

Research Methods in computer science

Spring 2024

Lecture 4

Omprakash Gnawali

January 29, 2024

Agenda

Research Topic/Idea Evaluation

HW2

Recap

How to find or generate ideas?

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?

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

<https://www2.cs.uh.edu/~gnawali/papers/lorasmarthome-as21-abstract.html>

Other Approaches

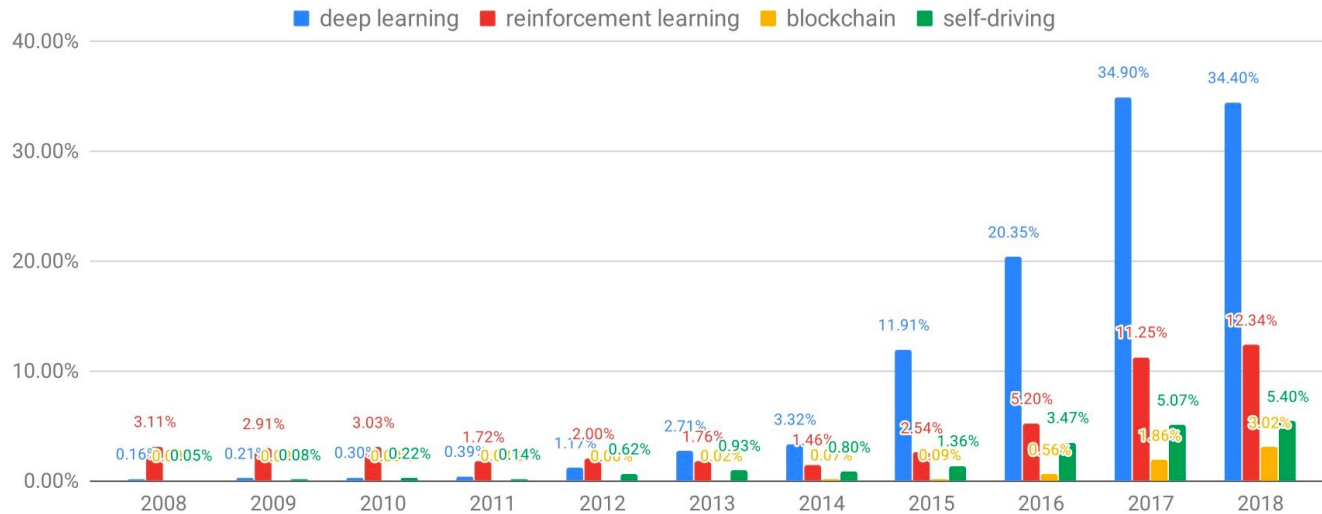
Random

Top trends and lists

Interestingness

CMU School of Computer Science

Grad School Applications Keywords



Andy Pavlo [twitter]

Table D4 of

<https://cra.org/crn/wp-content/uploads/sites/7/2023/05/2022-Taulbee-Survey-Final.pdf>

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)

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?