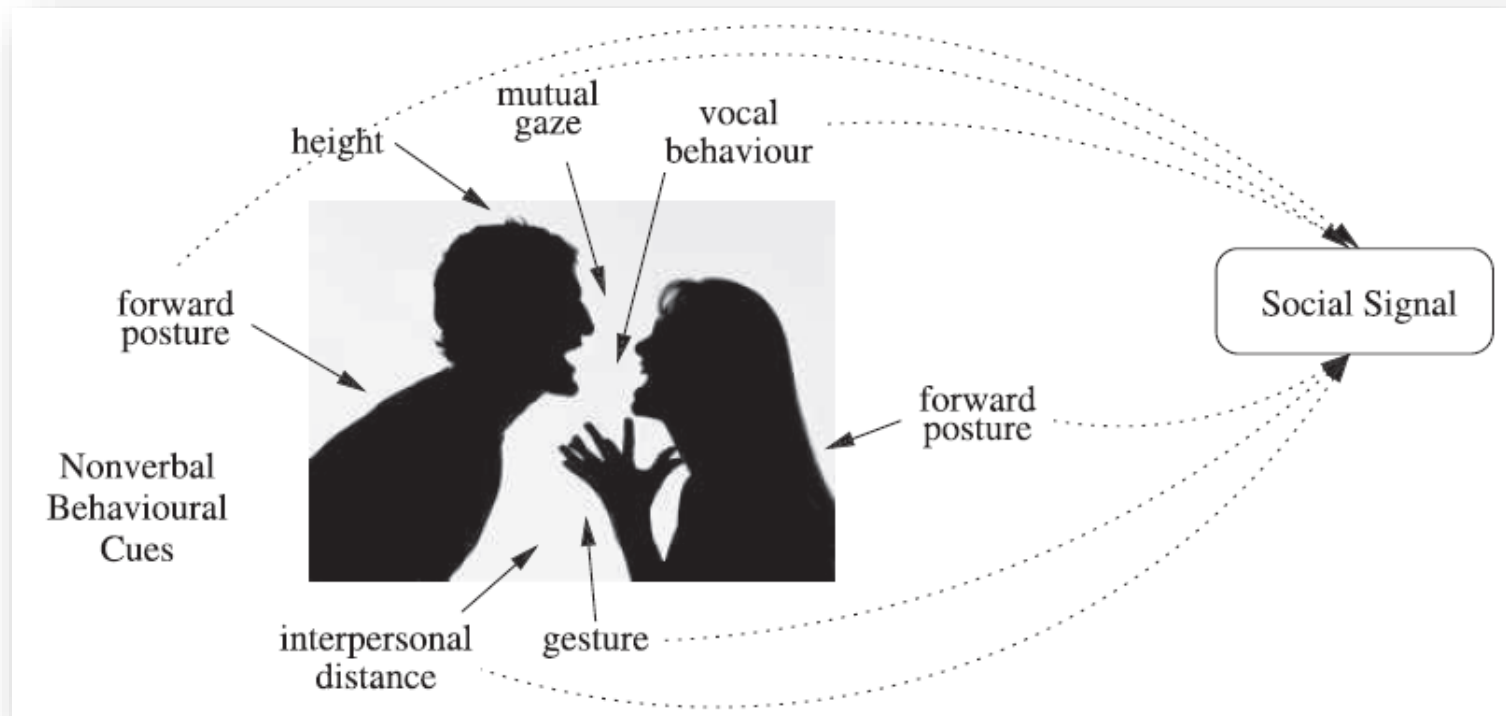


# Machine Understanding of Human Social Signals

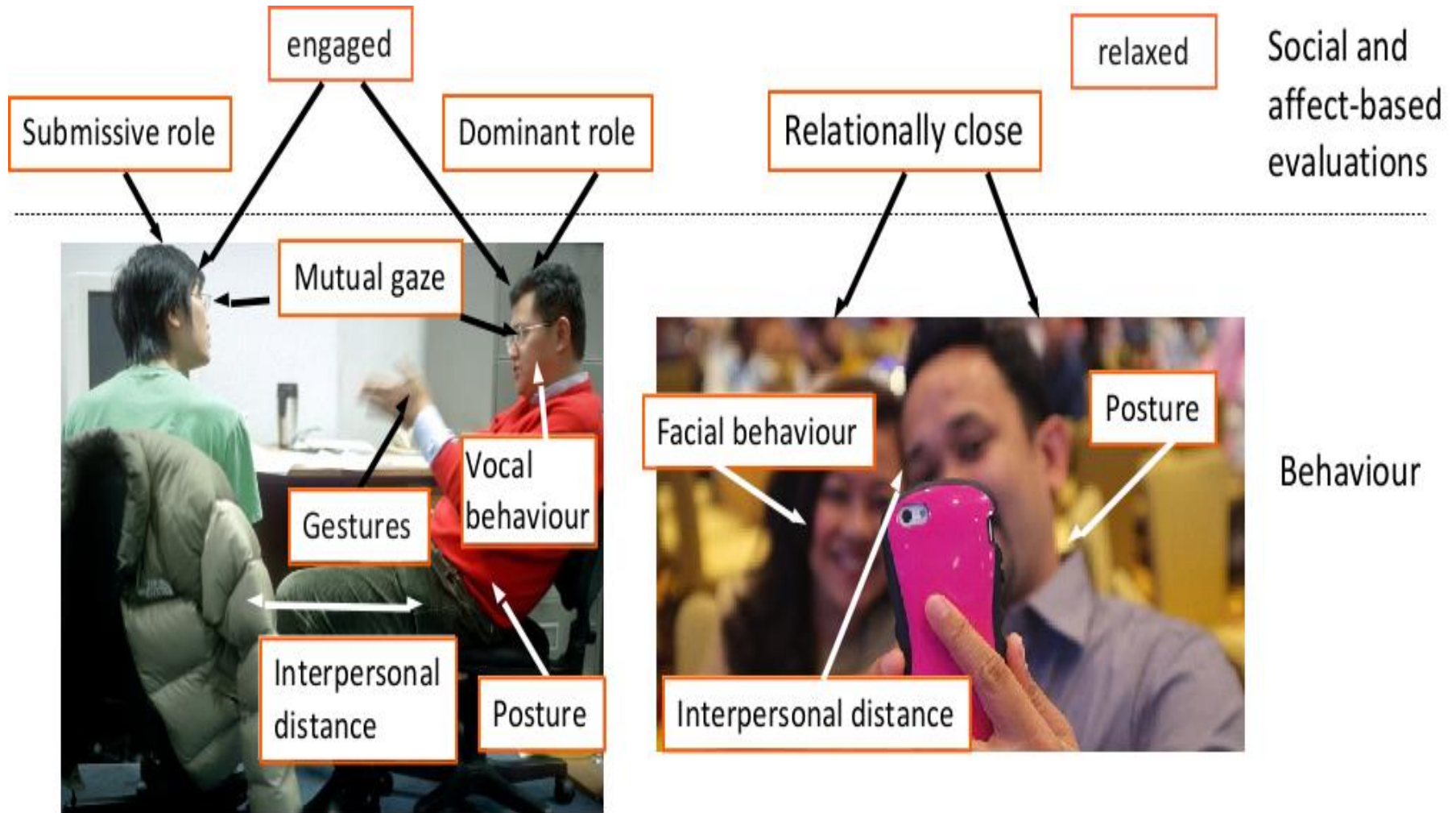
Hatice Gunes

# What?

- Social signal
  - a communicative signal that, directly or indirectly, provides information about social **interactions**, social **emotions**, social **attitudes**, or social **relations**



# Machine Analysis of Social Signals



# Why?

- HCI – sensitive talking heads, sensitive artificial listeners
- HRI – humanoid and social robotics
- Clinical & biomedical studies – stress/depression monitoring, autism-related assistive technology
- Multimedia – personalised affective video retrieval, personalised on-demand TV
- Learning & driving environments
- Entertainment technology – gaming
- New media art – adaptation and feedback
- ...
- ...

