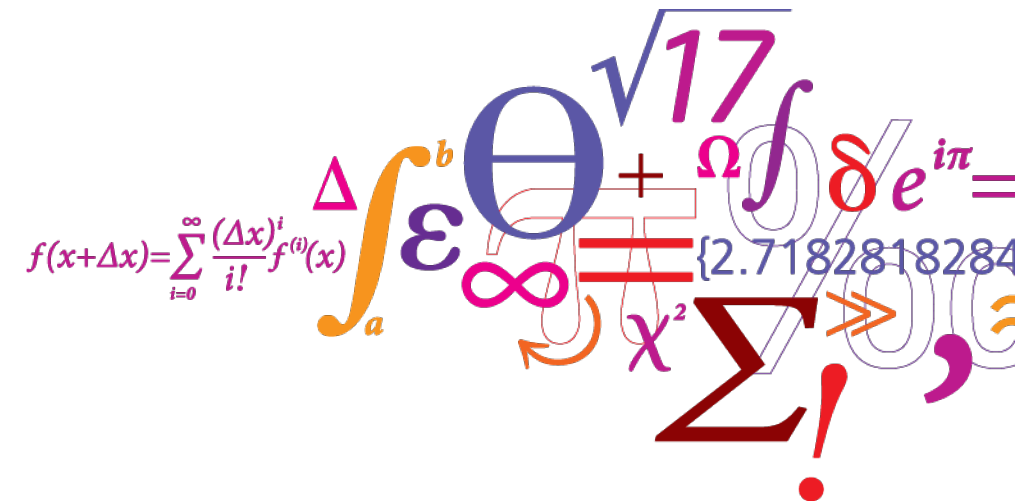


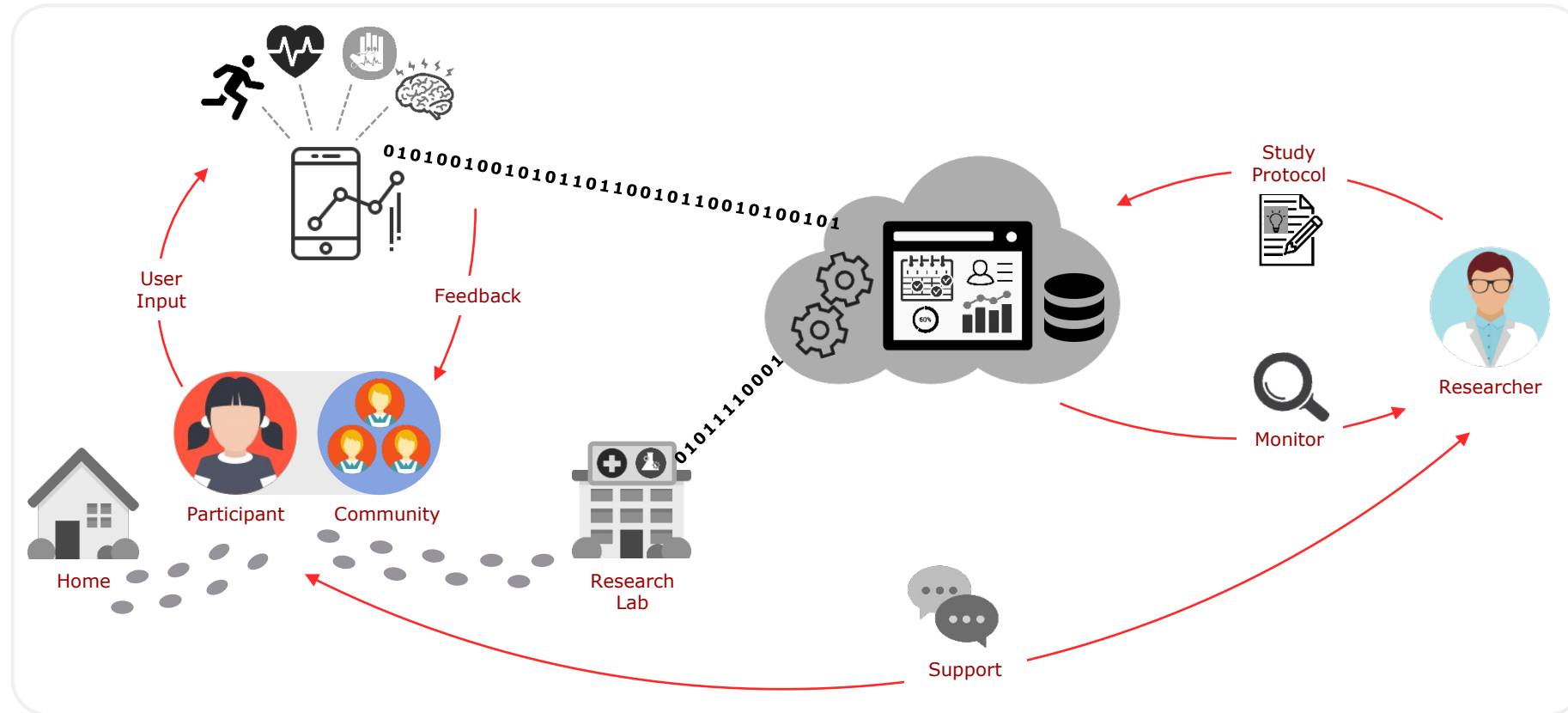
Eye-gaze analysis of face processing in autism

