



Bi-Weekly Report Number 6

Computer Vision for Object Detection in Medicine

Team Number 6

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Week Overview

During the Christmas break the team focused on the completing the necessary tasks in order showcase the prototype.

Prototype

For our prototype we wanted an application which could distinguish between 2 medical instruments from a live feed. To do this we needed to train a model. We took around 700 photos of the 2 instruments, identified the objects withing them, and fed the photos into a training pipeline. Using the frozen inference graph produced from the process, we managed to successfully distinguish the 2 objects from a live webcam feed.

Website

During Christmas the team completed the prototype website. The website is sectioned into 5 main sections as well as a reposts sections that can be accessed from the main page. Other sections have been left blank in order to fill in when they have been completed.

The website gives the user details about the project and what the team has accomplished during the previous term such as the research that went into the project.

Azure

One of the main features of the project is its ability to have the object detection calculated on the cloud. This allows access to the API from any machine and with faster detection. After getting the detection to work on our local machine we started working on trying to setup the virtual machine on Azure.

The first step that we took was setting up TensorFlow on the Azure VM. This required us to setup the virtual machine with a GPU. As GPU VMs are extremally expensive the team decided on using the Standard_NC6 size with 1 GPU. After choosing the VM the team was able to successfully install TensorFlow on the machine. This will allow us to later on transfer our model to the VM and run the object detection system remotely from any location.

List of tasks Completed

- Trained model
- Completed prototype website
- Installed TensorFlow GPU successfully on Azure
- Created application to detect on a live feed

Plans for Next Two Weeks

- Research into REST API
- Create a stream from local device to Azure
- Take pictures of more objects
- Train more models which can detect more objects
- Test the models

Individual tasks completed

Benedict

Over the holidays, I focused on training the model. This meant taking the photos, putting boxes around the objects in the photos. Thus allowing me to train the model using TensorFlow GPU. I then modified a sample application from EdgeElectronic's object detection repo which allowed me to use the model on a live video feed.

Shirin

During Christmas my main focus has been on the website. I have been responsible for the design and writing content for the website. I was also in charge of creating the Azure VM and setting up TensorFlow on it.