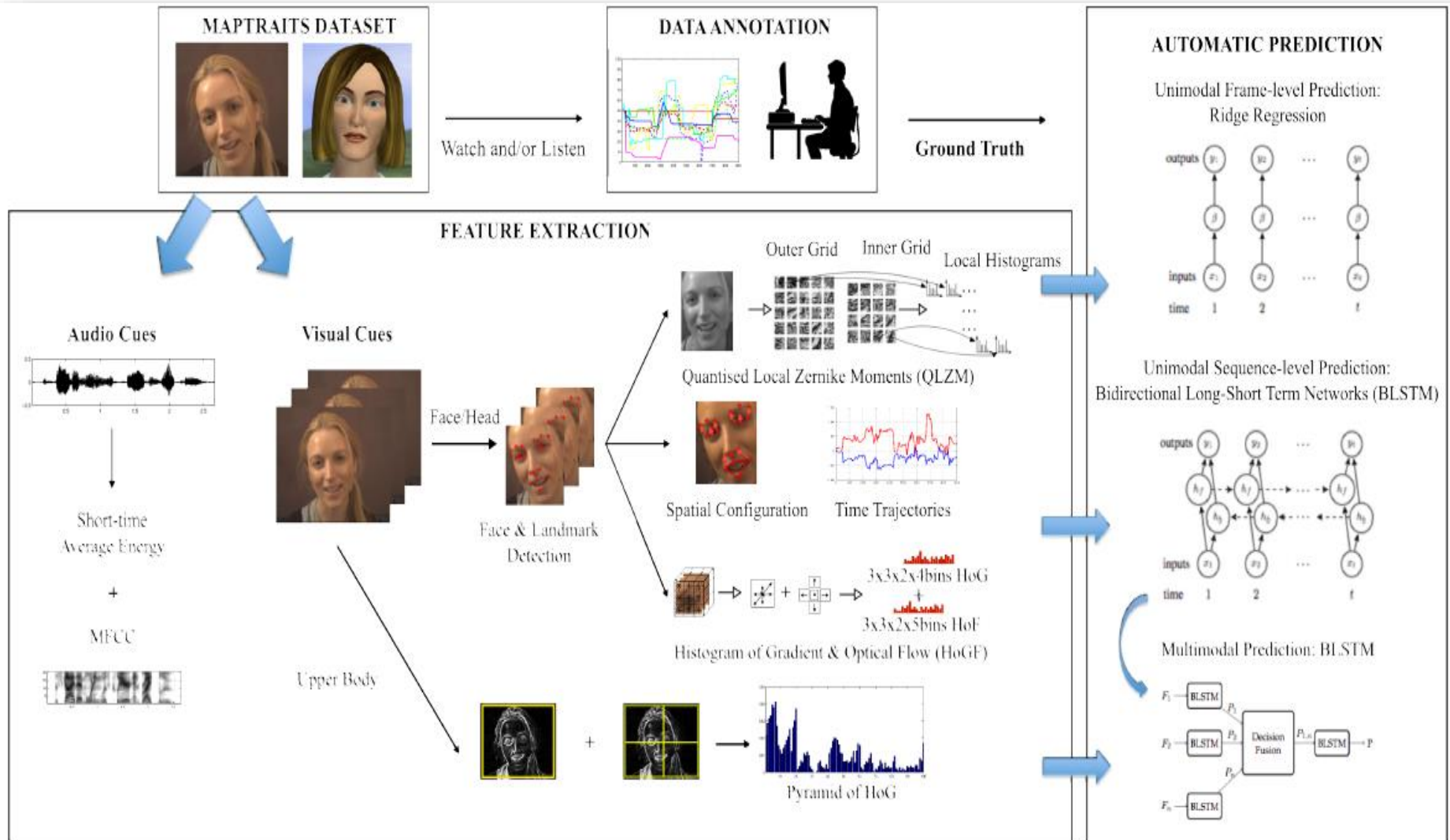


# How?

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- Social signal processing/analysis/recognition
  - From **low level processing** to **high level interpretation**
    - Data
      - acquisition & labelling
    - Feature extraction and analysis
      - computer vision, audio processing, bio signal analysis etc.
    - Recognition and prediction
      - machine learning
  - Many **challenges**
    - natural environments and freely moving subjects in real-world
      - » E.g., patient-doctor discussions, job interviews, etc.
    - incomplete information due to
      - » occlusions and noise
      - » large and sudden changes in illumination and pose
      - » temporal dynamics typical of naturalistic behaviour and expressions
      - » ...

