**User Guide**

The use of this application requires the use of Kaggle.com, Google Drive, and Google Colab. These tools are free to use from their respective websites.

1. If the user does **NOT** have an existing **Kaggle** or **Google** account, the user will need to create an account on both sites.
2. **Creating a Kaggle Account:**
   1. **Visit Kaggle Website:** Open your web browser and go to [Kaggle's website](https://www.kaggle.com/). (<https://www.kaggle.com>)
   2. **Sign Up:** Click on the "Sign Up" button located in the top right corner of the page.
   3. **Fill in Information:**
   4. Provide a valid email address and create a strong password.
   5. Complete the necessary information, including your full name and username.
   6. Complete the reCAPTCHA to verify that you are not a robot.
   7. **Agree to Terms:** Read and accept the terms of service and privacy policy by checking the respective boxes.
   8. **Create Account:** Click on the "Create Account" button to complete the registration process.
   9. **Verify Email:** Kaggle will send a verification email to the address you provided. Open the email and click on the verification link to activate your Kaggle account.
3. **Creating a Google Account:**
   1. Navigate your browser to [Google’s home page](https://www.google.com/). (<https://www.google.com/>)
   2. Click **Sign In** at the top right corner of the page.
   3. Click **Create account** and select the type of account you wish to create.
   4. **Fill in Your Information:**
      1. Enter your first and last name in the provided fields.
      2. Choose a unique username (your email address) that hasn't been used by someone else. If your preferred username is already taken, Google will suggest alternatives.
      3. Create a secure password. Google will indicate the strength of your password.
      4. Provide a Phone Number:
      5. Enter your phone number. This is optional but highly recommended for account recovery purposes and additional security.
         1. Google will send a verification code to the provided phone number.
      6. Recovery Email (Optional):
         1. You have the option to provide a recovery email address. This is useful for account recovery in case you forget your password or lose access to your primary email.
      7. Enter Your Birthdate and Gender:
      8. Provide your date of birth and select your gender. This information is used to personalize your Google experience.
      9. **Complete the CAPTCHA**:
         1. Complete the CAPTCHA by solving the puzzle or selecting the required images.
   5. **Review Terms of Service and Privacy Policy:**
   6. **Read Google's Terms of Service and Privacy Policy.**
   7. **If you agree, check the box indicating your acceptance.**
   8. Click "**Next**":
      1. Click on the "**Next**" button to proceed.
   9. **Verify Your Phone Number:**
   10. If you provided a phone number, Google will send a verification code to that number. Enter the code to verify your account.
   11. **Welcome Screen:**
       1. You will be directed to a welcome screen once your account is successfully created.
   12. **Personalize Your Google Account (optional):**
       1. Follow the on-screen prompts to customize your account settings, such as adding a profile picture and setting up additional security options.
4. **Setting Up Google Drive:**
   1. **Visit Google Drive:** Go to [Google Drive](https://drive.google.com/) in your web browser. (<https://www.google.com/drive/>)
   2. **Sign In:** If you already have a Google account, sign in with your existing credentials. If not, click on "Create account" to set up a new Google account.
      1. Follow the instruction to create your Google account listed above.
   3. **Create a New Folder (Optional):** Organize your files by creating a new folder dedicated to your Kaggle projects.
5. **Download the necessary files:**
   1. Navigate in your browser to: <https://www.kaggle.com/c/dog-breed-identification/data>
   2. Scroll down to the bottom of the page and click **Download All**
   3. Once downloaded, place the file (**dog-breed-identification.zip**) into the desired directory of your **Google Drive**.
   4. During development and testing, **dog-breed-identification.zip** was placed here: (“**content/drive/My Drive/Colab\_Notebooks/dog-breed-classifier/**”)
      1. Any deviation from this file structure will require modifications to the numerous filepath variables throughout the application.
      2. It is **strongly recommended** that you follow the same file structure to avoid complications.
   5. Download the attached file: “**C964\_dog\_breed\_classifier.ipynb**” and place it into the same directory as above **(“/content/drive/My Drive/Colab\_Notebooks/dog-breed-classifier/”)**
      1. Once the file is in the appropriate Google Drive directory, locate the file and right-click.
         1. Select **Open with**, then select **Google Colaboratory.**
      2. …**OR** navigate to <https://github.com/r3m3dial-g3nius/C964_Capstone/blob/main/C964_dog_breed_classifier.ipynb> and **click the icon** on the right side of the screen (looks like a down arrow) just above the file preview window to **“Download raw file”**.
         1. Once the file is downloaded, please move the file to your Google Drive in the directory mentioned above.
         2. Once the file is in the appropriate Google Drive directory, locate the file and right-click.
         3. Select **Open with**, then select **Google Colaboratory.**
6. Once the file is open in Google Colab:
   * 1. Please take time to review the notebook.
     2. Note the filepath variables and make sure your file structure is the same
     3. On the left side of the screen under “File Edit View…” you will notice a vertical menu bar with icons. If the **Table of Contents** is not already open, click the topmost icon consisting of 3 vertically aligned dots with 3 horizontal lines next to each dot to open the **Table of Contents**.
     4. Scroll to the bottom of the Table of Contents and click on **User Interface**.
        1. **Please review this section if you wish to run the model on your own custom images**.
        2. 4 random images were manually downloaded during testing from the provided links and placed in a newly created **custom\_images** folder for testing purposes:

