Qual Mentoring Session
Fall 2012

Presenters:
Joel Harley, Joseph Fernandez

Panelists:
Jon Smereka, Jonathan Becker, Shahriyar Amini, Kristen Dorsey
Motivation

Why are we doing this?

• Help you prepare
  • Presentation and Q&A
  • Expectations

• Give tips based on our experience
  • We have been through this too

• Give you an opportunity to ask questions
Overview

• This presentation
  • Purpose of the qualifying exam
  • Tips on: Preparing your slides
  • Tips on: Delivering your slides
  • Tips on: Surviving the Q&A session

• Following: EGO Q&A
PURPOSE OF THE QUAL

Joel Harley
What is the Qual?

What is the Qual?

• A model conference
  • A technical topic
  • Technically competent audience
  • Paper
  • Presentation
  • Q&A

• A demonstration of your knowledge
  • Fundamentals
  • Vocabulary
What is the Qual?

What the Qual is **not**

- A review of your research
  - Focus important

- A defense of original research
  - Only understanding is necessary

- A presentation to experts in your “specific” research
  - Do **not** assume your committee knows everything
What do they want to see?

• Demonstrate **understanding** of research
  • Strengths/weaknesses of your work
  • Relate to background papers

• **Know the fundamentals** of your area
  • Process is more important than the final answer

• Ability to **communicate** with technical audience
  • Stand up to scrutiny
  • Committee wants to see how you react when someone is critical of your work
Joel Harley

PREPARING YOUR SLIDES
The Importance of Quality Slides

You are presenting your work & **yourself & your slides**

A good presentation requires preparation

Visual Quality

You are judged by the area

Technical Content

Slide idea from Markus Püschel, ETH Zürich
Organization

How you arrange your content is crucial

Typical organization

• Motivation and problem statement
• Background and related work
• Contribution/Results
• Validation (Graphs)
• Conclusion

Use slide numbers
Motivation and Problem Statement

**Explain your problem** – make your committee care

- Your professors are engineers – problem solvers
- Professors may often have some interest in your work
Contribution/Results

**Distinguish** your work from the background

- What is your main contribution/discovery?
- How does this relate to the motivation

**Verify/illustrate** results with visuals

![Graph: Probability of Detection vs. SNR](image)
Simple Guidelines

A few simple tips:

1) Try to convey **one** idea per slide
2) Use visuals (which add to the message)
3) Use words and equations sparingly

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Take Home Message

Convey a central message

• Tell them what you’re going to say (Motivation)
• Say it (Results/Contribution)
• Tell them what you said (Validation/Conclusions)

Use **visuals** and **concepts** when possible

**Markus Püschel’s Small Guide to Giving Presentations**

• Download and read this guide!
Joey Fernandez

DELIVERING YOUR SLIDES
Delivering Your Slides

There are three ways to look unprepared...

• Talk too long
• Forget what you want to say
• Get too technical

All of these can be solved with preparation
Timing

Timing is very important

- You are allotted 30 minutes to talk
- Set aside at least 5 minutes of this, you will be interrupted by the committee

Practice your talk

- Consistently finish in less than 25 minutes
- Practice with an audience a minimum of two times

Image: http://thinkgeek.com/homeoffice/lights/ac3f/
Timing

Don’t rush your talk

• If you are rushing to finish on time, you’re cramming too much in
• It’s a tough choice, but something must go

Supplemental Slides

• After the end of your talk, create a supplemental section
• Treat this like an appendix
  • Derivations
  • Supplemental experiments
  • Detailed background explanations
• Don’t rely on your supplemental slides, though!
Practice Quals

Schedule at least two

• Invite your lab
• Invite your friends in other areas
• Attend other practice talks

When you get your committee

• Invite the students of your committee members

Logistics

• Book the room for 90 minutes
• Bring food (and mention this in the invite email)
Handouts

Print note page handouts

- Do this for practice & the qual

In PowerPoint

- Select “Handouts”
- And select 3 slides per page

Don’t print supplemental slides

Make sure there are slide numbers!
At the qual...

Dress

- Business casual
- You want to look professional
- Comfort is important
- Bring a bottle of water
- Check out your room beforehand to make sure it has markers, or BYO
At the qual...

Speak to your audience

Laser pointer

- Use it sparingly (if at all)
- Don’t just underline the words as you read them
- Don’t leave it pointed at the screen as you talk
  - It will jitter, making you look nervous

Clarification Questions

- When interrupted, respond clearly and concisely
- Keep answers concise, there will be more time afterward
Conclusion

Practice! Practice! Practice!

• It will calm your nerves, and improve your presentation

*Simplicity* is king

• It is better to ignore a detail than to have the committee miss your *overall point*
Joey Fernandez

Q&A SESSION
What will they ask?

Anything in your paper or presentation is fair game

Background material related to your paper

• You define the scope of this with your three references
Answering the question

Take a **deep breath** and count to three

- If you have water, it’s good to start with a sip
- You want a moment to collect your thoughts

If you are uncertain of the question, say that immediately

- Ask for **clarification**
- So what I think you’re asking is...

Tell them how you plan to solve it

- Explain your approach
- Pretend you’re a TA, take it step by step
Thinking out loud

The committee wants to see how you think

Staring at the board will not help them

Think out loud and talk through the problem

• Even if you’re wrong, it will demonstrate to them that you know how to attack a problem
• Ask questions if you don’t understand the question

The faculty want to find the *boundaries of your ignorance.*
Stay Calm

Don’t get flustered

Be respectful of the committee
  • Arguing with them (especially yelling at them) will not help you
  • If you believe them to be incorrect, try to calmly make your case

Don’t get defensive
  • A critique of your work is not a personal assault

Handle Interruptions
  • You must respond well to interruptions
  • The faculty may guide you in a collaborative way
Quick Tips

Before the qual:

1. Study! Brush up on your fundamentals.
2. Work problems on a whiteboard.
3. Know classic/typical problems in your field.
4. Study your presentation and paper. Know **EVERY** word. This is what you will get asked about.
5. Practice your presentation to friends and get feedback. Have them ask you questions and work them out on the whiteboard.
6. Confidence is the **MOST** important thing. Know what you did, and don’t get flustered.

After the qual:

1. Tell your advisor how it went (email them if they are out of town)
2. Forget about it!
3. Go home, relax, and don’t think about it.
Conclusions

Good Luck! Practice! Don’t procrastinate (too much)!

And sign up for the practice qual announce list:

ece-qual-practice-announce@lists.andrew.cmu.edu