DaTeamVR - Datadriven Team Insights in Virtual Reality

The DaTeamVR project aims to develop an objective, real-time system for capturing and analyzing teamwork and team workload in a virtual reality (VR) in order to optimize team diagnostics and feedback. The project brings together researchers from (business) psychology and data science, as well as a company specializing in VR team development, allowing us to work on a real use case.

We collect data from small teams (5-8 people) working together to solve an interdependent VR team task. While the teams are in the VR, data from different sources are collected: psychophysiological measures (e.g., cardiovascular activity), speech and questionnaire data, and VR tracking data (movement and interaction patterns). These data are then utilized to identify various team dynamics and supply detailed feedback on potential future human resource development potential.

The data collection and analysis process offers several challenges that necessitate researchers to leverage the latest techniques in the field. Establishing valid indicators of team functioning and viability requires domain knowledge of the current team literature and their application to the highly virtualized setting of the team task at hand. Furthermore, physiological data are noisy, as well as highly ambiguous, and deriving suitable metrics for inclusion in the diagnostic models is non-trivial. In general, every data source in the scope of this project requires its own processing pipeline. Applying or developing different analysis methods to turn these data into meaningful metrics at both the individual and team level offer opportunities for researchers looking to expand their repertoire in quantitative data handling.

The most important aspects of teamwork we are aiming to quantify are manifest team processes (teamwork-oriented behaviors), latent team emergent states (e.g., psychological safety, group cohesion) as well as group characteristics such as resilience, andteam capacity in the form of team mental workload. We are actively working towards establishing suitable measurement instruments for some of these phenomena as well (i.e., questionnaires and observational tools). Therefore, we can also offer interested applicants the possibility to practice developing and validating such instruments.

Figure 1: A team during a VR session.

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Scope of the internship

You will be part of the (business-) psychology team working on your small project. The business psychology team is currently working on: Calculating physiological synchrony, automated content analysis for speech data, eye tracking data preprocessing and event parsing, developing a new team workload questionnaire, and creating an observational coding scheme for team behavior. You may take part in any of these subprojects or find a related research question that you can tackle over the course of your internship.

Special requirements

We are looking for someone with a background in psychology or business psychology (or comparable), with a special interest in research and a solid level of technical affinity. Knowledge of R or Python is beneficial. Furthermore, a high degree of self-organization and conscientiousness is expected.

Qualification level: Advanced bachelor student or master student; Experience in research and data analysis beneficial.

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