Face Mask Portraits

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In this activity you will use Google's **MediaPipe** AI Models to recognise faces from a webcam.

The idea is to use a web browser application that integrates the webcam, the Google **FaceMesh** model (a part of **MediaPipe**), and a drawing programme to create masks to overlay onto faces detected in the webcam feed. **You** have control of the masks! Have Fun!

WARNING

Be kind with the masks and don't offend anyone!

Let’s get going!

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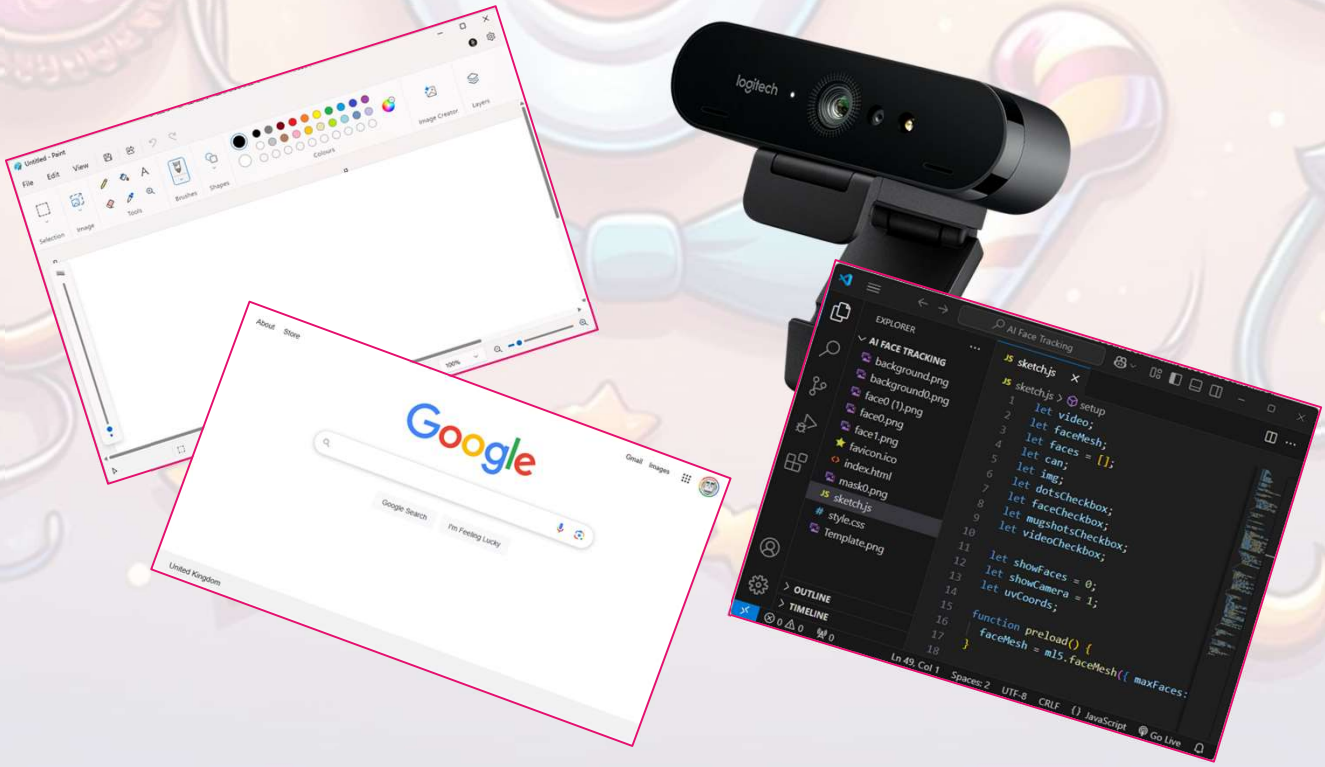
What do we need!

For this activity we need the following:

- A **web browser** (we recommend you use Chrome).
- A **webcam** connected to the computer.
- A **Drawing Package** (Paint, GIMP, Photoshop).
- **Your Face (and others ☺)!**

The lab computers should already be setup, but if you get stuck at any point, ask for help. We are here to help you. Don't worry if you don't get everything finished in this session there are sample masks in the application you download already.

Source files: https://github.com/neliot/Portraits



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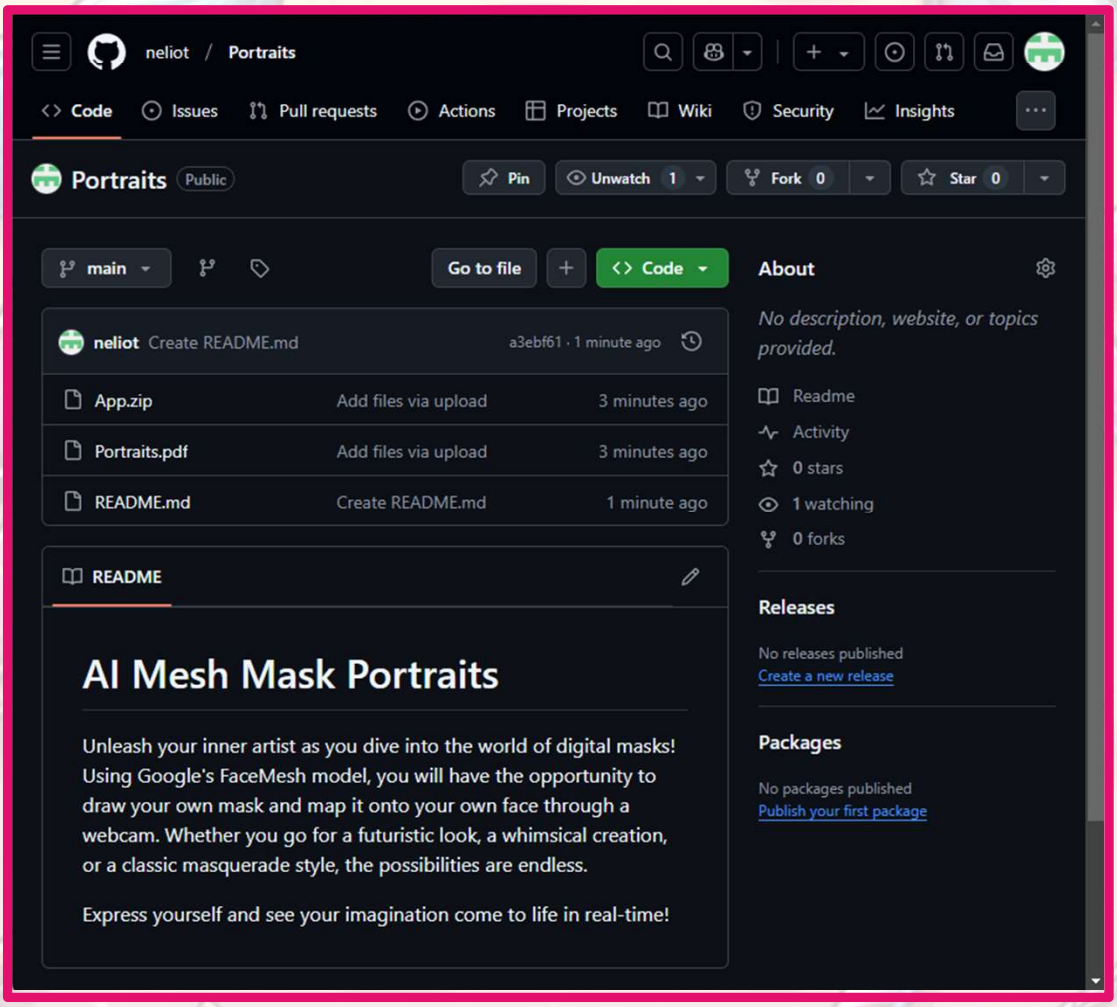
Download the application!

