AEYE explores the neuroscience behind the human visual system, and more specifically how visual perception emerges from the convergence of simple optical elements, as well as how this can act as a metaphor for broader ideas of pattern detection, categorization and apophenia.

The visual system is exhaustively studied per se – mainly owing to its centrality in the sensorial experience of our species and relative ease of study – but can also serve as a paradigm for understanding combinatorial neural computation in a variety of other neuroscientific contexts, providing insight into more complex phenomena of affect and cognition, such as mood, memory and reward, and stretched into speculations about belief and paranoia. An overarching framework tying these phenomena together is pattern recognition, an essential tool in navigating our worlds (spatial, geographic, intersubjective, etc..). The fine balance necessary to achieve adequate categorical perception (edible vs. poisonous, pet vs. predator, caress vs. slap) inevitably point to its limits, whether they lean towards under-association (e.g. prosopagnosia) or over-interpretation (e.g. pareidolia, paranoia).

Practically, AEYE focuses on edge detection in early visual processing, attempting to communicate the concept in a ludic and embodied fashion using a variety of computational tools to transform body posture into a speculative visual output. Edge detection, one of the first steps of visual processing occurring in the cortex, quite simply assesses the presence or not of geometrically consistent optical information – such as a line – in the environment. This information then goes on to undergird the majority of visual processing, from motion to complex shapes. In this piece, viewers are invited to act as the linear visual stimuli for a machine learning (ML) metaphor of visual edge detection. Concretely, a first ML model detects viewer posture, extracting a line running from fingertip to fingertip. A snapshot then captures these posture lines into a sketch, which can be fed to a second model trained to classify images. This model will attempt to indicate which object is most likely represented by the sketch according to its computational training, an inevitably imperfect speculation given the little data it has to work from. Both this guess as well as the sketch are then sent to an image generating model, which will creatively elaborate on the sketch based on what the image classification model determined it to be, essentially trying to extend the sketch lines into the guessed object, often with implausibly hallucinated or comically contrived results. The viewer is then presented with the initial sketch, the classificatory speculation and the image hallucination.

The intent with AYEY is threefold. First, to provide an intelligible analogy of an aspect of visual processing that I find fascinating and essential to understanding broader brain function and behavioural consequences. Second, to engage viewers in embodied play as a communication strategy to demystify theoretical concepts. Finally, to approach the limits of pattern recognition, here in visual perception through a computational anecdote of an overzealous edge-detecting system, but hopefully extending to generous reflections surrounding the consequences of apophenic categorization in more complex psychological contexts.

DART631 - Practicing Art based on science - Statement - illiez

Interface (screenshots):
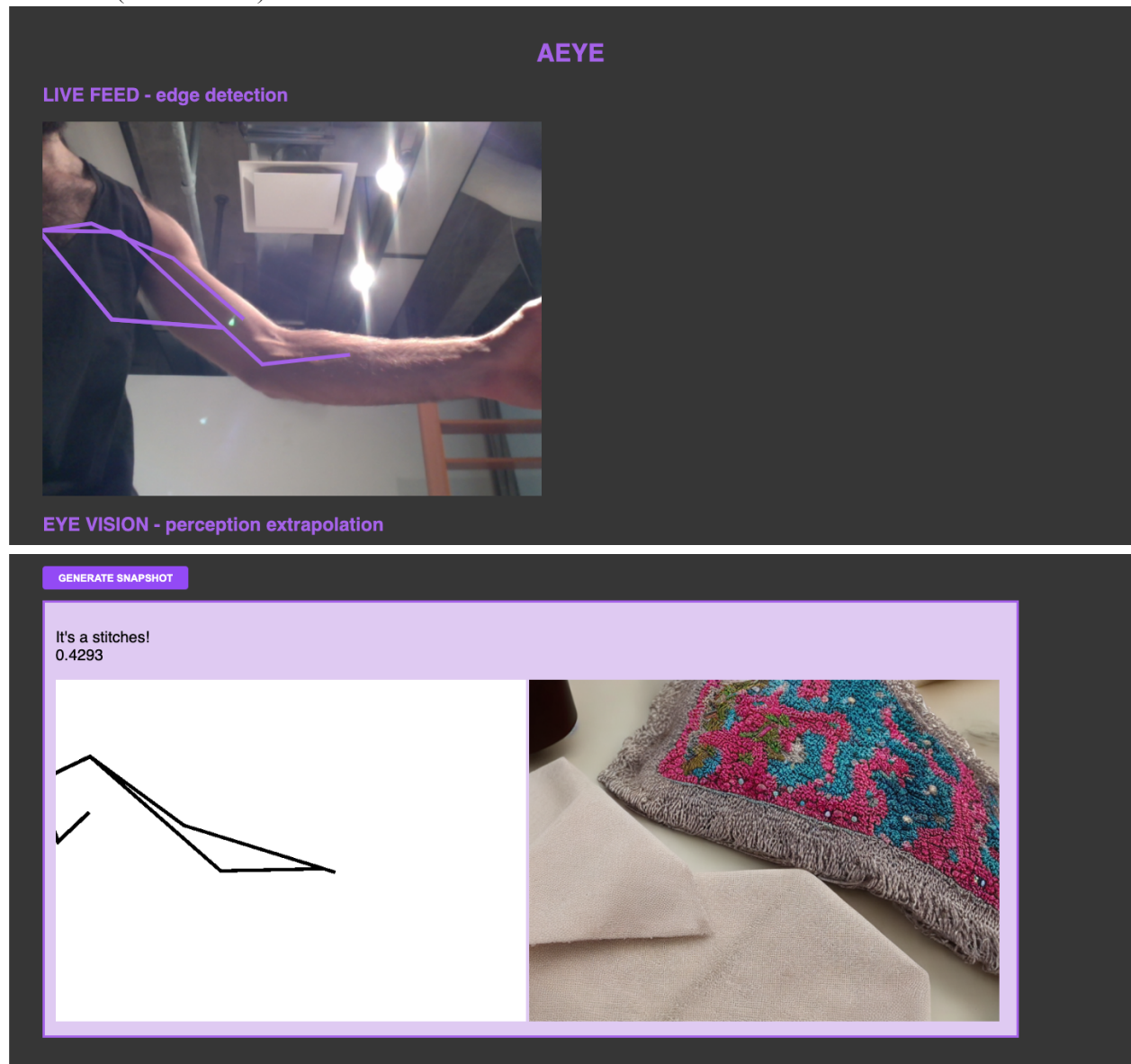


Following pages - Use-case (in class demonstration):

# AEYE

## LIVE FEED - edge detection



## EYE VISION - perception extrapolation

GENERATE SNAPSHOT

It's a grass!
0.5240