Research Methods in computer science
Fall 2021

Lecture 4

Omprakash Gnawali
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Agenda

Research Topic Evaluation
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?

Heilmeier
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?

Heilmeier
Competition / State-of-the-art

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

How to find these projects/products/papers?
Case Study

Lets try to answer the questions for this project

Feasibility of LoRa for Smart Home Indoor Localization
http://www2.cs.uh.edu/~gnawali/papers/lorasmarthome-as21-abstract.html
Other Approaches

Random
Top trends and lists
Interestingness
CMU School of Computer Science

Grad School Applications Keywords

- deep learning
- reinforcement learning
- blockchain
- self-driving

Andy Pavlo [twitter]
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?

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)
Research Papers

Identifying papers to read

We asked you to find papers you need to read in your area of research.

Understanding what papers look like

Anatomy
Research Papers

Understanding what papers look like
Anatomy of a Research Paper

Abstract
Introduction
Related Work
Design and Implementation
Evaluation
Conclusion
HW2 - Research Formulation

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