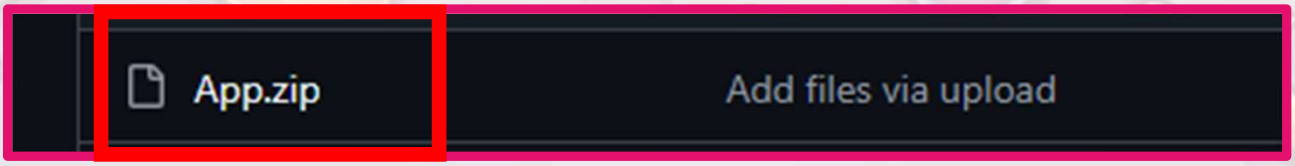
In your browser enter the URL below:

https://github.com/neliot/Portraits

You should see a page similar to the one below:



Click on the App.zip file:



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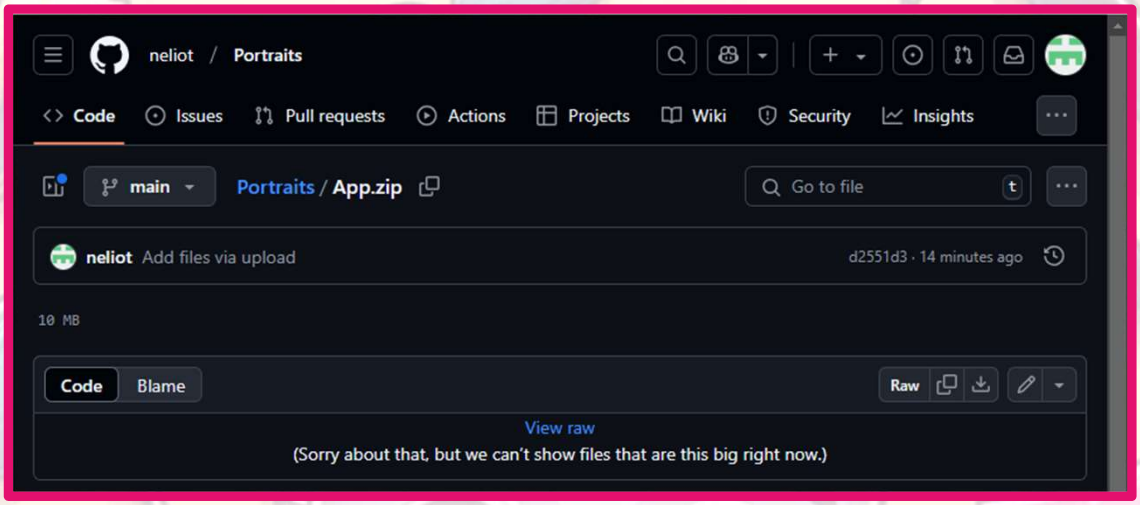
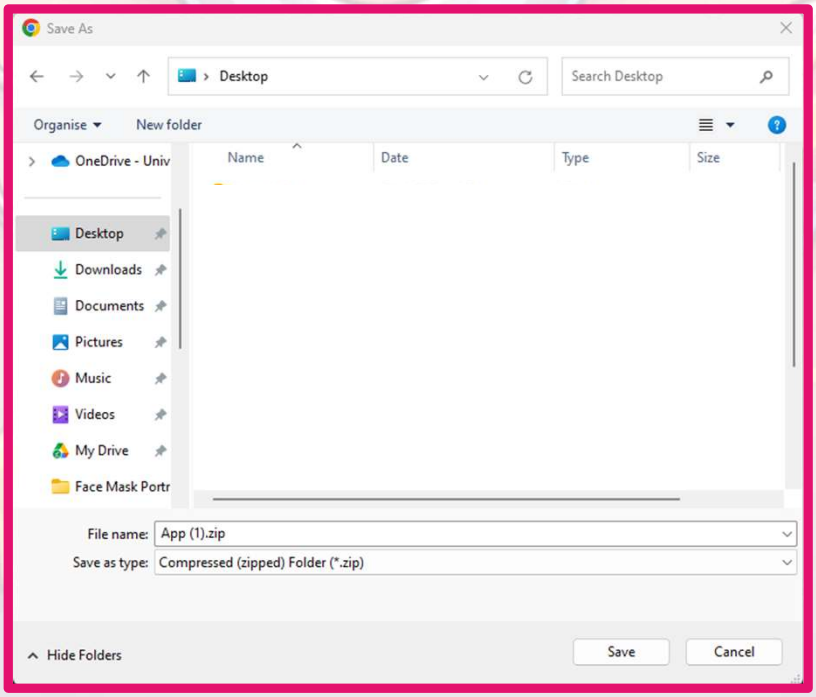
Download the application!

You will now be presented with the following screen:



Click on the download icon and save the file to the Desktop.



Let’s get going!

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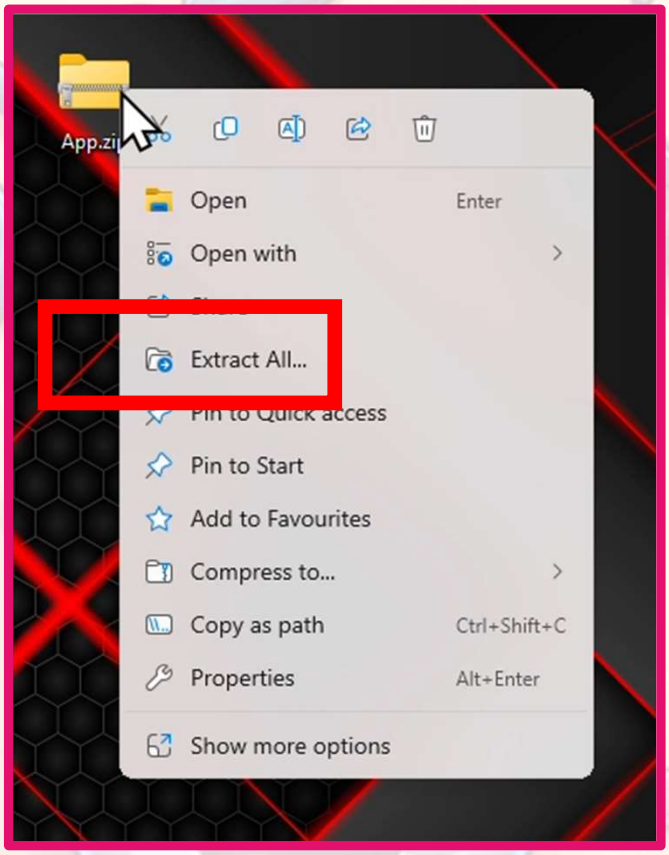
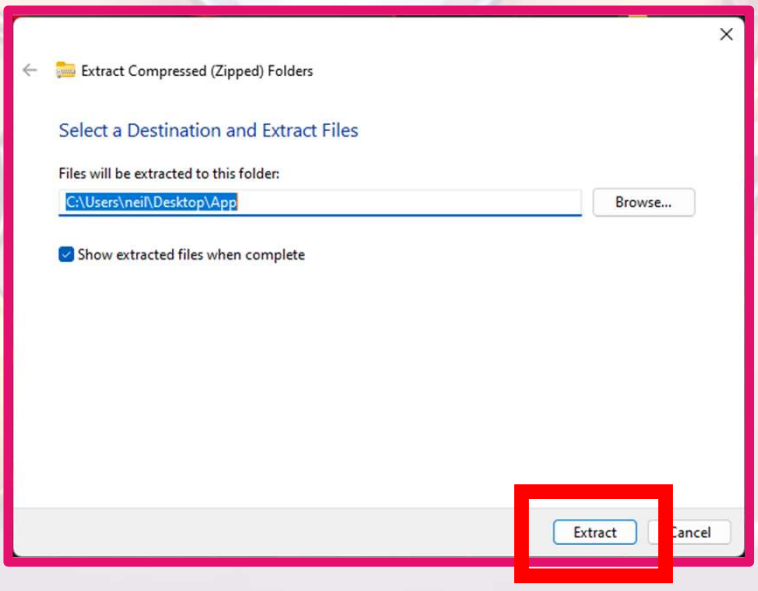
Extract the application!

Go to the desktop and find the file you just downloaded and right click on it.



Select **`Extract All`** and then **`Extract.`**



Let’s get going!

