

Name(s) _____ Period _____ Date _____

Computer Vision

For the following activities you will be using various face detection softwares, Google's computer Vision, and Neural Network-based Automatic Image Colorization research project funded by JST CREST.

Watson Vision Recognition

- Upload three images to determine the following:

Paste the image here	What key features did it find?	What did it get wrong or miss?

Sky Biometry [Demo](#)

With the people sitting next to you, take a picture of the group.

Upload that picture to the Face Detection area.

- For each member of the group, record the machine learning algorithms prediction of age, emotion, gender, and hair color. Put a star next to every correct guess and an X by each incorrect guess.

Person #1

Person #2

Person #3

Age

Gender

Hair Color

Emotion

- Based on the numbers in the JSON fields, what do you think are important fields that the algorithm looks for in assigning gender?
- Based on the numbers in the JSON fields, what do you think are important fields that the algorithm looks for in assigning age?

Google Cloud Vision -(Use the Demo link)

- Paste the description from the JSON and the picture into this worksheet here.
- What are some practical uses for this software? List at least five with one sentence each.

[Number Recognizer](#) [Number Recognizer 2](#) [Number Recognizer 3](#)

- Try easy to recognize numbers to test the accuracy of this demo. How accurate does it seem to be?
- Try to trick the application and discuss what strategies confuse the demo?
- [Recognize celebrities](#), plug in a picture of any mainstream celebrity that you can find on the internet. Did it figure out who the person was?
- Try a picture of yourself. Did it recognize you as a celebrity? How confident was it that you are a celebrity?

[Google Quick Draw](#)

- What prompts did it give you?
- What did it get correct and wrong. Do you believe this was your artistic skill or a shortfall in the network?

How does this work?

[Project](#)

Demo : [Neural Network-based Automatic Image Colorization](#)

[Image Colorization #2](#)

Go to the link above and insert four pictures from a Google search for black and white images. Paste the results below under each number.

1. A macaw
 2. A tiger
 3. An eye
 4. A historic image of your choosing (Must be a photo not a graphic.)
- What assumptions of color did the network make? There are multiple colors of each of the first three images. Why did the network choose what it chose to display?
 - The neural network that this application runs on needed to be trained to do what it does. What do you believe that the training data for this neural network included?
 - Bias and ethics: What problems do you foresee that could be ethical issues that this network could have gotten wrong? List at least three problems based on what you know about neural networks so far and generalizations the network needs to make by definition.