

Approaches: Finding Mii Tasks

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Face Detection

- Sometimes useful to detect all / most of the faces
- Other times, not as reliable...



Task 1 - Find this Mii

Two approaches

- 1. Eigenface projection on detected faces
- Grayscale & shrink all faces to same size.
- Find a basis (as in PS1)
- Project all faces (including reference) into basis.
- Choose the face with least norm difference.



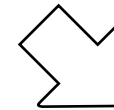
Task 1 - Find this Mii

- 2. Using SURF
- Very similar to SIFT features but faster
- Did exact same thing as in PS3 (keypoint, descriptor matching, bounding box estimation, Hough voting)
- Threshold for max votes



Task 2 - Find two look-alikes

- Same techniques as in Task 1.
- Except finding the lowest-error pair, instead of lowest-error against reference image.
- SURF better -- when can't detect full faces



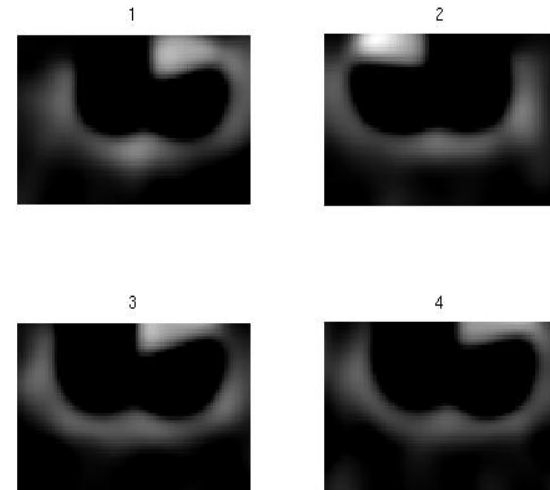
Task 3 - Find n odd Mii out

- Didn't manage to get level 1 & 2
- But Lucas-Kinade Optical Flow on Shi-Tomasi features shows **left-moving (red)** and **right-moving (blue)** features
- A bit "noisy", but corresponding to head-turn.



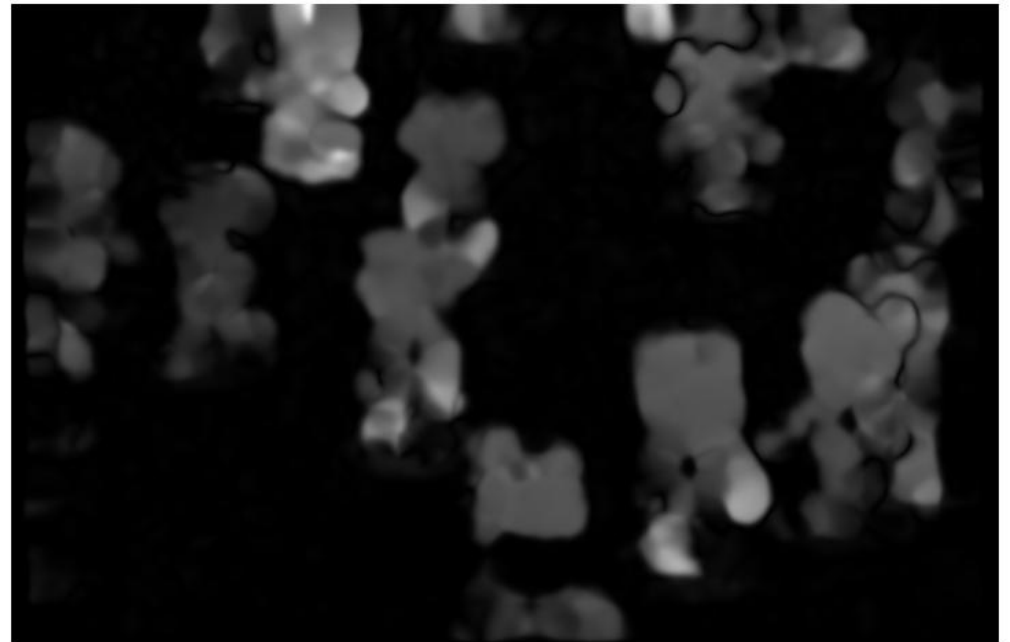
Task 3 - Find n odd Mii out

- For level3, locate the faces and then locate the feet region
- Extract the vertical part of the optical flow map
- Compare each sub-map with the rest
- Threshold on max difference -vs- second max



