

Human-Centered AI Group

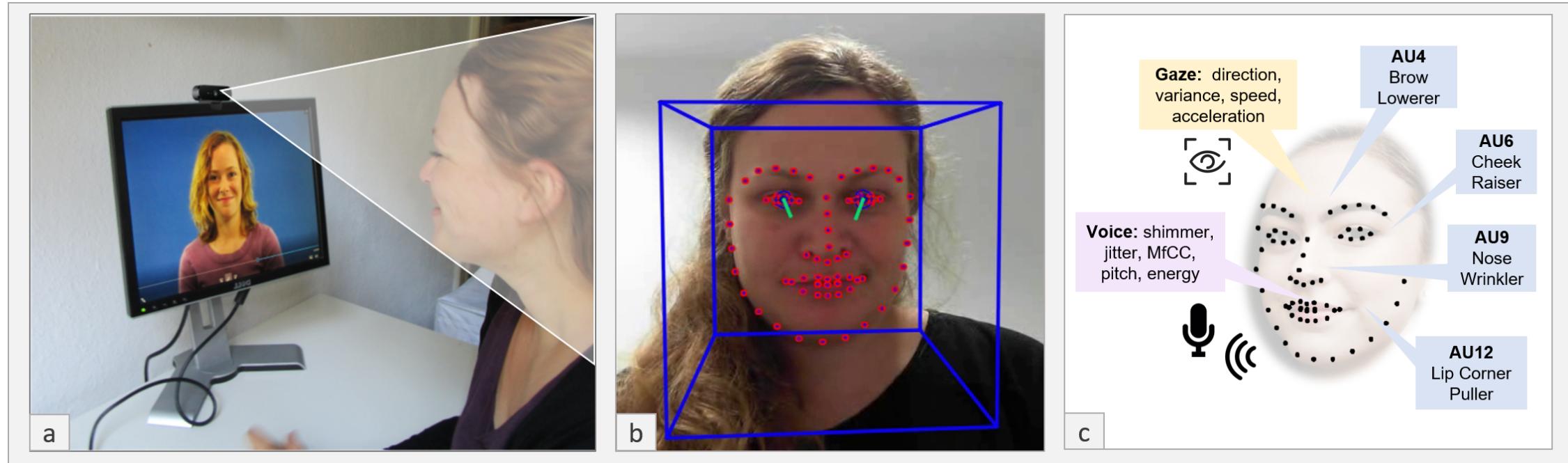
- Since 2020 at University Bielefeld
- Head: Prof. Hanna Drimalla
- Team: 2 PostDoc, 5 PhDs, 6 HiWis & Secretary
- Human-Centered AI for analyzing social signals
 - Automatic detection of affect
 - Computer-based stress detection
 - Analysis of social embedding
 - Explainable AI for Social Signals



- Website - www.hcai-research.com
- Instagram - [@hcai_lab](https://www.instagram.com/@hcai_lab)
- LinkedIn - [@Human-Centered Artificial Intelligence Lab \(Bielefeld University\)](https://www.linkedin.com/company/human-centered-artificial-intelligence-lab-bielefeld-university/)