**"drive/My Drive/Colab\_Notebooks/dog-breed-classifier/custom-images/"**

* + - 1. If you would like your own custom dog images to be classified, please create the folder **custom-images** here (**“drive/My Drive/Colab\_Notebooks/dog-breed-classifier/custom-images”**) and place your jpeg images:
         1. You may do this prior to step **7** by creating the folder in Google Drive manually.

This is accomplished by navigating to Google Drive and selecting the working directory “**drive/My Drive/Colab\_Notebooks/dog-breed-classifier**” on the left side of the screen that shows your file structure.

Right click on the **dog-breed-classifier** folder and select **New Folder**

Name the folder “**custom-images**”

* + - * 1. **Or** you are executing the application line by line, you may do this at the section labelled: “**Please place your custom images in your Google Drive Folder labelled: drive/My Drive/Colab\_Notebooks/dog-breed-classifier/custom-images”** found in the **User Interface** section of the **Table of Contents.**

The code prior to this line will create the directory for you if it does not exist.

1. **Running the application in Google Colab:**
   1. If you are already in **Google Colab** and have the file open, please skip to step **g)** below.
   2. **Access Google Colab:** Go to **Google Colab** using your web browser.
   3. **Sign In:** If you are not already signed in with your Google account, sign in.
   4. **Open the Notebook:**
   5. Click on "**File**" in the top left corner.
   6. Select "**Open** **Notebook**" from the dropdown menu.
      1. Under “**Open Notebook**”, select “**Google Drive**”
      2. Select “**C964\_dog\_breed\_classifier**”
      3. Depending on how you saved a copy of the file, the file may be renamed to **“Copy of C964\_dog\_breed\_classifier”**
   7. **Set Up Environment:**
   8. Connect to a runtime by clicking on the **down arrow dropdown** next to the "**Connect**" button in the top right corner.
   9. Choose the type of runtime (**T4 GPU**) and click “**Connect”**.
   10. **How to run the application**:
       1. If you opt to create the custom-images folder before running the application, it is possible to select **Runtime** 🡺 **Run all.**
          1. **(**although your system performance may require a line-by-line execution.)
          2. A prompt requesting permission to access your **Google Drive** will appear after selecting **Run all.** You must follow the prompts and **ALLOW** the notebook to connect to your **Google Drive.**
       2. If you choose to upload your own images after starting the application, this can be accomplished 2 ways:
          1. Open the Table of Contents and scroll down and select the prompt: “**Please place your custom images in your Google Drive Folder labelled: drive/My Drive/Colab\_Notebooks/dog-breed-classifier/custom-images”**
             1. Click **Runtime** 🡺 **Run before**
             2. Colab will run each line of code up to the prompt.
             3. A prompt requesting permission to access your **Google Drive** will appear after selecting **Run all.** You must follow the prompts and **ALLOW** the notebook to connect to your **Google Drive.**
             4. Once **Colab** reaches the prompt, you may add the desired images to the custom-images folder in your **Google Drive**. The application will create the **custom-images** folder in your **Google Drive** if it does not already exist.
             5. Once the images are uploaded you may run the remaining code in the notebook.
          2. The other option is to run the application line-by-line.
             1. A prompt requesting permission to access your **Google Drive** will appear after selecting **Run all.** You must follow the prompts and **ALLOW** the notebook to connect to your **Google Drive.**
             2. Once you reach the prompt “**Please place your custom images in your Google Drive Folder labelled: drive/My Drive/Colab\_Notebooks/dog-breed-classifier/custom-images”**, you may upload your images at that time.

As mentioned above, the code prior to the prompt “**Please place your custom images in your Google Drive Folder labelled: drive/My Drive/Colab\_Notebooks/dog-breed-classifier/custom-images”** will create the custom-images folder in the correct location for you if it does not already exist.

1. About the application
   1. Please be patient while the program is executing. It processes over 20,000 images and generates several visualizations. Your time may vary depending on your system performance and quality of your connection.
   2. Thank you for taking the time to read this how to. Please reach out to Tech Support with any issues.