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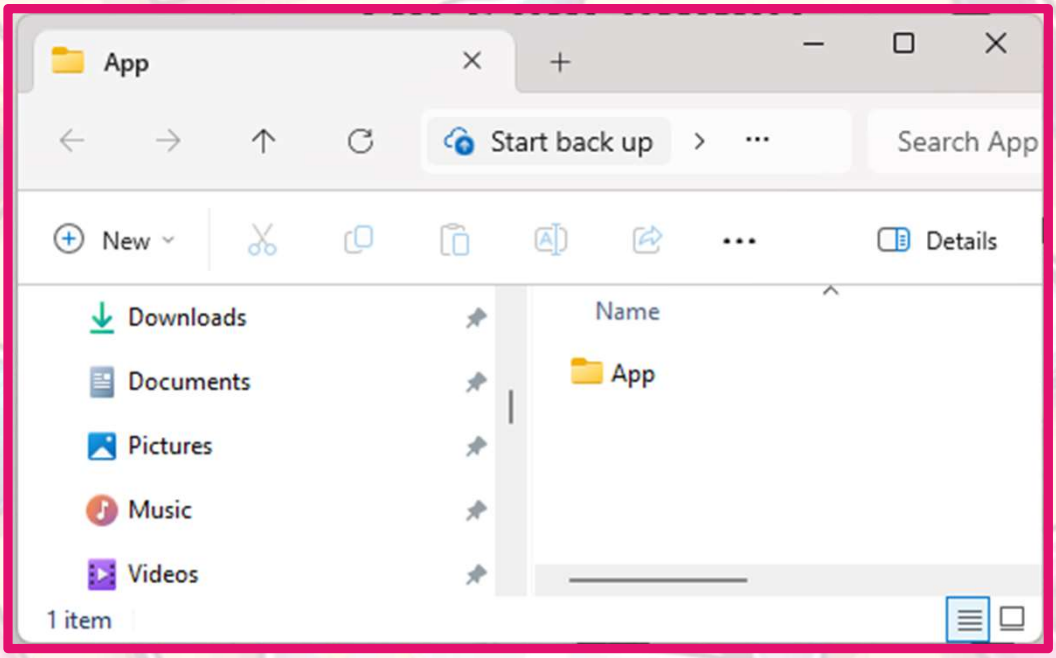
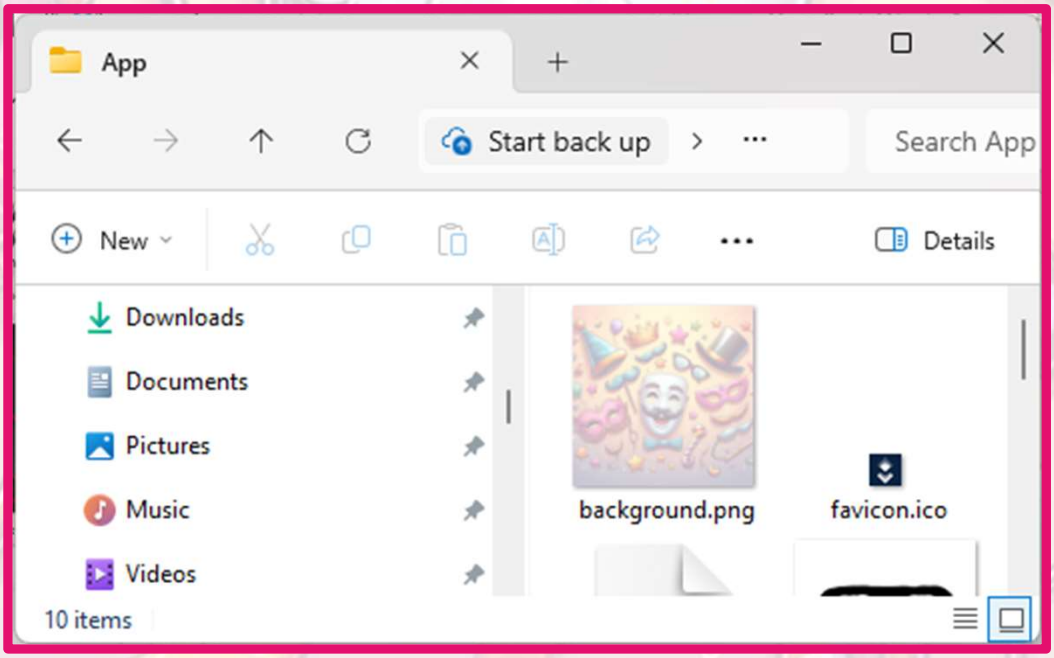
Running the application!

You can now see the Extracted application folder.



Go into the **App** folder by double clicking on it.



And now the Editor

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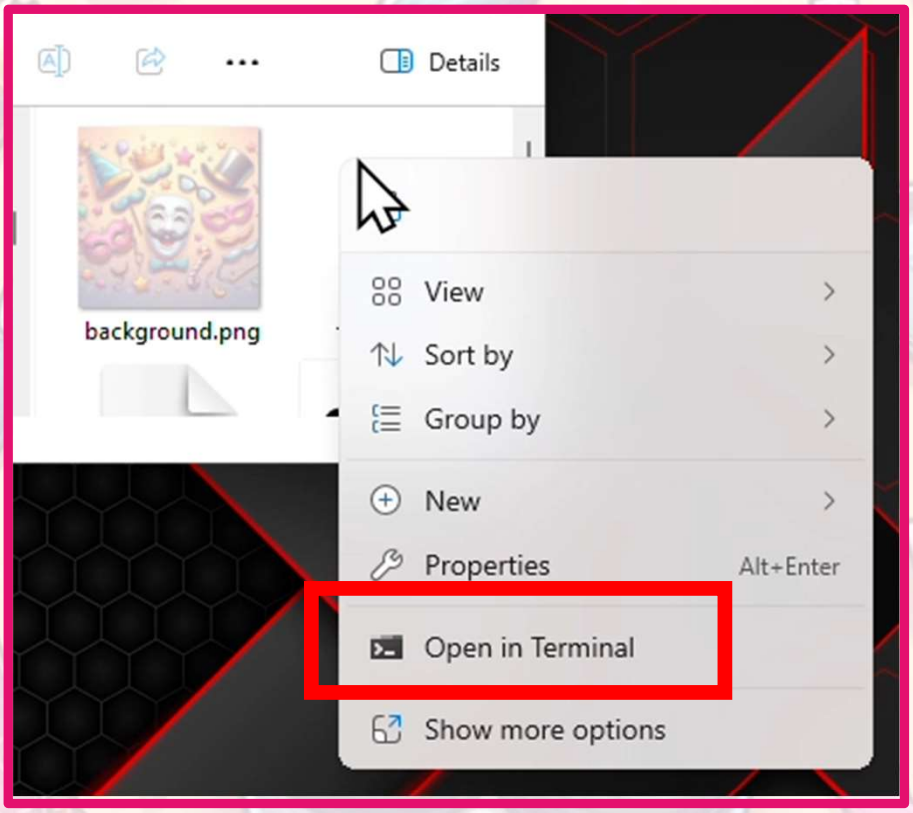
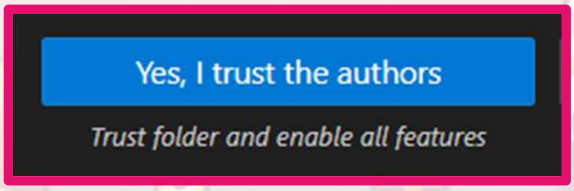
Running the application!

`Right Click` in the white space above the **`icon`** file to bring up the **`action menu`** as below:



Select the **`Open in Terminal`** option. When the terminal window opens go to it and type in "**`code .`**" (without the quotes, yes a dot is required after **`code`**!). Press the **`RETURN`** key. You should now have **`VS Code`** running with the **`App`** folder showing the files. If you get a message asking if you Trust this folder select **`Yes`**.



And now the Editor

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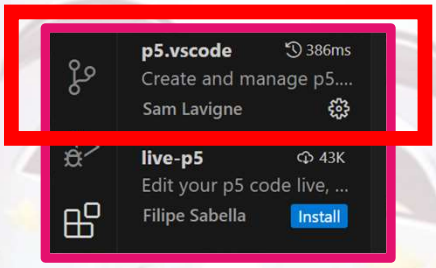
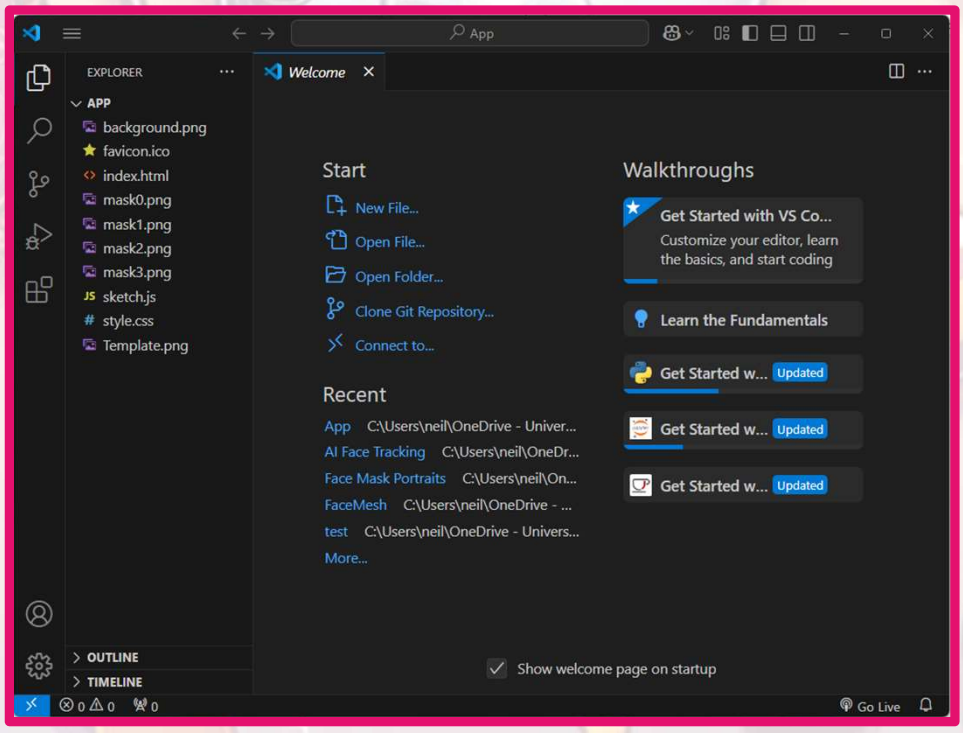
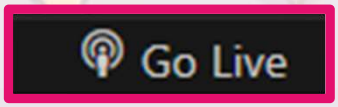
Running the application!

Now you can launch the application. At the bottom of the screen is an option "**`Go Live`**". This is the built in **`Live Server`** which is a local web server which runs the application.

If the "Go Live" option isn't displayed call the academic over, they may need to install the `p5.vscode` extension for you!