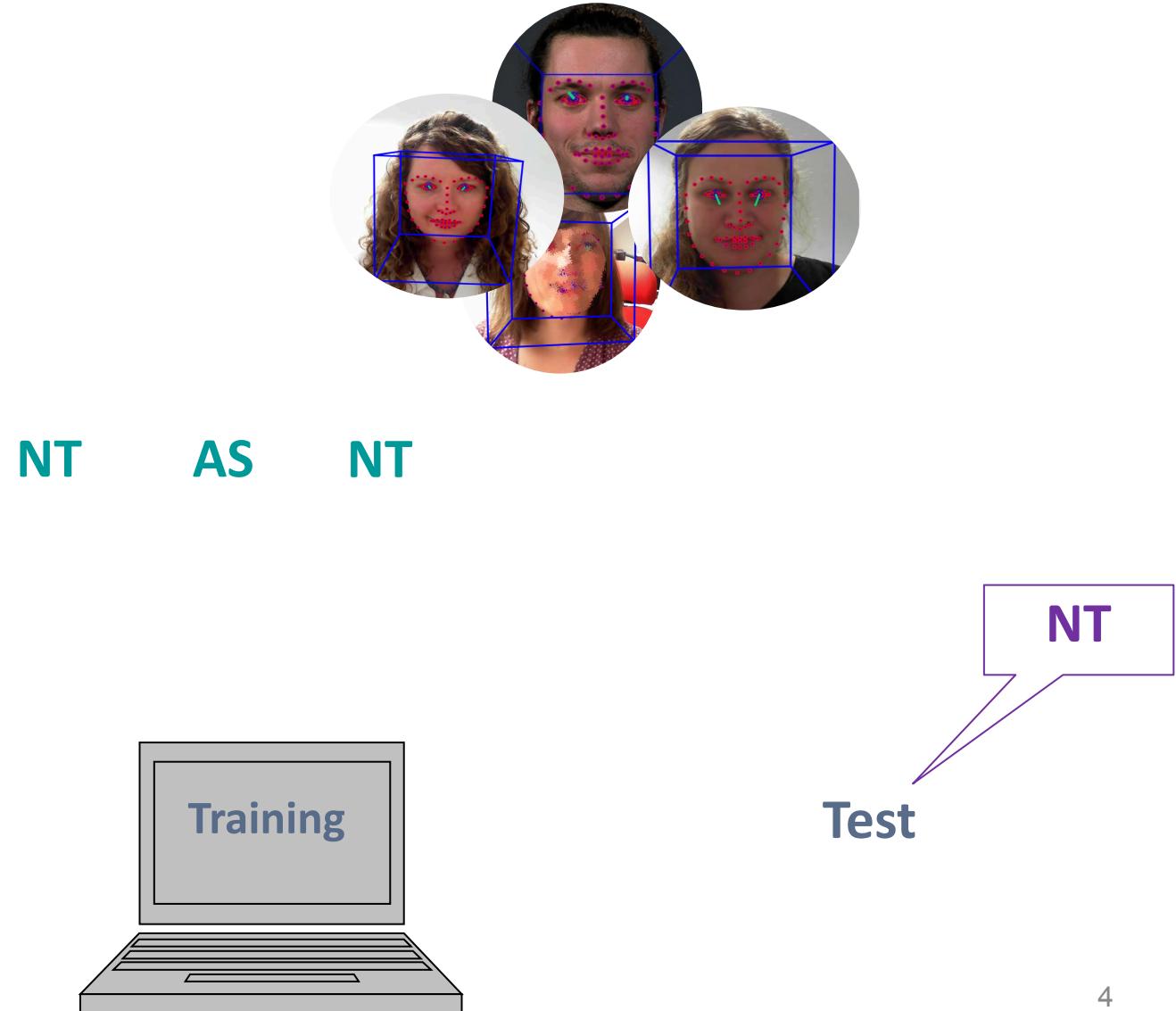
A sneak peak into our research...

Behavior-Analysis with Simulated Interaction Task



Machine Learning for Detection of Diagnosis

- Detection of Autism Spectrum Diagnosis based on Speech, Facial Expression and Gaze during the Simulated Interaction Task (SIT)



