Interview Guide

RQ1: What are the most evolving functional requirements of autonomous vehicles' perception systems?

#	Question
1	What are the AV perception system's most critical functional requirements?
2	What advancements have been made in environmental perception for identifying static and dynamic obstacles in adverse weather conditions?
3	How do perception systems prioritize different elements of the environment in high-density traffic situations?
4	How do you handle real-time data processing and quick decision-making in AVP?
5	How do adverse weather conditions, such as rain or snow, impact the accuracy of lane detection systems?
6	What are the key challenges in enhancing inter-vehicle communication (IVC) or vehicle-to-everything (V2X) for autonomous vehicles, and how does it improve safety?
7	How does multi-sensor fusion work, such as combining radar and camera data?

RQ2: What are the most evolving non-functional requirements of the autonomous vehicle perception system?

#	Question
1	What are the most evolving non-functional requirements for the Autonomous vehicle perception system?
2	From your experience, what are the industry standards or frameworks for safety in AV?
3	What are the advancements and challenges in cybersecurity?
4	What advancements are necessary to ensure autonomous vehicle perception systems' accuracy and real-time processing capabilities in complex, dynamic environments?
5	What steps are taken to minimize risks to human life when developing the perception system for autonomous vehicles?
6	What strategies can be implemented to enhance the robustness of autonomous vehicle perception systems in challenging environments, such as poor weather conditions or unclear road markings?

7	How does continuous testing play a role in ensuring the perception system's reliability and safety?

RQ3: What are the challenges of autonomous vehicle perception systems, and what challenges arise due to the evolving requirements?

#	Question
1	What challenges arise due to the evolving requirements in autonomous vehicle perception systems, and in what ways are agile methodologies used to address challenges in perception system development?
2	What methods are being developed to bridge the gap between simulation-based and real-world testing for autonomous vehicle systems?
3	How do you ensure reliable localization and object detection when environmental factors resist sensors, such as during snowstorms or heavy rain?
4	How do you mitigate the impact of sensor uncertainty, particularly in situations where the environment is unclear or sensors have a limited range?
5	How do the increasing costs of AV development affect consumers, both in terms of pricing and accessibility?

RQ4: What are the consequences of challenges in the autonomous vehicle perception system?

#	Question
1	What are the consequences of these challenges in AV perception systems?
2	Are there particular types of errors or blind spots that often arise, and how do you address them?
3	What steps are being taken to reduce the high error rates in AV perception systems to make them safe for widespread commercial use?
4	What measures can be taken to avoid accidents caused by system or sensor failures in AVs?
5	How do AVs ensure smooth interactions with human-driven vehicles that may have unpredictable behaviours, without causing accidents or disrupting traffic flow?
6	How do you mitigate the risk of failures in the perception system that could lead to accidents or safety hazards?

RQ5: How do we mitigate the consequences or challenges of the evolving requirements of autonomous vehicle perception systems?

#	Question
1	What are the different methodologies used for the development of software in autonomous vehicle perception systems?
2	How does agile respond to evolving requirements and technical advancements?
3	What do you think about which agile practices (such as scrum and retrospectives) are more beneficial in the development of the AV perception system?
4	How can agile's iterative development process help to gradually improve the accuracy and safety of perception systems in AVs by allowing continuous refinement based on real-world feedback?
5	How can Agile teams use real-world testing feedback from users to identify blind spot issues and implement sensor improvements in shorter, manageable sprints?
6	Can agile's focus on constant testing and validation throughout the development lifecycle reduce the risk of mechanical failures in AV perception systems?