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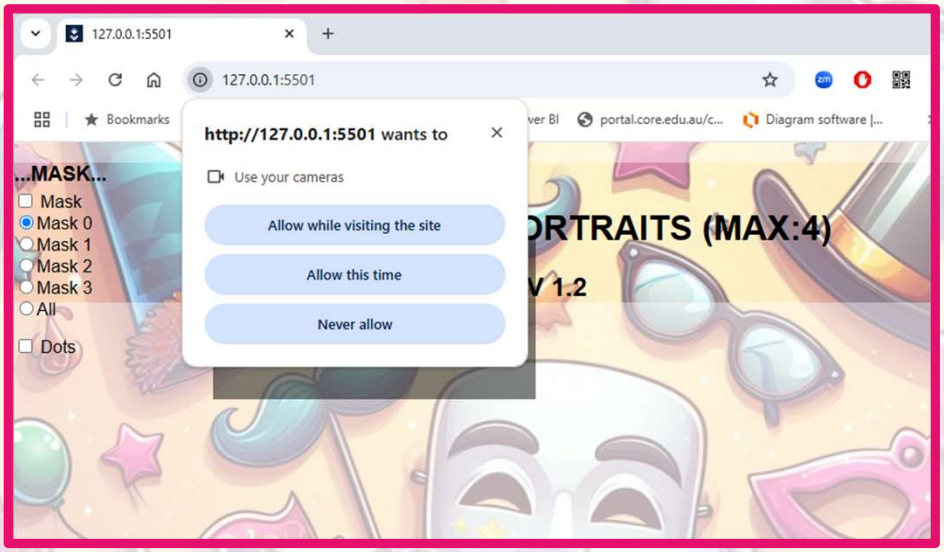

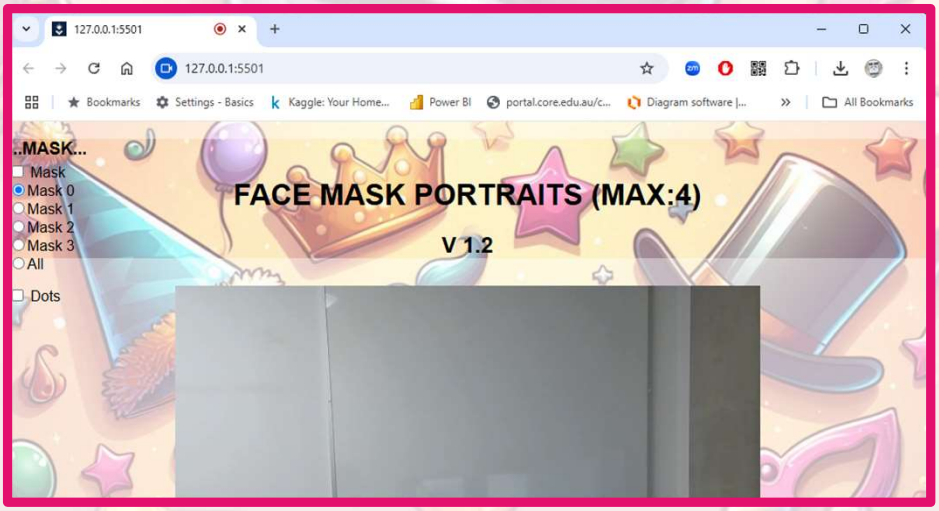

Now the Fun Begins!

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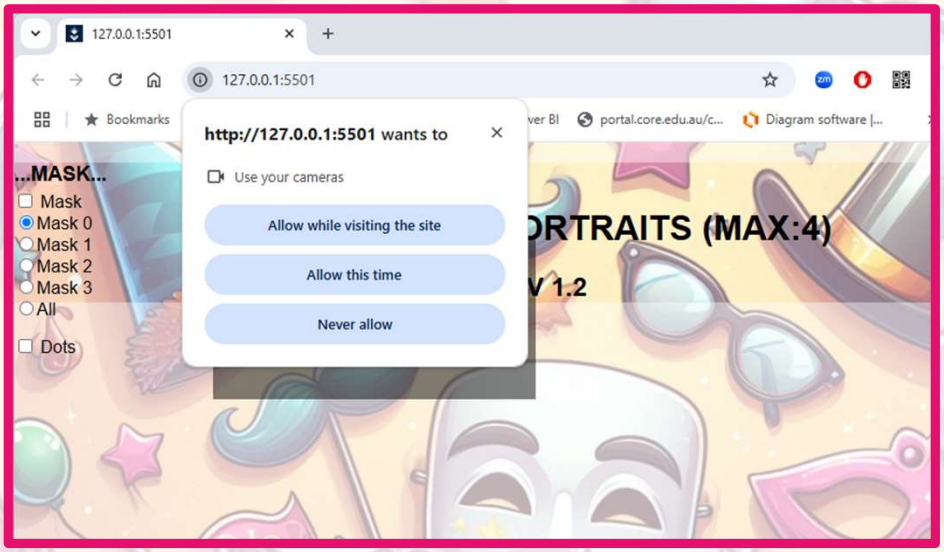
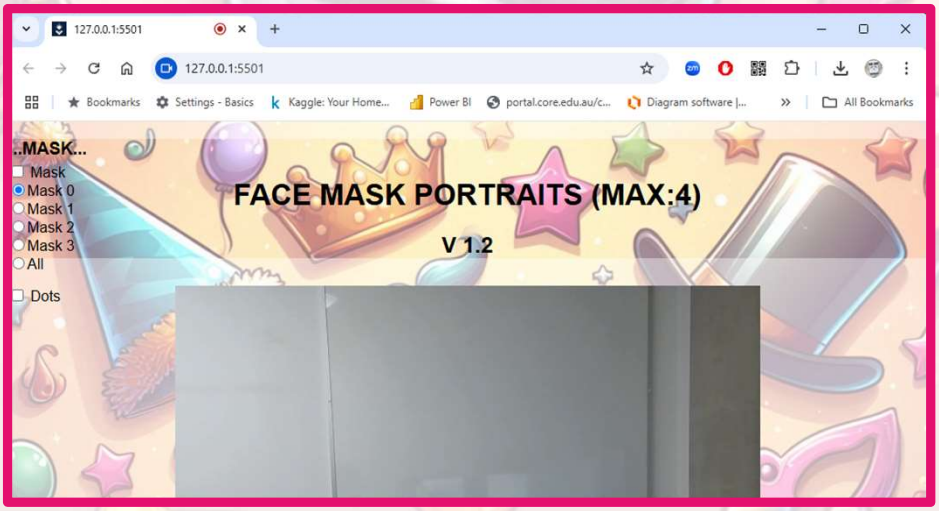
Using the application!

The webcam should now be in the application window, and you should be able to see yourself!





Now the Fun Begins!

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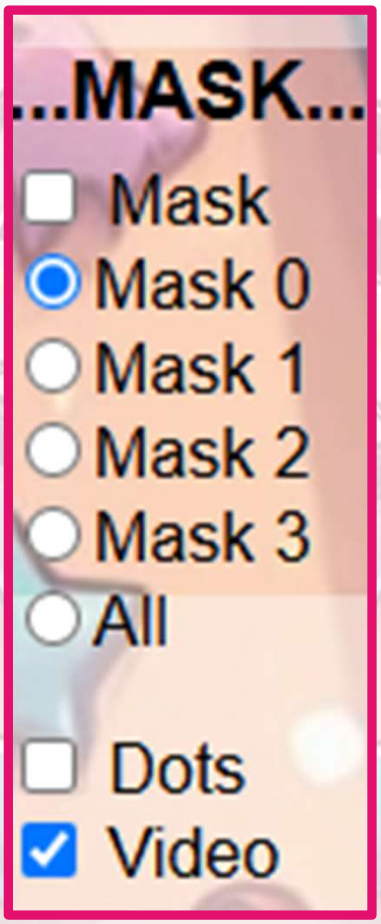
Using the application!

If you look at the Top Left corner of the browser screen you will see there is a menu. Have a play round with options. Checkboxes switch features on and off, Radio buttons allow you to select options. The initial settings are video on only! (you can have video off and mask on which can be a bit weird!)



Now the Fun Begins!

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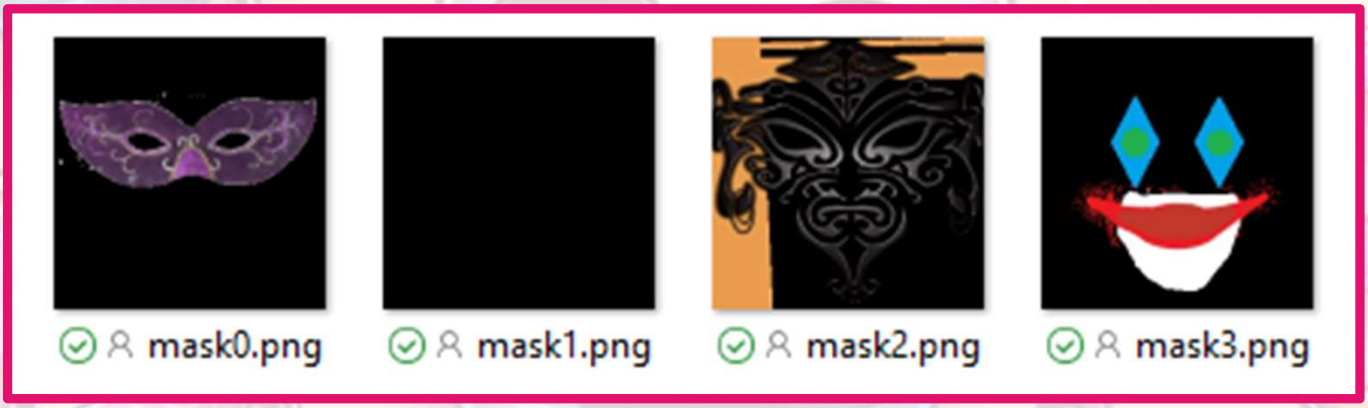
What about creating your own masks!

