Master Thesis Proposal

Development of algorithms to support the diagnosis of social anxiety disorder in children

Background: Analyzing non-verbal behavior in children with social anxiety is crucial for early diagnosis and treatment of these disorders.

We developed the Simulated Interaction Task (SIT) [1], a digital application designed to measure qualitative and quantitative differences in social behaviour. The SIT is currently in use in multiple clinical studies. In this project you will work with a study to assess social anxiety in children. The data is collected by clinical collaborators and already available. Participants perform the test on a laptop while their faces are recorded via a web cam.

You will analyze this corpus of data by statistically comparing the non-verbal behavior of children with and without social anxiety and evaluate potential machine learning approaches for classification. Additionally, you will evaluate how kids interact with the SIT (speaking percentage, gaze etc) compared to adults. The developed algorithms and results will be integrated into a therapeutic platform [2] to monitor the therapy progress and support the effectiveness of treatment.

- **Tasks:**
    - Describe and compare interaction of children with adults
    - Statistically compare differences between children with and without social anxiety
    - Evaluate potential machine learning approaches for classification or prediction of social anxiety in children
- **Data:**
    - ~ 30 videos of kids performing the SIT
    - Diagnostic questionnaires and diagnoses
- **Incentives:**
    - Interesting project with further usage in an actual clinical application (DIVAN[2])
    - 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] Drimalla, Hanna, et al. "Towards the automatic detection of social biomarkers in autism spectrum disorder: Introducing the simulated interaction task (SIT)." *NPJ digital medicine* 3.1 (2020): 25.

[2] DIVAN Project Homepage (in German) - https://divan-kids.de/

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