UNIVERSITÄT BIELEFELD
Technische Fakultät

Master Thesis Proposal

You look stressed so I look stressed? Analysis of Facial Mimicry during a social stress test (TSST)

Background: In interpersonal exchanges, individuals often spontaneously mimic the facial expressions of others, a phenomenon commonly termed facial mimicry [1]. This project aims to analyze facial mimicry and empathic stress during the Trier Social Stress Test (TSST). The TSST [2] is considered the gold standard in human experimental stress research, where participants complete a 5-minute mock job interview and a 5-minute mental arithmetic task in front of an evaluating committee.

Your task is to analyze facial mimicry in video recordings of participant and committee members during the TSST. Additionally, you should try to predict the stress level of the participant by using the facial mimicry in the committee members.

- **Data:**
  - ~25 video-pairs for participant and committee member of around 10 minute length, for a few videos multiple camera angles are available
  - Available stress labels: Cortisol, alpha-amylase (hormon values), heart rate, heart rate variability, questionnaire data (e.g. perceived stress, frustration...)
- **Task:**
  - Analyze facial mimicry between participants and committee members
  - Use machine learning methods to predict stress levels of participants by using facial mimicry information
- **Incentives:**
  - Innovative project in an interdisciplinary field using data from collaborators
  - Interdisciplinary group environment with close supervision

While this project is primarily intended to be a Master thesis, you can approach us for adaptations into a Bachelor thesis or project.

References:

[1] Seibt, B., Mühlberger, A., Likowski, K., & Weyers, P. (2015). Facial mimicry in its social setting. *Frontiers in psychology*, *6*, 121380.

[2] Kirschbaum C, Pirke KM, Hellhammer DH. The 'Trier Social Stress Test'—a tool for investigating psychobiological stress responses in a laboratory setting. Neuropsychobiology 1993;28(1-2):76-81

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