If you go to the **App** folder where you downloaded the application, you will see there are several "**png**" files.

The files are the masks that are injected into the video feed on top of the FaceMesh!

It's now up to you to change them up a bit or make your own!



There are 4 masks that the application can map based on the option you select.

Each mask has a transparent background. There's a template image (**Template.png**) you can modify to create your own mask.

Now the Fun Begins!

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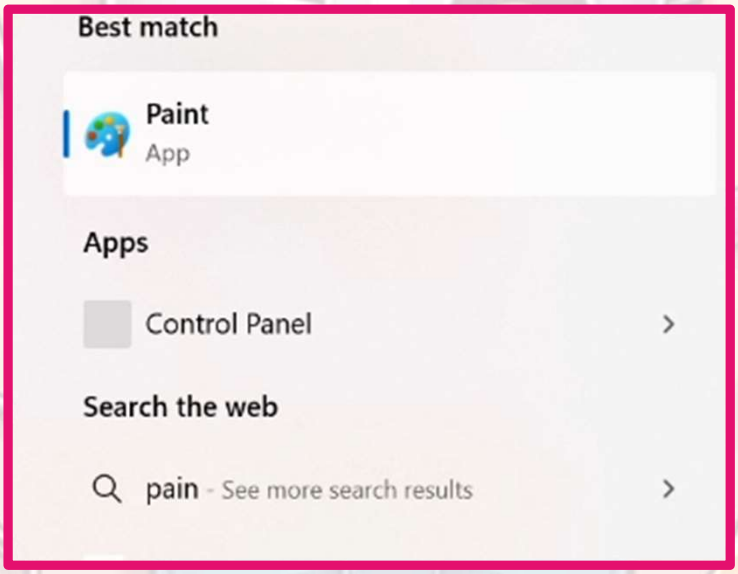
Microsoft Paint!

We can now use any suitable drawing package to create masks. In this next section we will use Microsoft Paint to replace one of the default masks (`mask0.png`) using the mask template.

First off, all open Paint.
Click on the start menu and start typing “paint” it should appear as a “best match”. Select it (click) and you should have paint up and running.



Now the Fun Begins!

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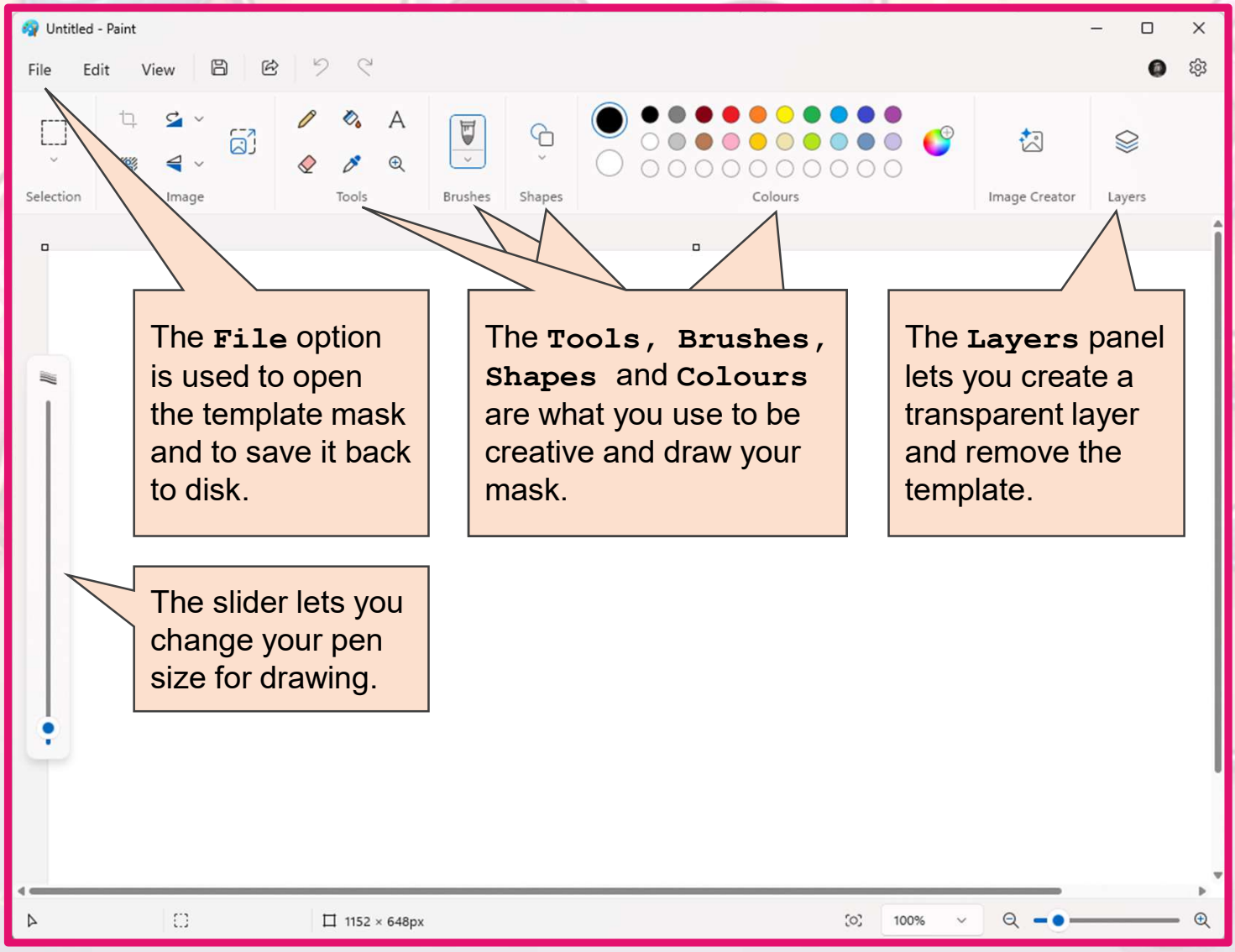
Microsoft Paint!

First off, let's run `Microsoft Paint`.
Click on the **`start`** menu and start typing "paint" it should appear as a "**`best match`**". Select it (click) and you should have paint up and running.

The main components that you will need to know about are highlighted below:



Now the Fun Begins!

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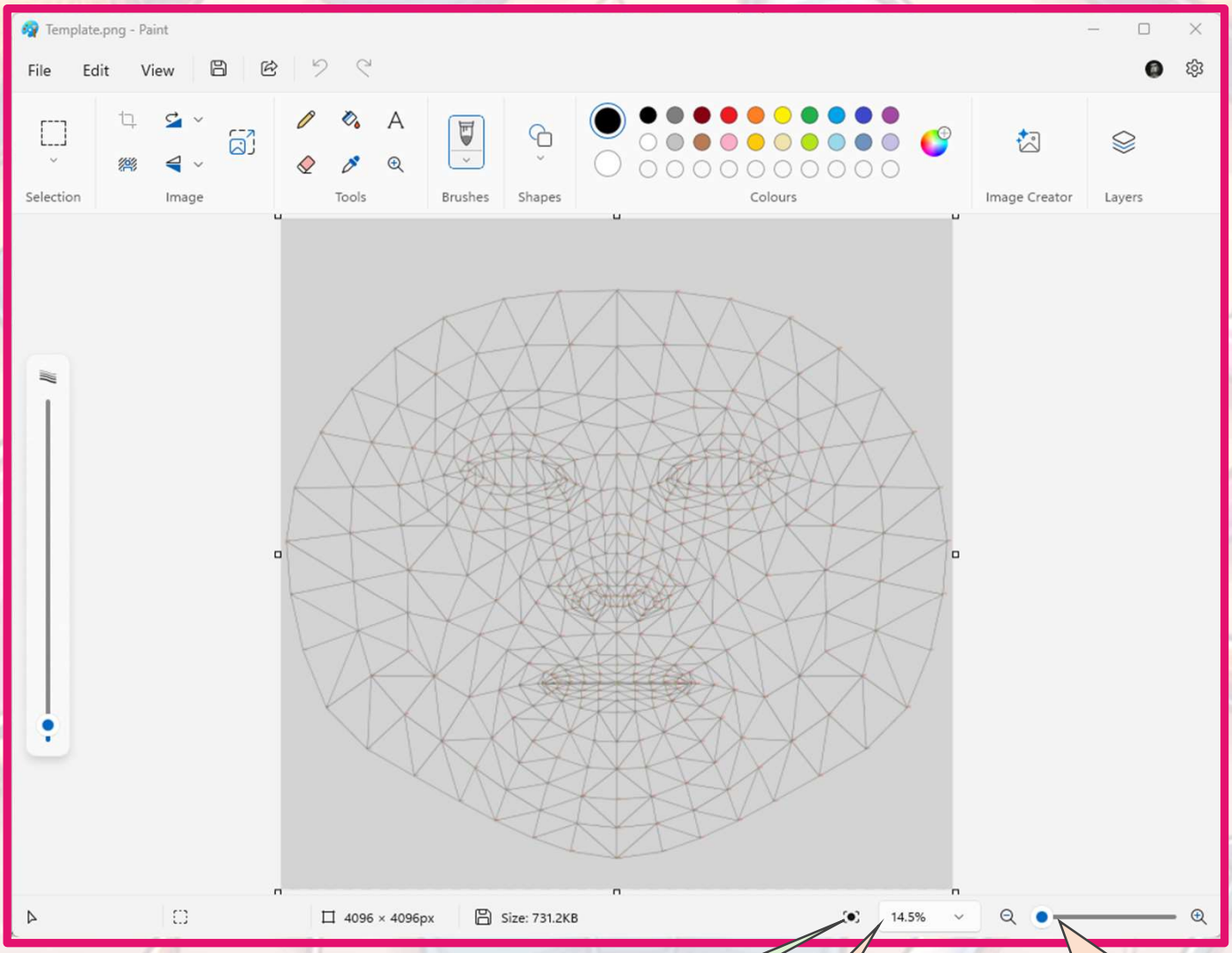
Microsoft Paint!

