
- **programs are funded**
- internships may be beneficial

PhD Timeline



GRADUATE SCHOOL IN THE US VS ABROAD

Differences

US

- GRE Required
- Teaching/Research funding generally available
- Course work followed by qualifying exams before research
- Geared towards attaining future academic positions

Abroad (UK)

- GRE is not needed
- Teaching not required, but suggested
- Preliminary courses assumed (thus shorter time to PhD)
- Straight into research
- Program tied to supervisor (pick your area by picking your supervisor)
- Funding may be an issue

HOW TO APPLY TO MS PROGRAMS

Finding the Right MS Program

- look at job placement opportunities
 - technical, non-technical, or leadership positions
 - academic, government, corporate, etc.
- different types of MS programs
 - capstone/portfolio - helps for industry
 - thesis - useful for continuing to PhD
 - dual degree MS programs
 - online programs
- review course options
 - can you take courses outside the department?

Deciding to Apply to a MS Program

- review GRE and GPA requirements
 - still apply even if you do not meet requirements
- look for funding opportunities
 - teaching or graduate research assistantship
- reach out to former students about their experience
- attend MS program info sessions
- apply to more than one school!

Components of a MS Application

- Personal statement/statement of purpose
- Recommendation letters
 - former employers or professors
- GRE Scores (US) and transcripts
- Resume
 - showcase your work and research experience
- Provide a portfolio/website
- Contact professors before applying to a program
- **APPLICATION DEADLINES VARY!!**

HOW TO APPLY TO PHD PROGRAMS

Which PhD programs to apply to?

- Look at specific departments
 - Do not rely on rankings, departments can be strong in area of research
- Contact professors whose research interests you
- Visit schools when possible to gauge for environmental fit
- Consult your network for recommendations
- A focused list is better than a giant list

Components of a PhD Application

- recommendation letters
 - usually need three -- can be from industry, need at least one from academia
 - reach out to your former professors!
 - want a letter that says more than that you did well in class
 - research, independent study, teaching assistant, large course project, etc.
 - make it easy for your professors
 - ask early, organize materials, thank them!

Components of a PhD Application

- personal statement/statement of purpose
 - this is really a **research** statement
 - describe prior research experience and what you learned
 - discuss what you want to work on in grad school
 - what professor/lab would you work with and why?
 - why is that program a particularly good fit?
 - avoid cliches!
 - “Ever since I was 5, I have loved computers...”

Components of a PhD Application

- transcript
 - matters a lot less than you think!
- GRE exam
 - some schools require it, some don't
- resume/curriculum vitae
 - make it look nice and not an excessive amount of pages
- **deadlines are usually in December!**

TIPS FOR SUCCESS

How to Thrive in Graduate School



- Take care of yourself
 - sometimes that requires declining commitments
 - life doesn't stop because of graduate school
- Set goals and manage your time
 - use agendas/calendars, productivity applications
- Build your professional network
 - attend conferences, info sessions on campus, join campus organizations, LinkedIn, etc.
- Apply to fellowships
- Observe the culture, life happens, family, relatives, etc
 - How does the community support people in your life situation.

Industry Prepares us for Academia!

- a sense of what software development looks like in the “real world” which helps inform research
- experience owning projects, working in teams
- improved time management
- balanced outlook on the PhD process

Getting into the Research Mindset after Industry

- a sense of what software development looks like in the “real world” which helps inform research
- experience owning projects, working in teams
- improved time management
- balanced outlook on the PhD process

Reflections from Andrew Maxim:

- *I really struggled for a while with trying to **get my head out of the industry mindset** and to see things from a more academic, or research focused, perspective.*
- *It seemed like the **research focus came so much easier for all the other students** I was around.*
- *And one day it sort of clicked that **I was trying to suppress a strength (my industry experience)**. By not applying my experience in industry to my new academic career I was holding myself back. **Industry and research are both trying to produce something that others want, so the mindset change was only about working on a different product (research)**. Research became a lot easier and a lot less stressful once I stopped trying to force myself to think like/be like my peers and instead started leaning on my industry experience.*



QUESTIONS?

THANK YOU



CRA-WP



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**CRA-Widening
Participation**