

Recognizing Damaged Items with an LLM Bot and Camera

Ozobot Editor Challenge—Student Guide

by Richard Born, Associate Professor Emeritus, Northern Illinois University

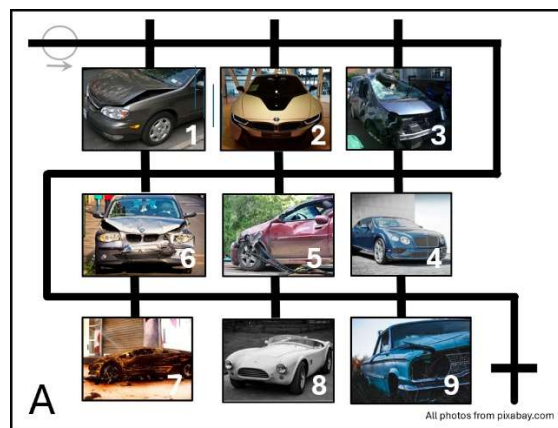
Introduction

An LLM with a camera can identify damaged items on a warehouse shelf by using computer vision to analyze the images. Visual signs of damage, such as cracks, broken packaging, or missing parts may come to light. Trained algorithms are used to classify and evaluate the condition of objects in real-time. This visual analysis is then combined with natural language capabilities to generate reports or alerts. All of this helps warehouse staff quickly identify and address damaged items for efficient inventory management.

The preceding paragraph infers that it is a rather complex task to identify damaged items on a warehouse shelf. Therefore, in this challenge you will identify damaged cars rather than damaged items on a warehouse shelf. An LLM with a camera can more easily identify damaged cars because cars are larger, have distinctive features, and show clearer damage signs. Extensive datasets and higher-resolution images also improve detection accuracy. In contrast, warehouse items are smaller, with subtler damage, making recognition more difficult.

The Challenge

Your teacher will provide you with an Ozomap like the one in Figure 1 or similar to it. It shows nine cars, some of which are damaged via a collision and some that are not.



With Ari or Evo at the start location in the upper left corner of the figure, facing the direction shown by the arrow, you will take a snapshot of the Ozomap with the LLM Bot and camera in the Ozobot Editor. You will design a block-based program that will then have Ozobot follow the path from pictures 1 through 9, in that order numerically. Based upon information obtained with the LLM and an appropriate prompt, Ozobot must show a red top light when at an intersection where the car is damaged, and a green top light if the car is not damaged.

Notice the letter A in the bottom left corner of the Ozomap. Your teacher will also provide you with an Ozomap labeled B, also containing nine car images. Your program is not to make use of the letter A or B in the LLM prompt. The letters are just used to allow quick visual reference to the fact that they are different.

Note that recognition of damaged cars seems to be most accurate when using the **Google (mini)** LLM model.

Finally, your program should work with the ***same prompt*** for both the A and B Ozomap.

That's it! Enjoy the challenge. Be fearless, industrious, and bold. You can do it!