Loading the Template.

From the file menu select open and navigate to the **`App`** folder and select **`Template.png`**.



This option allows you to set the size to “Fit to Window”.

The dropdown allows you to select a specific magnification.

The **`slider allows to dynamically zoom the image.`**

Now the Fun Begins!

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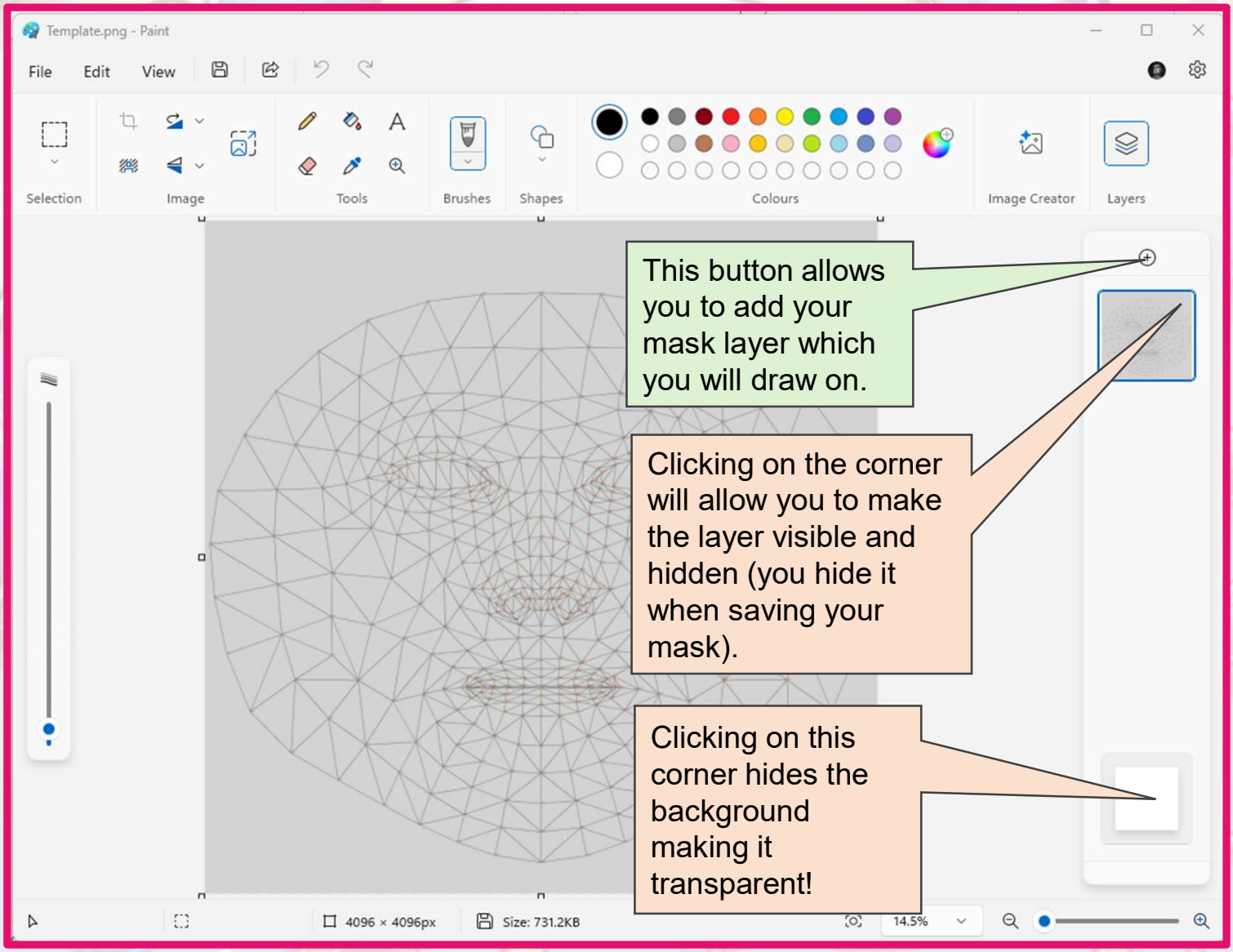
Microsoft Paint!

Preparing to Draw.

Now the template is loaded you need to prepare the environment to allow you to draw your mask.

Select the **`Layers`** option to manage the layers



Now the Fun Begins!

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Microsoft Paint!

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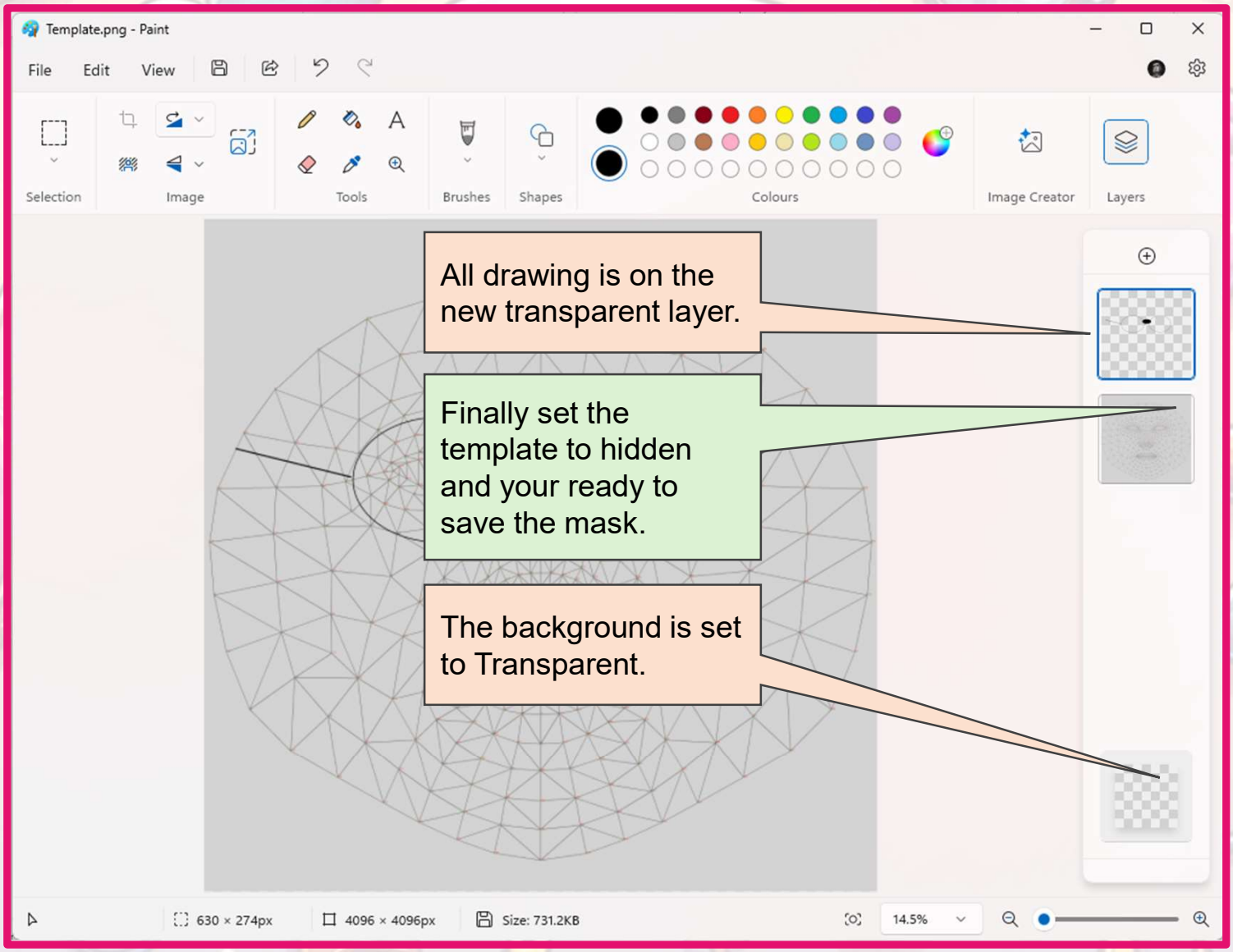

Now the Fun Begins!

