Computational Thinking in Action

Facial Recognition– Teacher Guide

Principles

This activity mimics the way that facial recognition systems identify faces through important ratios. These systems use measurements between key points of the face and compares the ratios to known faces. Students will be using a similar method to get measurements of each other's faces, replicating the method manually.

Logic

Students can select their own points to measure on the face, but in order to help identify changes in a smiling face, it might be wise to include the corners of the mouth and other vertical comparison points such as the corners of the eyes, temples, or outer eyebrows. The more reference points students can get, the better.

Students should notice that the corners of the mouth move up the face while smiling on their second set of measurements. If students compare measurements for different faces, this should still be true, but it could be interesting to compare the ratios between measurements.

Sample Answer

An example face could be entered into a spreadsheet with the following headers. Note that the main values changing between the Non-Smiling and Smiling records are the ones that include right and left corner mouth.

Measured Points	Non-Smiling (mm)	Smiling (mm)
Outer Eyebrow to Outer Eyebrow	150	150
Left Outer Eyebrow to Nose Tip	110	110
Right Outer Eyebrow to Nose Tip	105	105
Left Outer Eye to Nose Tip	92	92
Right Outer Eye to Nose Tip	100	100
Nose Tip to Chin	85	80
Left Corner Mouth to Nose Tip	59	64
Right Corner Mouth to Nose Tip	65	63
Left Corner Mouth to Left Outer Eyebrow	107	99
Right Corner Mouth to Right Outer Eyebrow	104	90