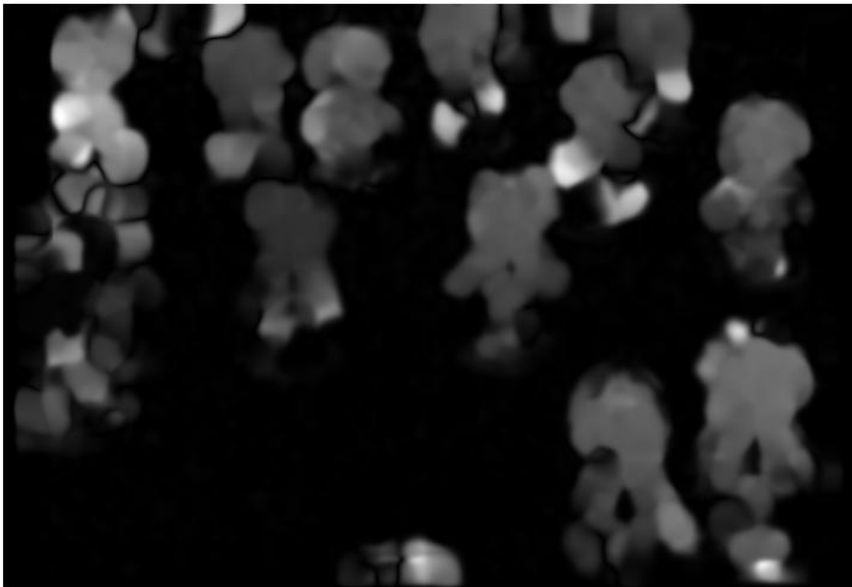
Task 4 - Find the fastest Mii

- Farneback's method (appropriate window size, pyramid)
- Calibration of speed
- sliding window and threshold



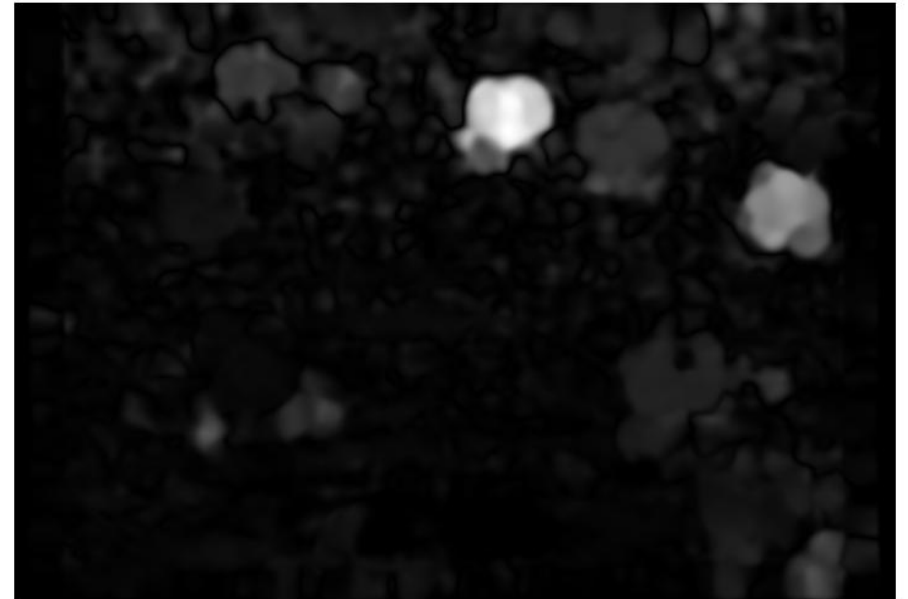
Task4

level 2



cluttered - the sliding
window helps

level 3



not cluttered - but
noise from water