A Study on Personal Medical History Visualization Tools for Doctors

Datasets to Visualize:

- Electronic Medical Records (EMR): Patient health information, including medical events, diseases, treatment history, medication history, and primary health checkup information.
- Electronic Health Record (EHR): Comprehensive digital records of patients' health information.
- Personal Health Record (PHR): Individual health data maintained by patients themselves.

Target Users:

- Doctors and Healthcare Professionals: To quickly understand a patient's medical history and make informed clinical decisions.
- Patients: To have a clear visual representation of their health information for better understanding and engagement.
- Healthcare Service Providers: To streamline and enhance the efficiency of healthcare services.

Tasks Users Want to Accomplish:

- Doctors and Healthcare Professionals:Quickly assess and comprehend a patient's medical history., Make accurate clinical decisions based on visualized health data.
- Patients: Understand and monitor their own health information., Communicate effectively with healthcare professionals about their medical history.
- Healthcare Service Providers:Efficiently manage and provide healthcare services., Reduce errors and enhance patient safety.

Type: Gantt Chart

Components:

- Timeline: The Gantt chart will have a horizontal timeline representing the chronological order of health events, treatments, and medical occurrences.
- Tasks: Each task bar on the Gantt chart represents a specific health event, treatment, or diagnostic activity. The length of the task bar indicates the duration or timeline of the corresponding event.
- Color Coding: Different colors may be used to categorize types of events (e.g., diagnoses, treatments, check-ups) for easy identification.
- Labels: Each task bar may include labels providing brief information about the associated health event or treatment.

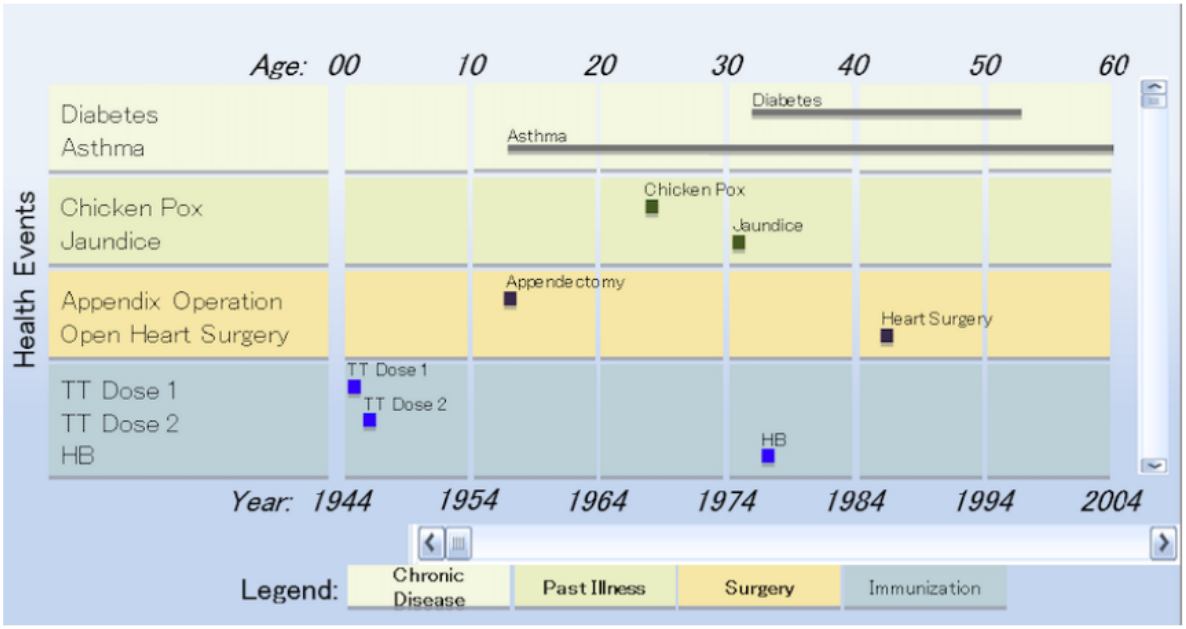
Additional Data Display:

- Medical Reports: Alongside the Gantt chart, links or thumbnails to associated medical reports will be displayed. Clicking on a specific event/task may open the corresponding medical report for detailed review.
- Medication History: A section or module dedicated to showcasing the patient's medication history, possibly in a list or timeline format.

- Detailed Information: Supplementary details about specific health events, diagnoses, or treatments may be accessible through interactive elements on the Gantt chart.