Paolo Masulli

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BHRP: Biometric Healthcare Research Platform



Goals and main ideas

- Long-term monitoring of neuropsychiatric diseases through the use of wearable sensors
- Leverage the broad (and ever-increasing) range of readily-available low-cost sensors
- Focus on multi-modal
- Collect data in the patient's natural environment, during their daily life

Face features processing in ASD individuals

Neurotypical individuals tend to **explore facial features** while interacting with another person or looking at a face.

For ASD individuals, looking at a face can be very **uncomfortable**, and so they create strategies to avoid that.

In this studies, Eye Tracking is used to study how the processing of facial features is affected.

The data

- Exploration and Processing of face features
- Patients:
 - neurodevelopmental disorders + psychiatric conditions
 - Young adults
- Eye tracking + Skin Conductance
- Standard questionnaires (Autism Quotient, BDI [depression], WURS [ADHD])

The data

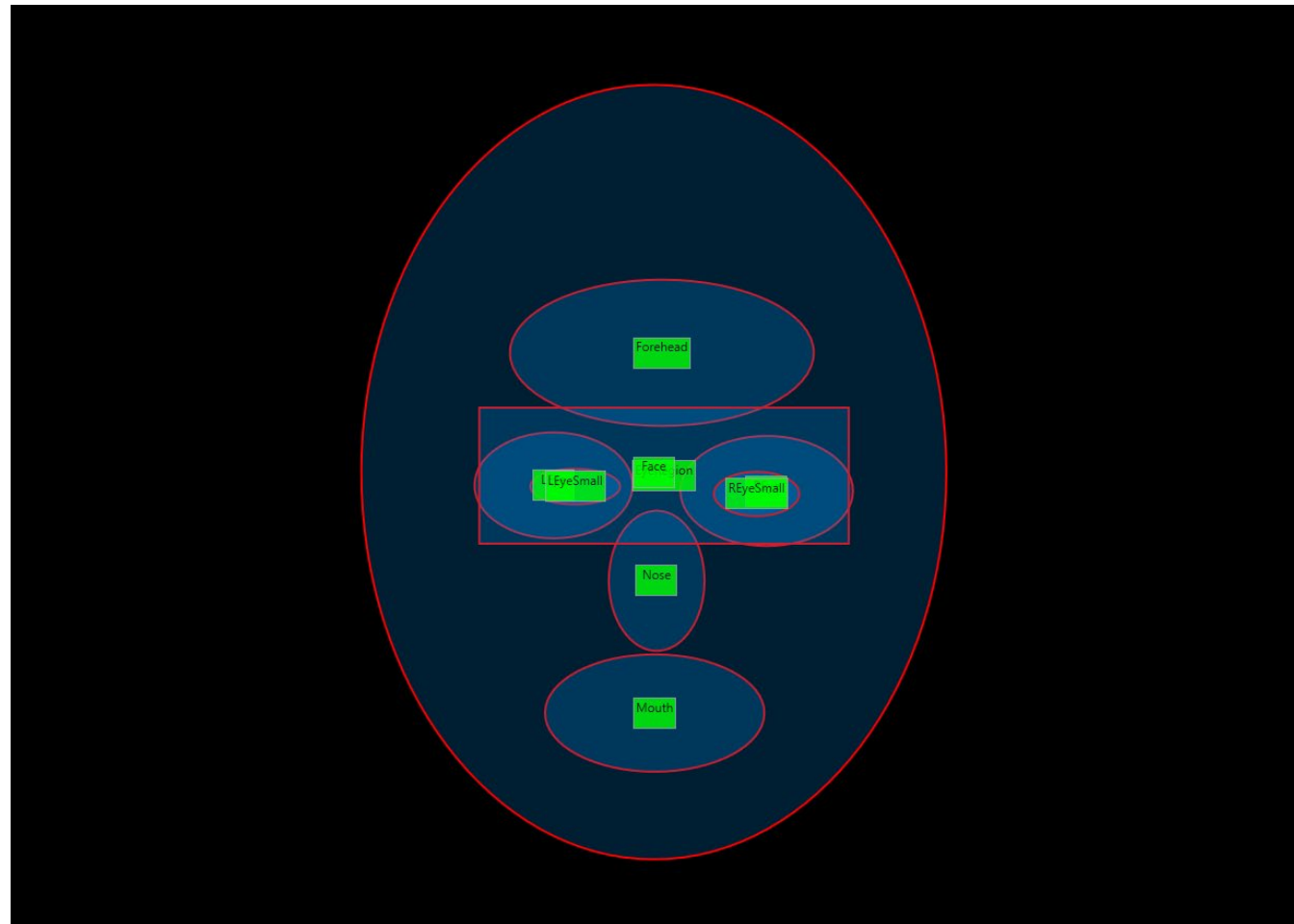
- N = 128
- Overlap between the classes
- No controls (for now...)



