FYP Project Proposal Form 2019/2020

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Programme Code: DT211c-4	
Project Title: The investigation into Cloud Based Image Recognition	

Summary (approximately 200 words)

The goal of this project is to implement cloud-based technology to tackle a problem that is facing many industries and workplaces by identifying trends.

The program will be able to take in a few images from S3 which can be analyzed through amazon Rekognition which will output a few pieces of data concerning the data. The data will then be translated into some graphs so that they can represent the trend of the data.

The real-world use case of this program will be that if a company wanted to analyze the trend inside their workplace, they can do this and get some information e.g. average age, gender, ethnicity. This can be very helpful in many use cases as it can make it very clear that the company tends to hire people from the 40-50 age range, then this might help indicate to them that hiring younger people can help them diversify their team. This can be a great boon in many ways.

Another use case can be for analysis of customers in the same manner; however this is all dependent on being responsible with this technology and fair usage.

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Background (and References)
Nowadays the discussion about data is always at the forefront of all topics no matter in which area it is.

As a student who is highly interested in the emergence of cloud technology it is very clear to me that all major businesses utilize this technology in many ways. Therefore, I researched the biggest cloud provider and checked what they had to offer. Amazon's AWS offers the most extensive suite of cloud services, among which I found the most interesting to be EC2, S3, Rekognition.

Amazon Elastic Compute Cloud (EC2) is a part of Amazon.com's cloud-computing platform, Amazon Web Services, that allows users to rent virtual computers on which to run their own computer applications.

https://aws.amazon.com/ec2

Amazon S3 or Amazon Simple Storage Service is a service offered by Amazon Web Services that provides object storage through a web service interface. Amazon S3 uses the same scalable storage infrastructure that Amazon.com uses to run its global e-commerce network.

https://aws.amazon.com/s3/

Amazon Rekognition is a cloud-based software as a service computer vision platform that was launched in 2016. It has been sold and used by a number of United States government agencies, including the U.S.

https://aws.amazon.com/rekognition/

Abstract- Image processing is an emerging field and lots of research had been performed for the past few years. It has various techniques which include image segmentation, enhancement, feature extraction, classification, restoration, image generation, pattern recognition etc. pattern recognition is an important part of image processing system. The aim of this paper is to study how AWS Rekognition can be used to recognize an image and also helps in analysis of image.

https://jespublication.com/upload/2020-110632.pdf

Cloud computing is performing well in today's World and boosting the ability to use the internet more than ever. Cloud computing gradually developed a method to use the benefits of it in most of the organizations. It is very demanding in all businesses tasked with improving the quality of service reducing costs as the organization pays for the service only what they consume based on the incoming and outgoing traffic.

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3415956

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Proposed Approach

My proposed approach for this project is to upload image files of peoples faces to Amazon S3, which is an object storage service. The images are then fed into Amazon Rekognition which will output labels of data e.g., gender, age, skin colour, glasses and other data like that. This information will then be returned, and you can check each person's data individually or it can also be displayed as a chart which will help to visualize the data.

The data will be accessible through a web page.

There are three main areas to my approach:
- Design and research
- Implementation
- Testing / Maintenance

Design and Research

- Image recognition is a new topic to me so I will need to test out how well it works.
- Through a module in third year, I was first introduced to AWS's services, I will need to do a lot more research to find out about how I will be able to proceed with this.
- AWS offers a free tier but that may not be enough for me so I need some research into their pricing
- Accessibility and making this online is a big part of this project so linking it up together is essential to the final presentation of the project

Implementation

- Implementing a system to upload the images to the bucket and then analyze them through Rekognition.
- Be able to retrieve the Rekognition results through an api and make it display on the web page in a presentable manner.
- Develop my JavaScript/ Rich Web knowledge to be able to have a good front end which can perform all the necessary tasks.

Testing / Maintenance

- As this program will need faces for the input it is important that it isn't mistreated, the data returned is also important.
- The webpage must remain accessible for those trying to access it.

Deliverables

A project dissertation.
A website that loads correctly
Interim Report

Technical Requirements

Laptop
AWS EC2, S3, Rekognition

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Project Reviews – Please include reviews of two of LAST 2 years projects from either DT228, DT282 or DT211C.

Project 1
Title: Mangaudible

Student: Mohammed Kadiri

Description (brief):

Mangaudible is a website for manga scanlations, which will help people who like to read manga in different languages be able to easily find manga in their preferred language. This project seems to cater well to a specific target group based on the research of the project owner, therefore it caters well to for the target group.

It features a database for the manga collection which will be stored in the database

Project 2
Title: Web Application for Camping Sites

Student: Sahil Sahil

Description (brief):

The purpose behind this website is to make it easier for people in search of a camping site in Ireland to be able to easily find one. It also displays a few features of each location and what they have, like parking public toilets and other such amenities. It also has the added feature of allowing you to do a weather search for anywhere in the world.

Proposal Sign off:

Student Signature: Omair Duadu	**Date: 18/10/2021**
Lecturer Signature:	**Date:**