

Assignment 7

Retrieval-Augmented Generation (RAG)

10-K Due Diligence

Overview. In this assignment, you will use retrieval-augmented generation (RAG) to analyze two real robotics and autonomy companies: Ouster, Inc. and Luminar Technologies, Inc. Both companies build LiDAR-based sensing technologies for autonomy-related markets.

The documents you will analyze using RAG are the 10-K filings from each company, which are annual reports filed with the Securities and Exchange Commission (SEC) that summarize a public company's business, including risk factors, financial condition, and management. The purpose of this assignment is to see how RAG can retrieve evidence from specialized documents like 10-Ks to improve on unguided LLM responses.

Instructions. Download the 10-K file for each company from BruinLearn [Note: These PDFs are key excerpts from the full 10-K documents]. You will upload these into the [Week 7 web app](#). Answer the questions below and upload your responses to BruinLearn as a PDF.

Question 1. First Upload Ouster_10K_Excerpt.pdf and ask “*Was Ouster profitable in 2024?*”. Compare the zero-shot answer with the RAG answer. What specific 2024 financial figures does the RAG answer use, and how does the RAG answer differ from the zero-shot answer?

Question 2. Open the retrieved chunks for the Ouster profitability question above. Paste one of the retrieved chunks that contains evidence about Ouster’s 2024 profitability. After inspecting the chunk, do you feel confident about the answer that the LLM generated?

Question 3. Now upload Luminar_10K_Excerpt.pdf as well and ask, “*Was the company profitable in 2024?*” Compare the RAG answers for Ouster and Luminar. Which company appears closer to profitability based on the retrieved 10-K evidence, and what specific figures support your conclusion?

Question 4. Come up with one additional question that would help you decide which of Ouster or Luminar is a better investment. In your answer below, briefly summary your question, the relevant information obtained via RAG, and whether you would invest in Ouster, Luminar, both, or neither company. Is there any other information beyond the 10-Ks you would want to know? (This is open ended and there are many acceptable answers).