Insights from Visualization:

- Temporal Patterns: Identification of patterns or trends in the patient's health history over time.
- Treatment Effectiveness: Assessment of the effectiveness of specific treatments based on the timeline.
- Critical Events: Rapid identification of critical health events or interventions.
- Medication Adherence: Visualization of medication history and adherence patterns.
- Collaborative Insights: Enables collaborative discussions among healthcare professionals about the patient's health journey.



Affective Color Palette Recommendations with Non-negative Tensor Factorization

Datasets to Visualize:

- Rating Tensor: A three-dimensional dataset consisting of affective type, color, and user ratings. Each entry in the tensor represents the user's rating for a specific color under a particular affective category.

Target Users:

- Designers and Creators: Professionals or individuals involved in creating visual media, illustrations, or advertisements who seek assistance in choosing color palettes that align with specific emotional intentions.
- General Users: People interested in exploring and experimenting with color combinations for various purposes, including personal projects or artistic endeavors.

Tasks Users Want to Accomplish:

- Designers and Creators:
  Efficiently choose color palettes that evoke specific emotional responses.
  Explore trends in color choices for different affective intentions.
- General Users:
  Experiment with color combinations that align with their emotional preferences.
  Receive recommendations for harmonious color choices based on their selected emotional expression.

Interpretation of Charts:

- NTF Visualization: A visual representation of the extracted features and patterns in color preferences across affective modes.
- Color Factor Matrices (A, B, C): Charts depicting the basis factors contributing to color evaluations based on affective modes.

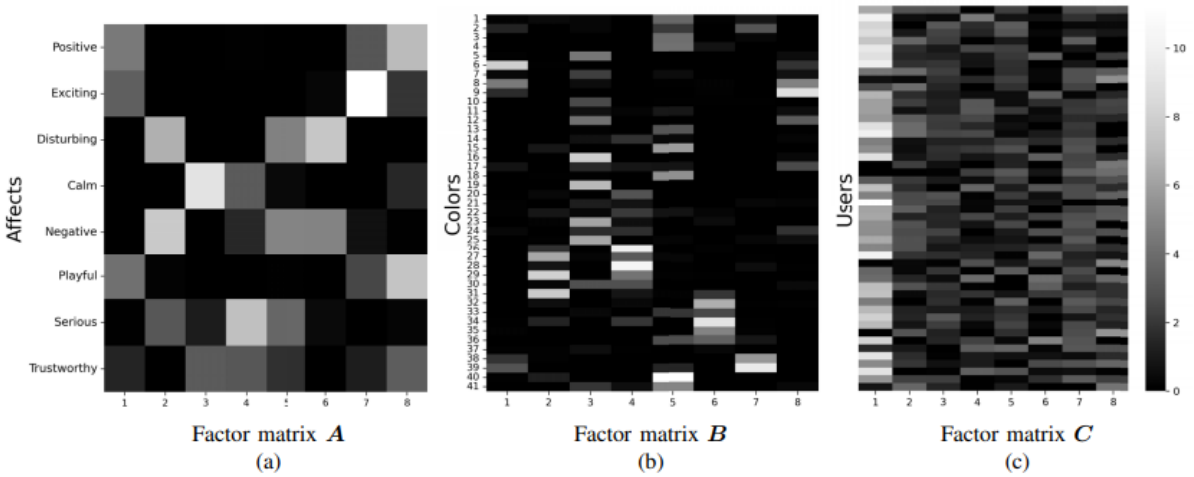
Insights from Visualization:

- Affective Modes Influence on Color Preferences: Understanding how different affective modes impact users' color choices.
- Identification of Basis Factors: Extracting basis factors (matrices A, B, C) that contribute significantly to the color evaluation tensor.
- Patterns in Color Selection: Recognizing patterns and relationships between affective modes, colors, and user preferences.

Role of Algorithms:

Non-negative Tensor Factorization (NTF) Algorithm:

- Inputs: The three-dimensional rating tensor X representing color evaluations.
- Outputs: Factor matrices A, B, C that minimize the error in approximating X.
- Role: Extracting features and patterns from the color evaluation dataset, facilitating a more detailed categorization of colors based on affective modes.



Color Recommendation System:

- Inputs: Factor matrices A, B, C obtained from NTF.
- Outputs: Recommendations for color palettes based on affective modes and user preferences.
- Role: Leveraging the extracted features to recommend color combinations that align with specific affective modes.