

Research Methods in computer science

Spring 2019

Lecture 3

Omprakash Gnawali

January 23, 2019

Agenda

Research Topics

HW Live Review

Assignment

How to Find a Topic?

Read, read, read, discuss, go to talks

Listen to your advisor: sometimes you may not have a choice, but you can still bring small ideas

Lets say you are convinced you found a topic. You are excited

How to know if we should pursue the topic?

Why do (PhD) research?

Research Formulation

What are you trying to do? Articulate your objectives using absolutely no jargon.

How is it done today, and what are the limits of current practice?

What's new in your approach and why do you think it will be successful?

Who cares?

Research Formulation

If you're successful, what difference will it make?

What are the risks and the payoffs?

How much will it cost?

How long will it take?

What are the midterm and final "exams" to check for success?

Other Approaches

Random

Top trends and lists

Interestingness

Parallels to Products

Research can be thought of as a Product

Product Viability Evaluation

Companies do this all the time

Lets look at some examples

Viability of Product Idea

1. What is the potential market size or demand?
2. Who are your competitors?
3. Is it a trend, fad, flat or growing market?
5. Who are your target customers?
6. What is your potential selling price?

<https://www.shopify.com/blog/13640265-the-16-step-guide-to-evaluating-the-viability-of-any-product-idea>

Research vs Startups

What should you work on? Are you working on the right problem?

MVP.

Usually resource constrained and must prioritize.

Small team.

Selling process.

Marketing.

(Thanks to Guo)

Learning during Ph.D.

Topic or Process?

HW Live Review

Spend time discussing HW submissions

Volunteer to have your HW reviewed

We will review 1-3 submissions

Projected on the screen and discussed publicly

HW Live Review – Why?

Similar to Code Review

Public discussions

- Practice giving feedback

Opportunity to “improve” other work

- Practice editing skills

Get feedback from different views

- Not just professor or your sub-discipline

Live comments on HW1 submissions

HW2 - Research Formulation

What are you trying to do? Articulate your objectives using absolutely no jargon.

How is it done today, and what are the limits of current practice?

What's new in your approach and why do you think it will be successful?

Who cares?

HW2 - Research Formulation

If you're successful, what difference will it make?

What are the risks and the payoffs?

How much will it cost?

How long will it take?

What are the midterm and final "exams" to check for success?