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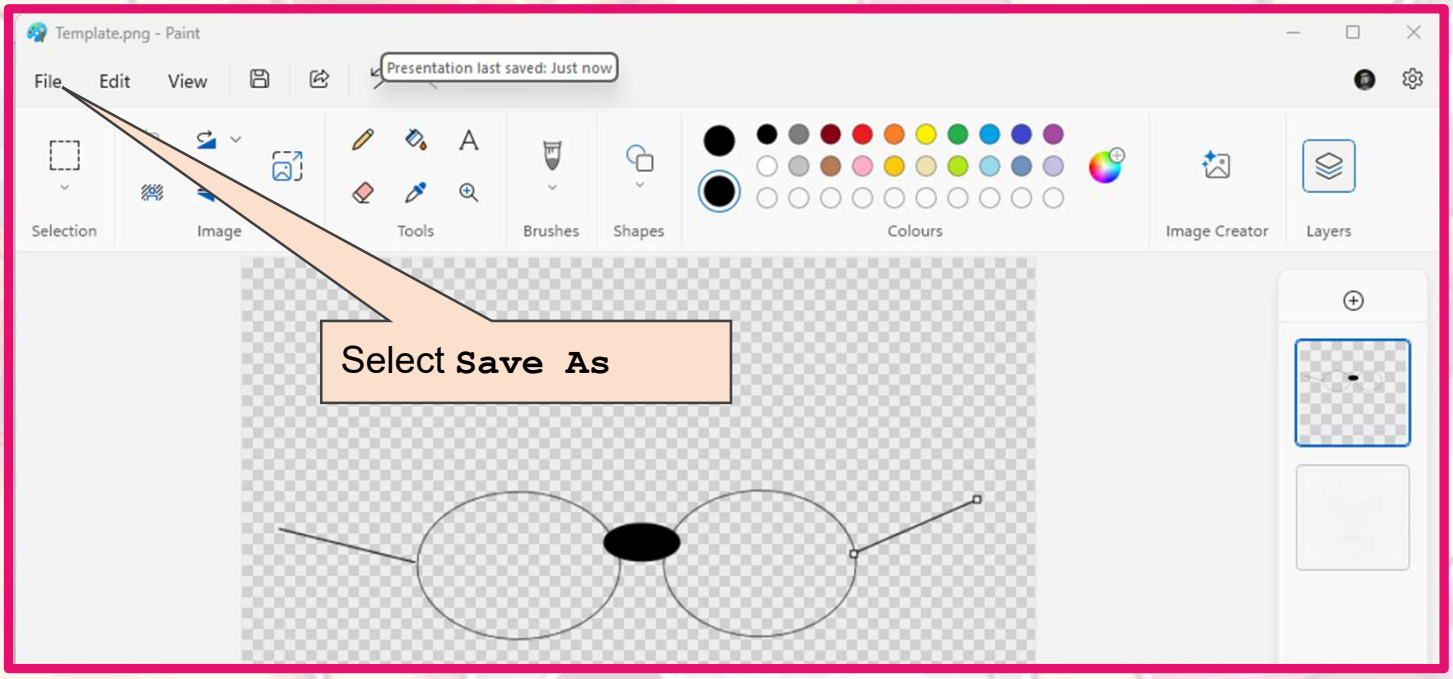
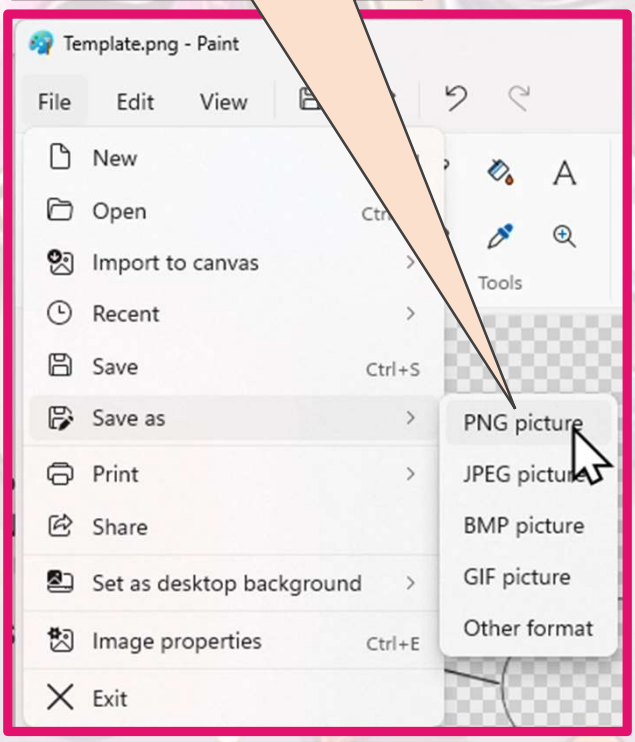
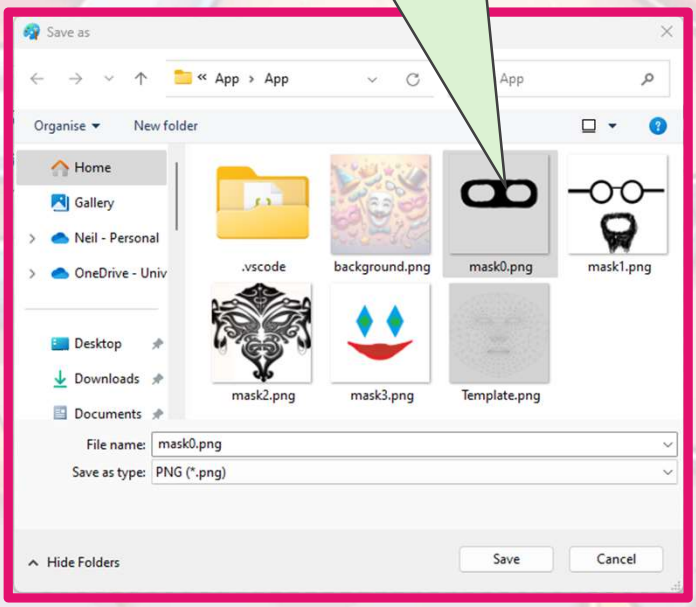
Microsoft Paint!



Select **PNG Picture** as this will preserve the Transparency.



Navigate to the App folder and select **mask0.png** to overwrite it.



Now the Fun Begins!

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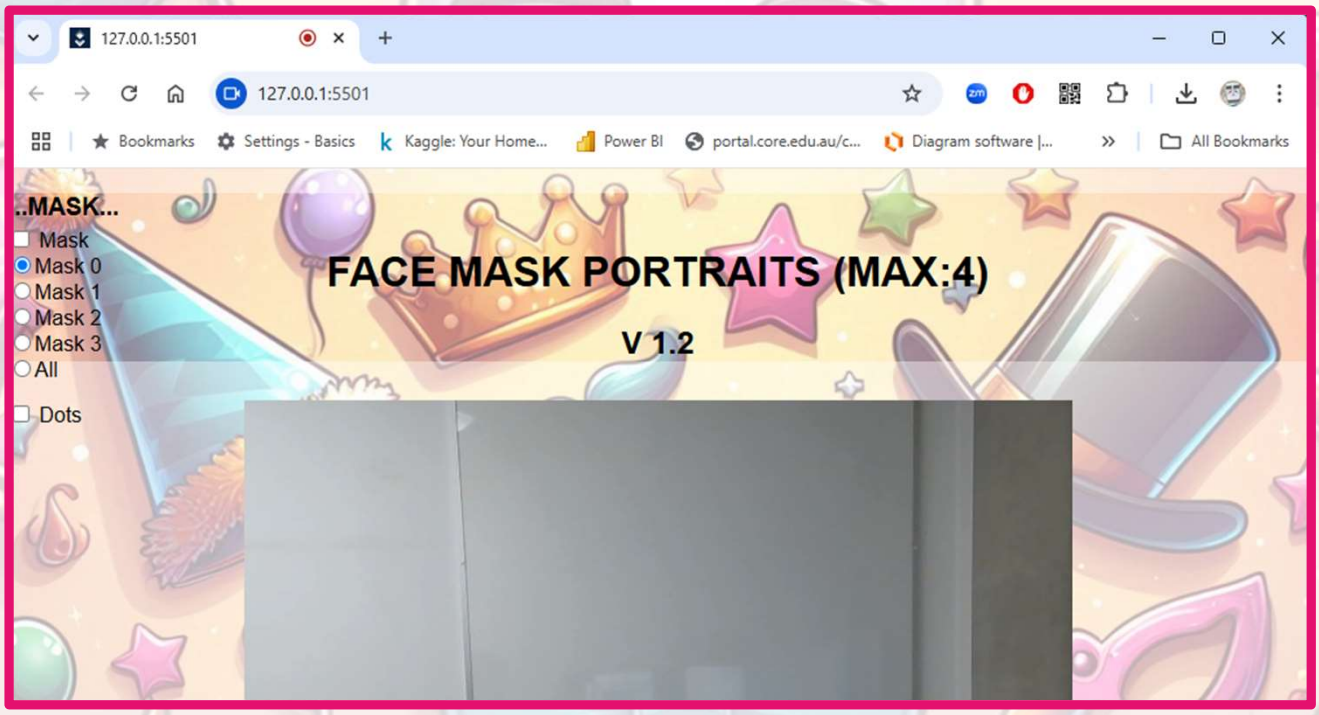
Back to the App!