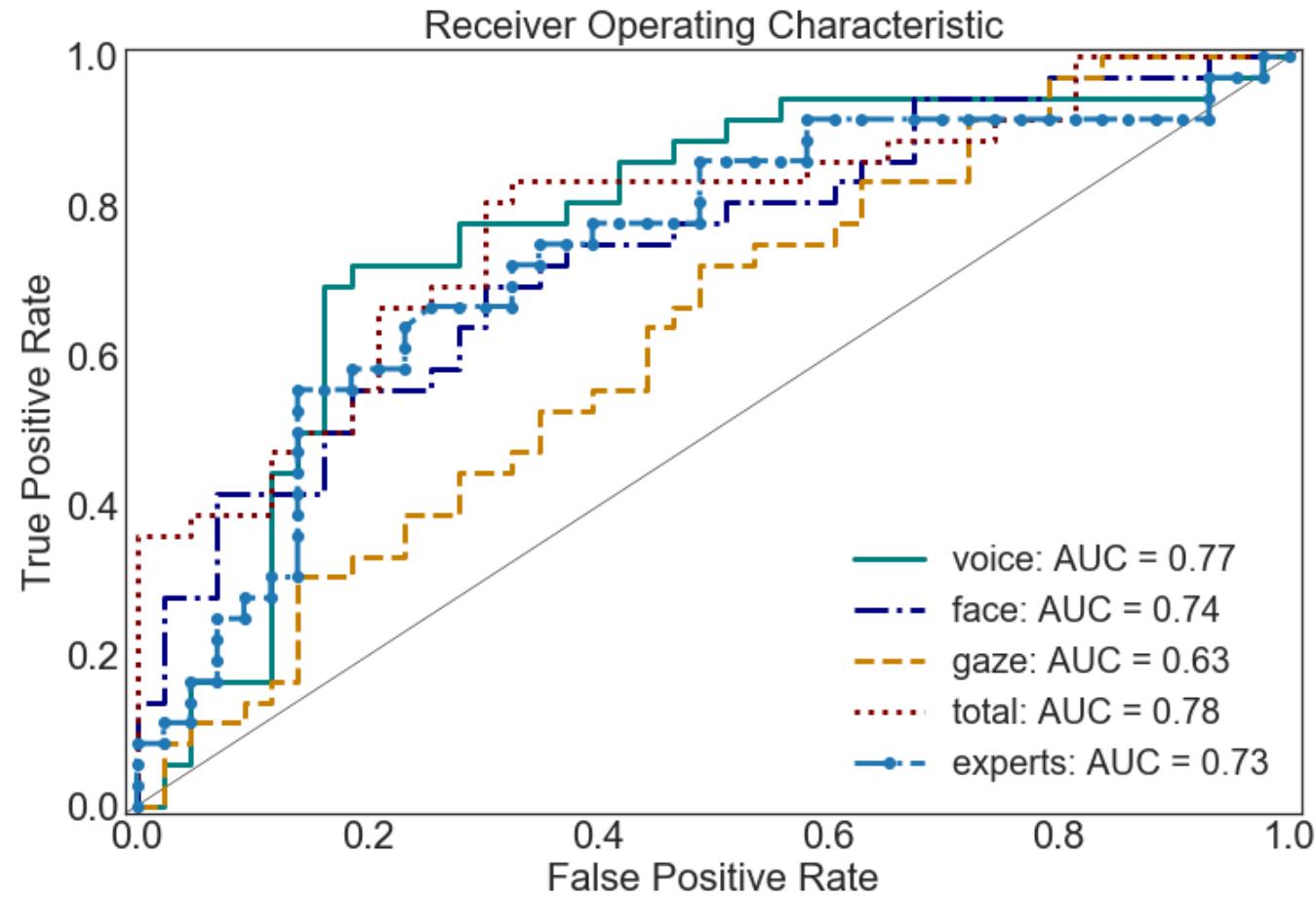
- Leave-One-Out Crossvalidation

Detection of Autism Diagnosis

- Detection of individuals with autism based on facial expressions and voice with machine learning with 73% accuracy

(better than chance, $p=.014$)

- Study with eight experts: 71% (65-100%) accuracy



In this practical session...

Multimodal Feature analysis and Classification

- Correlation Analysis
 - Identify relationships between features and detect redundancy
 - Interpret strength & direction of relationships (from -1 to +1)
- Elastic Net Regression
 - Ridge (L2) - address overfitting and multicollinearity by adding sum of squares of model coefficients, shrinks the large coefficients but keeps all features in model
 - Lasso (L1) - address overfitting by adding sum of absolute coefficients, encourages some coefficients to become exactly zero helps in effectively removing less important features
 - Elastic Net (L1+L2) - manage multicollinearity and balance coefficient shrinkage
- Random Forest Classification
 - Ensemble learning method - Decision Trees and Bagging (Bootstrap and aggregate)
 - Metrics: Accuracy, precision, recall, F1-score