Analysis and Visualization of Longitudinal Physiological Data of Children with ASD
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Motivation
Individuals with ASD almost always suffer stress and anxiety, but cannot always communicate it.
Can we monitor their inner responses during daily life activity and for long periods of time?
Goal: Test feasibility of longitudinal study in classroom settings using state-of-the-art biosensors to monitor physiological responses of children with ASD.

Data Collection
5 minimally verbal children (9-20 years old) Non-profit school for people with ASD Two-month study

Affectiva Q™ sensor
Electrodermal Activity
3-axis accelerometer
Skin temperature

> 1400 hours data 91% artifact free

Physiology
Context
Teachers’ Annotations
Activities: food, gym, play, reading, walking…
Behaviors: aggression, self-injury, tantrums, …

& > 6000 annotations

Data Visualization Tools
Physiological data + context
Multiple time granularities (day, week, month)
Feature computation & visualization

Exploratory Analysis
Each child represents a different cluster

Tantrum
Self-Injury
Relaxing
Eating Food

Amplitude EDA Peaks
# EDA Peaks

Behaviors
Activities

1st LDA component
2nd LDA component

S1
S2
S3
S4
S5

1 day of biosensor data

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