

# SquidVision

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## General Tasks:

### Squidwardized Faces:

In [this](#) episode of Spongebob, Squidward teaches us about how to properly sculpt noses. The goal of this task is to train a classifier that can detect noses in a set of images, and to modify them to Squidward's standards.

Difficulties/Sub-tasks:

- Train classifier to detect nose in variety of lighting situations.
- Rotation and scale invariance of nose and facial features.
- Add, modify and scale Squidward's nose to match surrounding scene.

Justification:

- Training a neural net to detect certain features on a set of images.
- Each difficulty is a task which needs to be reasonably addressed.

Topics used from class: CNNs, Up-sampling/Down-sampling (Scaling Nose)

### Squidwardized Video:

Given a real-life video of people, track their noses throughout the entirety of the video, and process each frame to replace them with Squidward's nose. Furthermore, we will aim to place the augmented people in an environment suitable for a citizen of Bikini bottom through interest point detection and augmentation of these interest points with Spongebob [Sea Flowers](#).

Difficulties/Sub-tasks:

- Processing and augmentation of video frames
- Optimization of video frame processing and augmentation
- Re-integration of augmented video frames to create a cohesive video

Justifications:

- Modifying and augmenting a video with computer vision practices and approaches.

Topics used from class: Video Processing, SIFT

### Resources:

- Zhang, Shutong, and Chenyue Meng. "Facial keypoints detection using neural network." *Stanford Report* (2016).