

# Milestone 01: Project Initiation

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**1. What is your name?**

TYLER SUPERSAD

**2. What is your Student ID?**

SUP20486969

**3. What Programme are you on?**

BSc Computer Science

**TELL US ABOUT YOUR PROJECT SO FAR**

**4. What is the working title of your project (this can be changed at a later date)?**

Deepfake Detection Web Application

**5. What is the theme of your project?**

Artificial Intelligence & Machine Learning

Backend Development (Web)

Frontend Development (Web)

**6. Please give a very brief description of your project.**

Deepfake Detective (working site name) will be a web application where any user can simply upload an image or video file in which the web app will produce a result determining if it's a deepfake or not.

**7. Please outline the main aim(s) of your project. An aim is an expected outcome of your project (e.g., issues it will address, how it might improve or enhance a situation for stakeholders, etc.).**

The concept of deepfakes refers to images and videos that are fake, ergo they depict false events. Outcomes from this type of technology can pave a pathway to a significantly advanced form of media manipulation and reputational damage than Photoshop, as they are continually being improved on by deep neural networks to be practically indistinguishable from their authentic equivalent. With the terrifying prospect of the public having a difficulty discerning the truth from lies, this project will focus on an investigation, implementation and analysis of detecting deepfake technology as a combative method towards their generative improvement.

**8. Please outline some artefact objectives of your project. Your "artefact" is what you are going build, deploy, evaluate etc. Objectives are typically steps/activities that you must complete in order to deliver your project successfully.**

As I will be determining deepfake outcomes from images and videos, I need to apply slightly different methods to produce their respective results. Working with an image is simple because it's an evaluation of one image, however evaluating a video will be moderately complex as I'll need to assess frame-by-frame (plethora of images).

My first line of action is to create an algorithm that can identify a distinguishable face (eyes, nose, mouth, etc.) in an image. Once, the algorithm correctly identifies a face, I can move onto creating an algorithm that detects whether the face is a deepfake or not through a deepfake classification score. (Both algorithms will be constructed through the training of multiple datasets).

If an image cannot discern a face, it cannot move forward to the deepfake testing stage. In the case of a video, the aftermath will be the same if all frames cannot detect a face. I plan to have this handled gracefully by notifying the user of this constraint.

If an image successfully detects a face, it can move forward to the deepfake testing phase. Through its assessment, the image will be given a deepfake score, produced by the algorithm, which will conclude its deepfake classification. However, whilst analyzing a video, the frames with only a face will be utilized for the deepfake testing stage. Each frame will be analyzed individually for a deepfake score, and a calculation for the mean of all frame deepfake scores will occur. Depending on the amount of frames, there will be a number that indicates deepfake classification. The mean of all frames will determine the conclusion by associating itself with the closest classification number.

A problem that might arise is the evaluation of a video or image that contains multiple faces. I have a couple of ideas of what I can do to account for this predicament, but they're not fully fleshed out yet.

After I am content with my deepfake classification algorithm, I will move forward to designing and developing the web application.

## **TELL US ABOUT YOUR SUPERVISION PREFERENCES**

- 9. Please indicate your preferred supervisor. NOTE: Your choice cannot be guaranteed as supervisor allocation is based on availability and subject specialism.**

Arturo Araujo

- 10. Have you contacted a prospective supervisor?**

I am still in the process of contacting a prospective supervisor.

- 11. Please indicate your preference for a second supervisor (marker). Please select one or more.**

Charles Clarke

Kimia Aksir

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## **To be completed by the First Supervisor**

It is the supervisor's responsibility to approve this project as meeting the requirements for the module. This includes professional body requirements, programme requirements, and module requirements. By signing the form, you are agreeing you have validated the suitability of the

project.

I approve this Project Initiation Document:

Supervisor's Name:

Date:        /        /