Machine Learning Design Interview Prep Guide

Meta

What You'll Find in This Guide

Welcome to your prep guide for your interview process with Meta. Our recruiting team put together this guide so you know what to expect and how to prepare. We recognize that interviewing can be stressful, so we hope this guide provides the information and resources you need. Remember, your recruiter is there to support you so please reach out to them with any questions.

Interview Process Overview

What will your interview process be like?

Meta seeks individuals who have technical expertise to solve deep, challenging problems who can communicate in a clear and compelling way to a wide variety of stakeholders and across diverse subjects. Your interview is designed to give you the opportunity to give us a sense of your technical management skills. Your interviewer should also leave a few minutes at the end for your questions:

What can you expect?

This 45-minute design interview will focus on your design skills and domain expertise. A machine learning design is a design interview where the question is tailored to your specific area. Your interviewer will be carefully selected ahead of the interview for specific teams within Meta so that the interviewer can assess your knowledge, experience, and expertise within your narrow domain.

How to prep:

Here are some tips and tricks to keep in mind for system design interviews which might be applicable to your design interview:

- Think out loud throughout the interview. You can also utilize the VC whiteboard or similar to diagram out your system
- The scope of the question can vary widely; this will be a challenging and deep technical discussion. Ask clarifying questions about these goals and requirements to help you determine prioritizations for the system.

- For this interview, there is no right or wrong answer; the interviewer wants to observe how you design and architect a system, while assessing your understanding of abstract problem definition. We will look to you as the expert to drive this.
- Refresh on Computer Science fundamentals
- Recall previous designs
- Research
- Practice using online system design platforms
- Review the basics of hardware
- Think through different tradeoffs

How we evaluate

Areas that will be assessed include problem navigation, solution design, technical excellence, and technical communication:

- Problem Navigation: Your interviewer will be looking for you to demonstrate the ability to organize the problem space, the constraints, and potential solution(s). Asks questions to reduce ambiguity, target the most important problems to solve for, understand what's needed for a quantitative analysis, and define a requirement set to design to. Think about the product from an end-user perspective.
- Solution Design: Design a working solution and account for scalability. Approach layers and the organization and design with user experience in mind. Keep scale and multiple developer scenarios in mind.
- Technical Excellence: You will need to dive deep into technical details when necessary and articulate the dependencies and trade-offs in the solution. You should identify and grapple with challenging aspects of the problem, including foreseeing and mitigating potential failure points.
- Technical Communication: The interviewer will be looking for your technical ideas, viewpoints, trade-offs and vision. Use logic to communicate your reasoning. Be ready to engage with the interviewer and grasp feedback and concerns during the conversation.

During the interview

Your interviewer will be digging into your ability to design a software component or system while looking at a number of dimensions of the design. Here are the areas to cover in your design question

- Problem Exploration: Understand the underlying motivation of the problem. Take time to define the requirements and clarify any ambiguity that exists. Define the success of the system.
- Handling Data: Think about entities & logical data model, physical data, data storage and data transport. Understand which data sources you need and how it's possible to collect them.
- Component Responsibilities: Be sure the right 'boxes' exist within the system and that the purpose for each box is well described. Pay attention to 'abstraction bleeding' which happens when a service can only operate correctly if it knows of implementation details, beyond the API, for another service.
- Completeness of solution: Resist the temptation to deep dive on a single area and spend all your time there; you don't want to rat hole yourself on one aspect and run out of time to cover others. You should be able to evaluate end-to-end design and assess if it solves the posed problem.
- Trade Offs: Explain positives and negatives of each option, and then make a decision. Dig in to why you're making a choice, why it's the right one for the system, and the scenario you're imagining. You will do this many times throughout the interview.
- Quantitative Analysis: Think quantitatively about how things will work and what it will look like in the real world. Assumptions are fine, but you'll be assessed whether the assumptions are based in reality.
- Deep Dive: Take time to deep dive on some facet of the problem. Your interviewer will allow you to propose an area to deep dive on, however if you don't propose an area the interviewer will probe an area of their choosing. It's critical to focus on first completing the end-to-end design before your deep dive. We recommend covering the complete solution, then going back to optimize the portion of the design you're most comfortable with.

Machine Learning Design

We're looking to understand your thought process and approach, given a domain you're familiar with. The purpose of this interview is to understand your knowledge/experience in Machine Learning and to assess you on various Machine Learning topics. A small portion of the interview will be knowledge based, where we'll look to understand how you've contributed to previous Machine Learning projects, but the majority of it is assessing you on your Machine Learning design skills.

You are expected to ask clarifying questions, understand the problem, and steer the conversation by discussing the pros and cons of the different approaches that are discussed.

Topics you should be familiar with include (but are not limited to):

- Formulation of business problems into ML solutions
- Definition and collection of the data needed for training and serving
- Feature engineering
- Model architecture design (in-depth for ML System Design)
- Scalable training and serving infrastructure design (in-depth for ML Infra Design)
- System and model performance optimization (ML Infra Design)
- Measurement and understanding of ML system performance
- ML system debugging and troubleshooting

We are not looking for you to be an expert in all of these, but you should know enough of them to weigh design considerations and know when to consult an expert. We also don't expect you to design the perfect system or have the answer ready right away. There are certain levels of ambiguity built into the interview questions intentionally. If you come across a topic you're not familiar with, or the question seems vague, don't panic! Part of the interview assessment is on whether you have the ability to solve problems in unfamiliar space with your existing domain knowledge.

Appendix / Resources

Links to exercises, information, and guides to help you prepare

Below you will find some helpful resources for your interview.

About Meta

- About Meta
- Meta Life
- Meta Products
- Meta Careers
- Meta Newsroom

Thank you for taking the time to review this guide!