Go Back to VS Code

Once you've saved you mask, or masks if you've created more (you should!). Go back to **VS Code** and restart the application by selecting the "**Go Live**" button. If it reads "**Port : 5500**" rather than "**Go Live**" select it to shutdown the server and then select "**Go Live**" when the server has restarted.



Have some fun

Get some of your friends to play with your new masks. If you've created 4 masks, try using the **All** option so each of you get a different mask. (Only 4 faces at time though!)

Now the Fun Begins!

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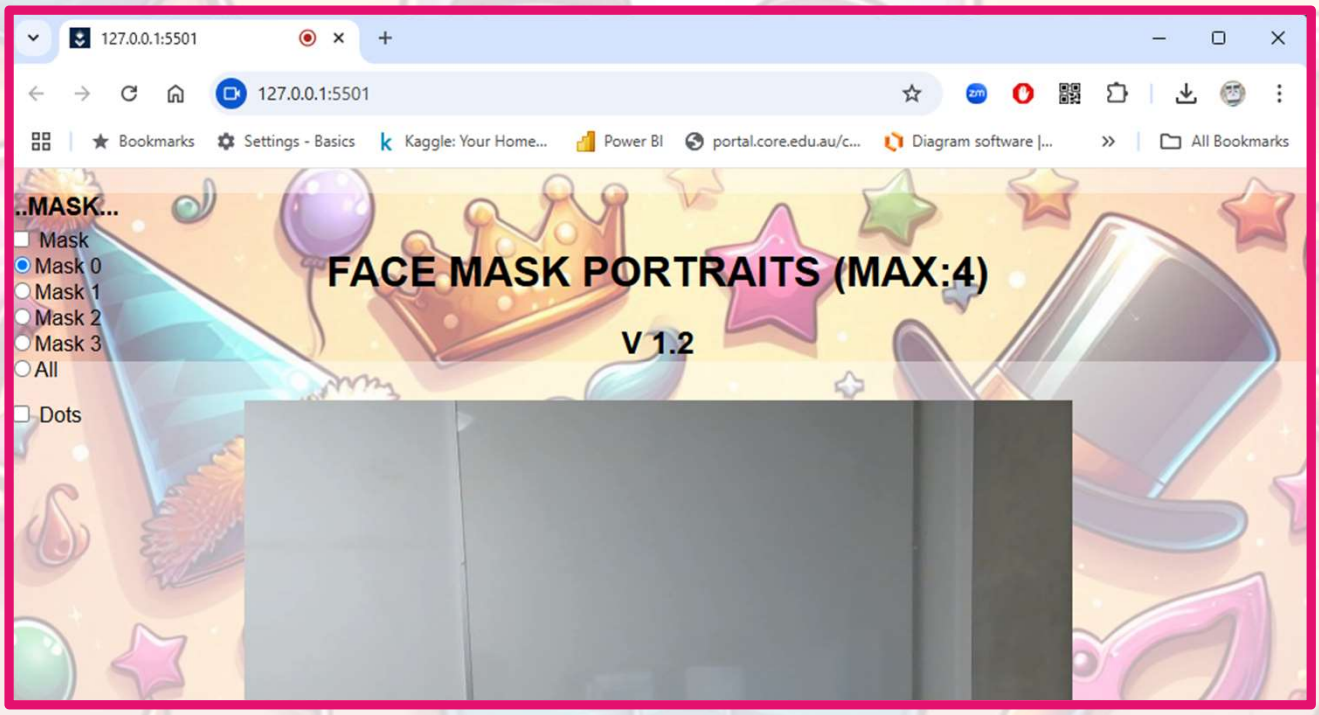
Final Note!

Go Back to VS Code

Once you've saved you mask, or masks if you've created more (you should!). Go back to **VS Code** and restart the application by selecting the "**Go Live**" button. If it reads "**Port : 5500**" rather than "**Go Live**" select it to shutdown the server and then select "**Go Live**" when the server has restarted.



Have some fun

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Now the Fun Begins!

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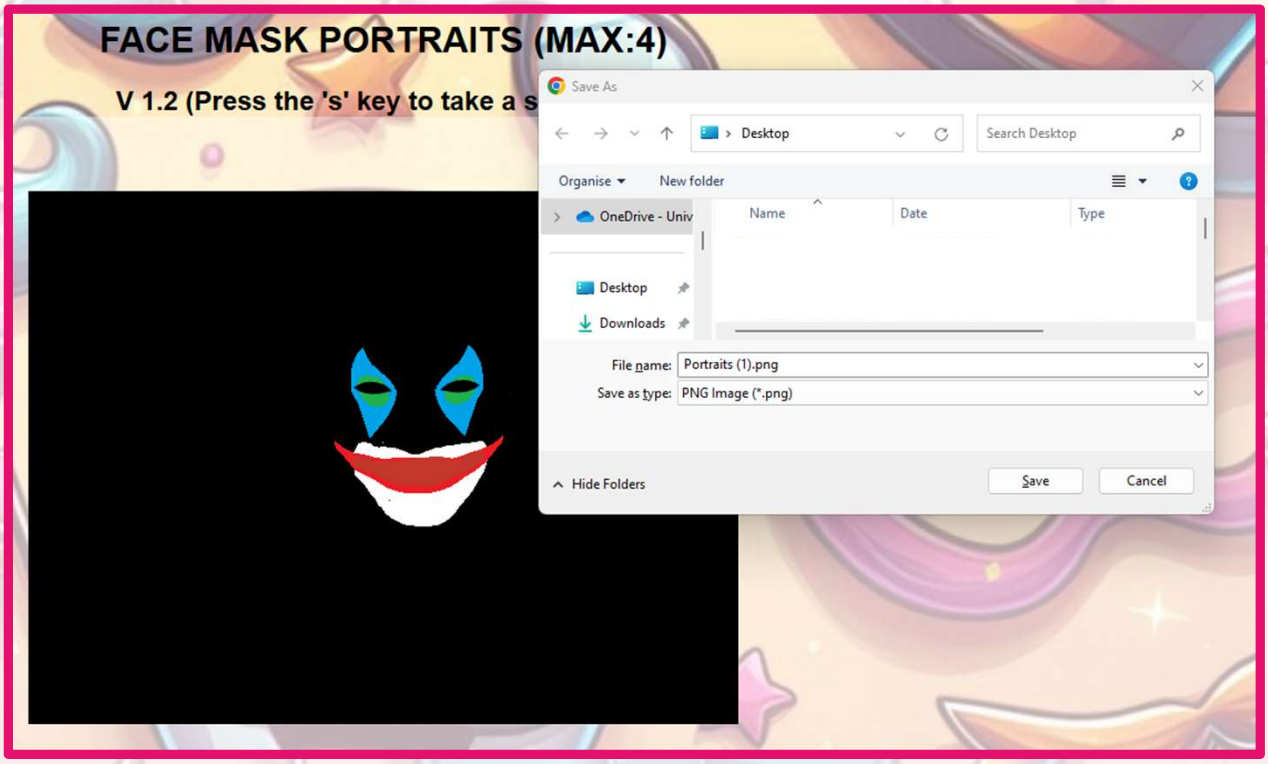
Bonus!

Why not save your final creations

Once you've got all your masks running and the faces covered in various forms, including no video (very strange!), you can save you creation by pressing the "s" key and it will let you save a snapshot image of the application canvas.



Hope you had FUN!

Now the Fun Begins!

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And Finally!

Creating a fun application with AI is just the tip of the iceberg.

AI now empowers us to revolutionize industries, enhance everyday life, and solve complex problems in ways we never thought possible.

From personalized healthcare to smarter cities, the future possibilities are vast and exciting!

And Finally!

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On the **BSc Computer Science** Programme at the **University of Sunderland** you'll study AI and Machine Learning in more detail, which means you'll be able to create some amazing things and have a good grasp on this important emerging technology.

BSc Computer Science

Other Programmes that may be of interested

BSc Cybersecurity and Digital Forensics

BSc Games Development