Team 3 Project Charter
Heart Deceleration Analysis
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Background

One of the goals of autism research is to detect autism in children as early as possible. One possible means of detection is the analysis of heart rate deceleration. However, many psychologists who are responsible for designing experiments have a weak background in computer science, which makes it challenging to analyze the data in complex ways.

Problem Statement

There is not currently an intuitive and easy to use software available to analyze heart rate data and behavioral attention data. Our project will implement an algorithm that will compare heart rate with other data to provide a heuristic to assist in the diagnosis of infants who are considered at high-risk for autism. Our project is unique in that it will be a generic software that any researcher can use easily, without needing comprehension of complex multi-purpose software like SAS.

Project Objectives

1. Take an input data streams and output a summary of analyzed data using various algorithms.
2. Implement visualizations of various sets of data against heart rate.
3. Design an intuitive and user-friendly interface for the system.
4. Enable researchers to customize the behavior of the software to suit their research needs.

Stakeholders

Project Owner: Bridgette L. Tonnsen, Ph.D. Assistant Professor of Psychological Sciences, Purdue University, btonnsen@purdue.edu
Developers: Ruhana Azam, Manoj Polisetti, Rajith Weerasinghe, Phillip Thain
Users: Researchers doing work specific to heart rate analysis.
Project Manager: Phillip Thain

Deliverables

1. Preprocessing of heart rate data combined with other data streams used for the study (e.g. behavioral attention data).
2. Implementation of the heart rate deceleration analysis algorithm.
3. User friendly UI to help researchers to customize their analysis.
4. Provide both graphical and numeric output (e.g., a CSV file that specifies the algorithm output for each heart beat) to facilitate further analyses.