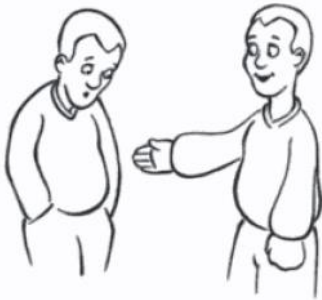
# Social Signal Processing



# Analysing Impressions

- Inferences about **traits** and **characteristics** of people based on their **observable behaviours**
  - Personality: the Big Five Model of core traits

Extroversion



Openness



Neuroticism



Conscientiousness

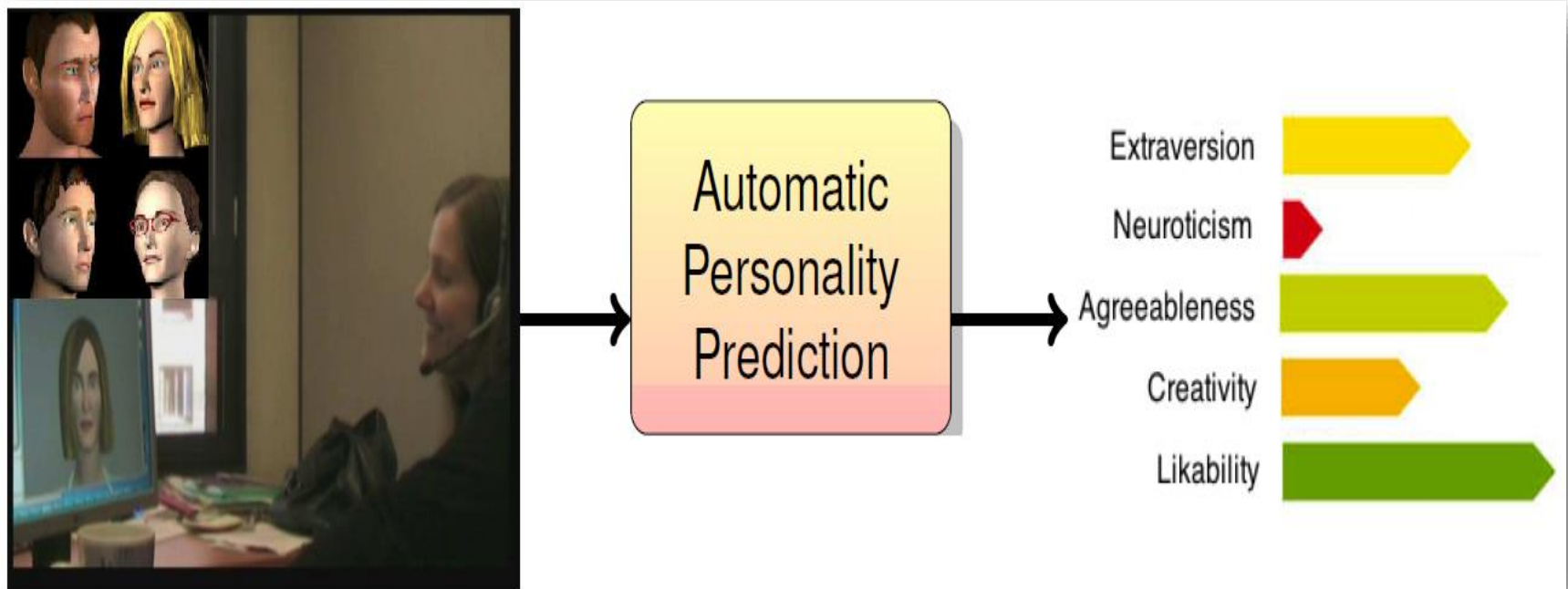


Agreeableness



# Automatic Prediction of Trait Impressions

- Predicting user personality traits
  - from their interactions with virtual characters
  - from their interactions with humanoid robots





# Automatic Prediction of Trait Impressions

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- Check out our demo!
  - Personality prediction during human-robot interactions



**Let me Tell You About Your Personality!**

Real-time Personality Prediction from Nonverbal Behavioural Cues

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Queen Mary University of London UK