Sebratec

Computer Vision Project Proposal

Earn confidence to solve real-world problems using computer vision

Instructor: Cristian Bortolini - cristian.bortolini@sebratec.com
Office Hours: To be announced
Classes: Monday and Wednesday - 17:30 - 19:30
Start date: To be announced
End Date: To be announced

I. Expectations and objectives:

What to expect from the final project

The project consists of an implementation of a solution to a problem belonging to the given topic. You can choose the actual problem you are trying to solve, as long as it fits the topic and is approached using computer vision and deep learning.

We recommend you to work on this project as the course goes on, work on it from day one, and submit it several times to receive feedback from the instructor. Each time you submit your project, the instructor will evaluate your work, provide feedback on what you have done and request improvements, or approve what you have done.

On the last day of the course, you will have to give a quick presentation of your final work to the class. It should include the objective, the problem to be solved, the positive impact on the proposed problem, the technical approach, and the achieved results. The presentation should take no more than 10 minutes.

The deadlines will be announced later during the course, and projects submitted after the deadline will not be accepted.

Educational objectives

The expected outcome of this project is to demonstrate your ability to employ the knowledge and techniques that you have acquired during the course to propose a technical solution to a real-world problem and test your ability to demonstrate the reasoning behind the technologies you chose.

II. Grading Procedures

The project will be graded alongside the final presentation to the classroom. You will have 10 minutes to present to your course instructor, classmates, and eventual guests brought by Sebratec academy.

The instructor will take into consideration the technical approach, the execution of the project, and your ability to demonstrate your knowledge during the presentation.

We do not expect you to deliver a production-ready solution. Your goal here is to present a proof of concept solution that is viable and can make an impact on the given challenge. It doesn't matter if the implementation performs badly. As long as you followed the technical principals properly when implementing it.

The course project and presentation will be the **only grading material** during the course. So you must not miss the deadline to be able to receive the course certificate.

III. Project proposal - Joining the Swedish recycling revolution

Sweden is one of the best countries in terms of recycling. According to the Swedish Waste Management Association, 1.850 million items are recycled in the pant system each year. 85% percent of the bottles and 69% of the packaging was recycled in 2017.

While these numbers are great and certainly among the best in the world, we can join the recycling revolution and use our knowledge to further reduce waste and lead ourselves into a greener future.

In this project, you will employ your computer vision knowledge to develop a solution to improve our current waste management techniques.

An example of an object detection solution using computer vision. This solution can detect aluminum cans, which are great candidates for recycling.

Here are some viable project ideas to be explored within this subject:

- An object detection software to detect garbage in images or videos;
- An image classification software to classify a given image into garbage/not garbage;
- An instance segmentation software to separate recyclable garbage from non-recyclable garbage in images or videos;

IV. The data

One of the biggest challenges when developing such a solution is to find adequate datasets to train our models. We have some suggestions for you below, but feel free to search for your own dataset.

Open recycle dataset: https://github.com/openrecycle/dataset
Taco Dataset, a dataset of litter in the wild: http://tacodataset.org/
TrashNew: https://github.com/garythung/trashnet