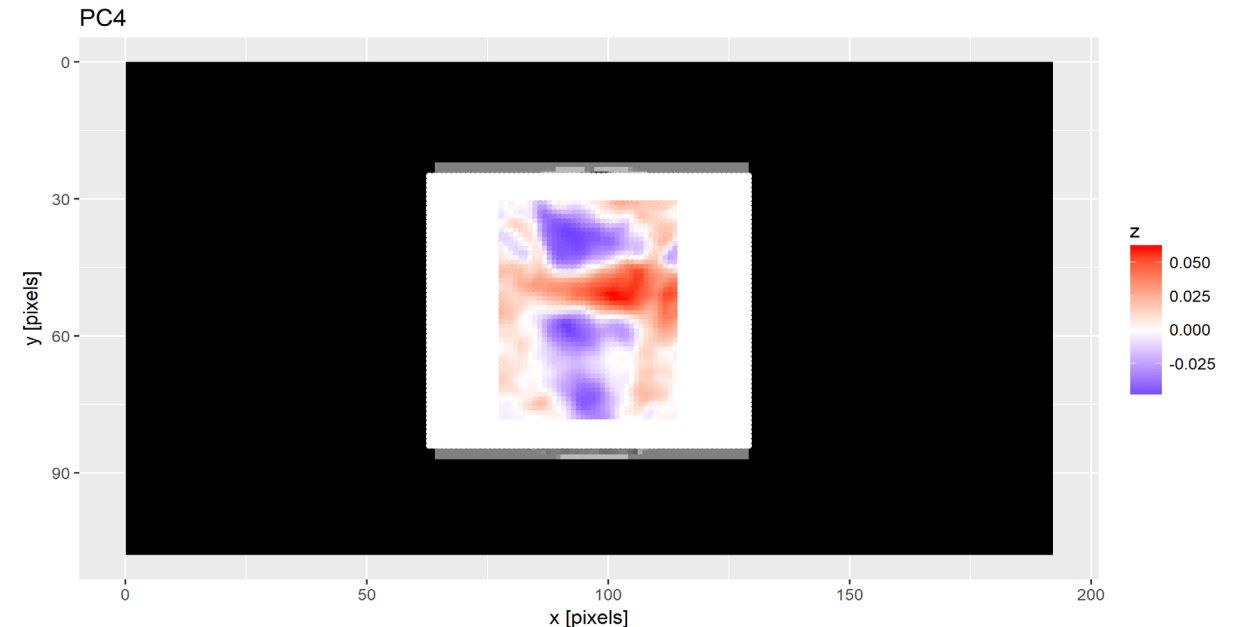
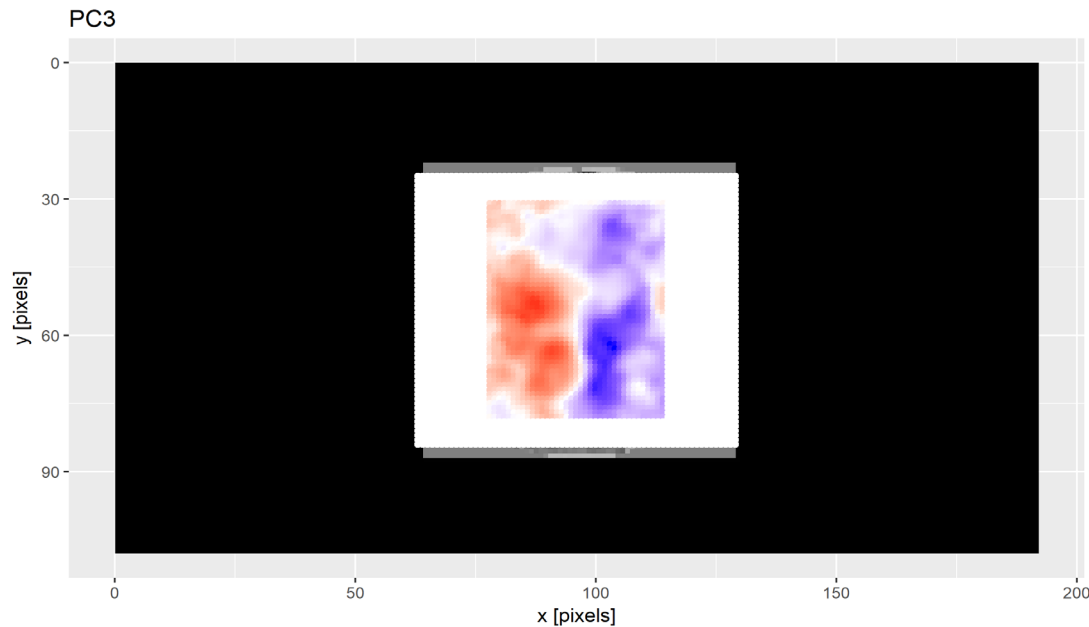
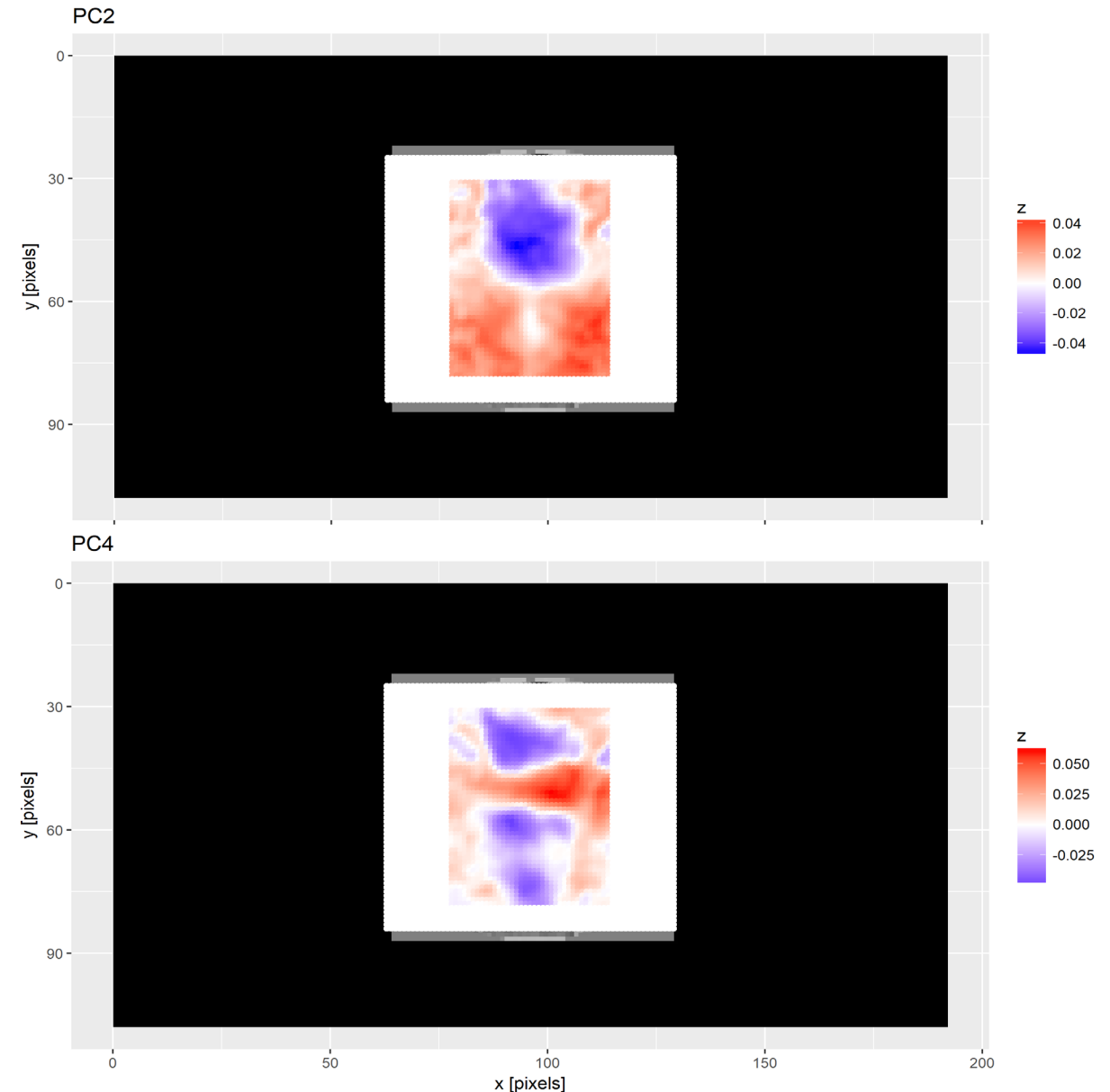
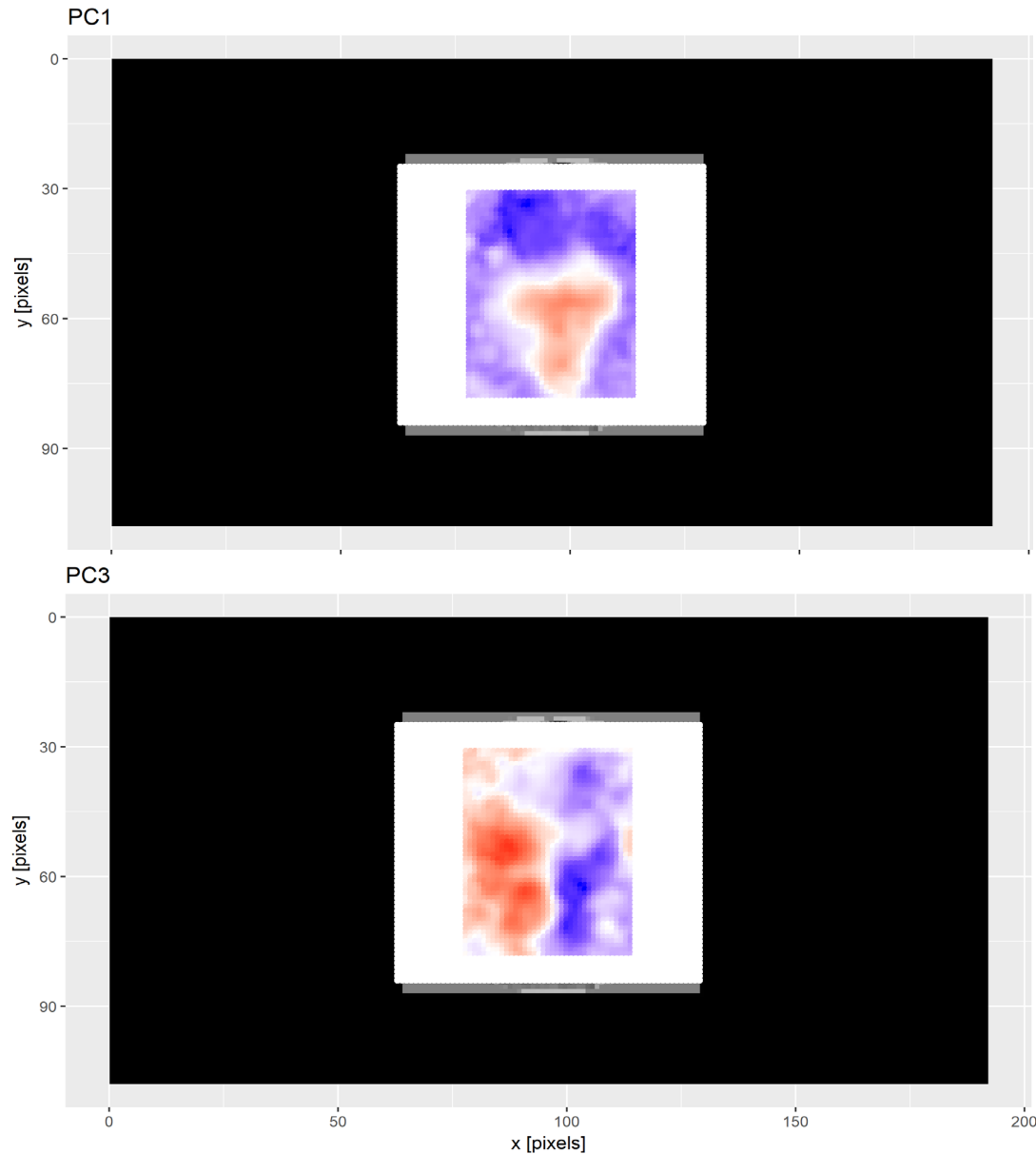
The stimuli

- Faces. Normalized in shape
- Emotions:
 - Neutral
 - Happy
 - Angry
- 8 per type

A standard approach: Areas of Interest



"Implicit AOIs" -- Principal components



Considerations

- Principal components in the space of pixels of the heat-maps
- They express directions in which there is variance within the data set
- We lose the time course
- Orthogonality?

Preliminary results

- Some components can distinguish patient groups
- Correlations with questionnaire scores
- Limits: lack of controls, ...