More Than Meets The Eye… Or Image
Image Classification Models: A Synopsis
Group 5

## Katie Briggs, Manuel Duran, Gregory Jaurequi, William Justice

Introduction

Image classification has played an important role in everyday users and the growth of data science. According to the Kaeli's book Heterogeneous Computing with OpenCL, Image Classification refers to the process of computer vision being able to classify an image to its visual content [3]. The use of algorithms to classify is used in everyday life from experimentation to visual tagging on social media. The algorithms used for image classification are able to be seen as both positive and negative within the data science community.

Deliverable

The deliverable of this project will present the current status of Image Classification models. It will aim to understand the following subjects within Image Classification models.

- Current Industries that utilize Image Classification Models
- Current issues with security and ethics within Image Classification Models
- The current future for Image Classification Models
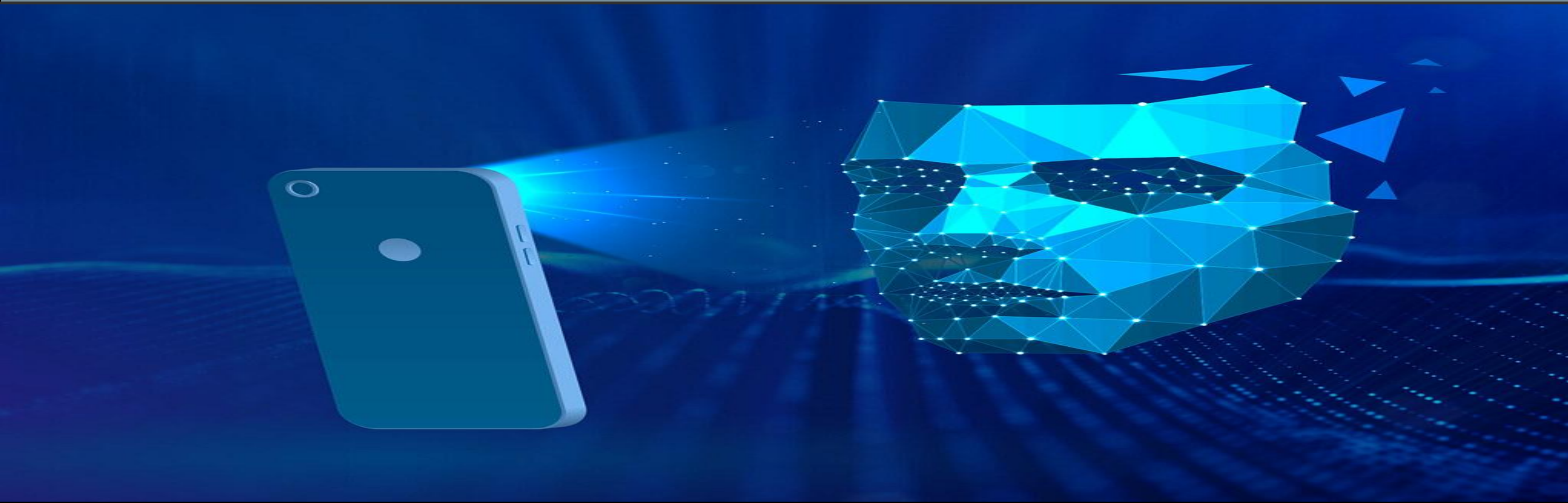
Conclusion:

Image classification has made great progress in a variety of areas. From computer aided diagnosis schemes used in automatic detection of cancer cells in relation to benign diagnosis, to producing a land and global map through remote sensory. The use of multiple remote-sensing features, including spectral, spacial, multitemporal and multisensor information aids first responders with locating fires, location of survivors in natural disasters and civil engineering to address global development challenges with roads and load bearing bridges.

Why this is data science?

Yiwere and Rhee established a study that presented the use of convolutional recurrent neural networks of sound source distance estimation [5]. The study used featured an image classification model where they wanted to classify audio signals to predefined distances of one - three meters by the orientation angle. To create the classification variables to discover these distances, the audio signals need to be reinvented into spectrograms to present the visual aspects needed to train the convolutional recurrent neural network.

Studies such as this could help police force industries to determine the length of shots fired within a critical moment during their work lives. Possibly this type of innovation could be implemented into their body cameras microphone and create a spectrogram of the audio to determine the distance of gunfire. It is possible to determine specific types of gunfire via a simple Github experiment performed by tusharsignh62 using spectrograms and image classification. Our team believes there is a possibility for this in the near future [4].

Unethical Applications of Image Classification Models

- **Style Transfer**
  - Style Transfer or neural style transfer is the task of learning style from one or more images and applying that style to a new image. [1]
  - Allows for unathletic artistic expression within art and social media.
- **Digital Image Misrepresentation**
  - Usage of facial swapping in images and videos cause misrepresentations which could be realistic to the viewer.
  - Digital images should be acquired in a manner thatt does not intend to decieve the viewer or obscure information [2].

Cited Literature

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4. tusharsingh62 , "tusharsingh/Gunshot-Sound-Classification-Using-Deep-Learning." *Github,* github.com/tusharsingh62/Gunshot-sound-classification-using-deep-learning.

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