



Carnegie Mellon University  
Silicon Valley

# Technical Interview Workshop Part 2

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*Research Software Engineer*

*@ Google Research Machine Learning*

*12pm PT, Tuesday, October 5, 2021*

# Background

- **Yongwhan Lim**
- Research Software Engineer
- Google Research Machine Learning (5 YOE)
- <http://yongwhan.github.io/>
- Stanford
  - CS (BS '11 & MS '12)
  - Mathematics (BS '11)
- MIT: Operations Research (PhD, on extended leave)



# Overview

- **Part I:** beyond algorithms
  - Behavioral interview (must for any SWE)
  - System design interview (> entry level)
  - Machine learning interview (ML engineer)
- **Part II:** Q&A

# Part I

# Behavioral Interview (for everyone)

- at least one session in typical non-entry level SWE interview loop.
- wants to learn leadership potential.
- tests soft skills (e.g., effective communication, conflict resolution, etc.)
- open-ended: **not** right or wrong

## Resource

- There are number of preparation books.  
For example:
  - Behavioral Interview Questions and Answers by Horatio Bird.
  - Leadership Interview Questions You'll Most Likely Be Asked by Vibrant Publishers

# Example Question #1

- Tell me about a time when you led a team to successfully complete a project.

# Sample Answer to Example Question #1

- Best if you led a hackathon/passion project.
- Otherwise, if you led a project as an intern, highlight it.
- Be concise
- Include hard **numbers** (in terms of %, \$, etc).
- Provide **concrete** example.



## Example Question #2

- How do you set up priorities for the work you are facing each day?

# Sample Answer to Example Question #2

- Priority queue idea:
  - Most essential responsibilities first!
  - Respond to emergencies as needed.
  - Non-essential tasks can be delayed.

# System Design Interview (for non-entry lv.)

- identify large components of the system and describe how each component is connected.
- actual implementation details are not as important.
- tests whether you can design an architecture using standard design patterns.

# Resource

- Must reads are:
  - *The System Design Interview*, 2nd Edition by Lewis C. Lin, et. al.
  - *System Design Interview* by Alex Xu

## Resource

- If you have time to dig deeper, consider:
  - *Understanding Distributed Systems* by Roberto Vitillo
  - *Designing Data-Intensive Applications* by Martin Kleppmann

# Example Question #1

- Design YouTube

## Example Question #2

- Design Instagram

# Machine Learning Interview (for ML SWE)

- **hands-on experience** using TensorFlow/Keras/PyTorch: comfortable using data to feed into a baseline model.
- ML foundations (e.g., linear regression, support vector machine, etc.)
- Recent trends (reinforcement/deep learning)



# Machine Learning Interview (for ML SWE)

- an in-depth knowledge of a specialization can be a plus, but not required (e.g., computer vision, natural language processing, etc.).

## Example Question

- *theory*: what is a difference between unsupervised learning vs supervised learning?
- *hands-on*: how do you avoid overfitting?
- *implementation*: given stock trends, predict the future stock price.

# Part II: Q & A

# Mock Interview Opportunity!

- If you attended both part 1 and part 2, you are invited to do a mock interview with me if you would like to. The link to the request form is [forms.gle/rrLNB3S9sHvzzm7U6](https://forms.gle/rrLNB3S9sHvzzm7U6).

# Contact Information

- My LinkedIn profile is <https://www.linkedin.com/in/yongwhan-lim-09855328/>.  
Feel free to add me there! :)
- Also, if you would like to contact me, email [yongwoods@gmail.com](mailto:yongwoods@gmail.com).
- My personal website is <http://yongwhan.github.io/>.