ScreenSense:Kids' Screentime Visualization

Project Statement

Analyze kids' screentime patterns to uncover trends by age, gender, location type (urban/rural), device type, day-of-week, and activity category using data visualization. The goal is to present clear, actionable insights for parents, educators, and policymakers.

Expected Outcomes

- Understand and preprocess the screentime dataset for analysis
- Explore trends across weekdays/weekends, devices, and activities
- Visualize key metrics using bar charts, distributions, heatmaps, and comparisons
- Summarize insights for non-technical stakeholders via a visual report/dashboard
- Provide a final presentation with the key findings and visuals
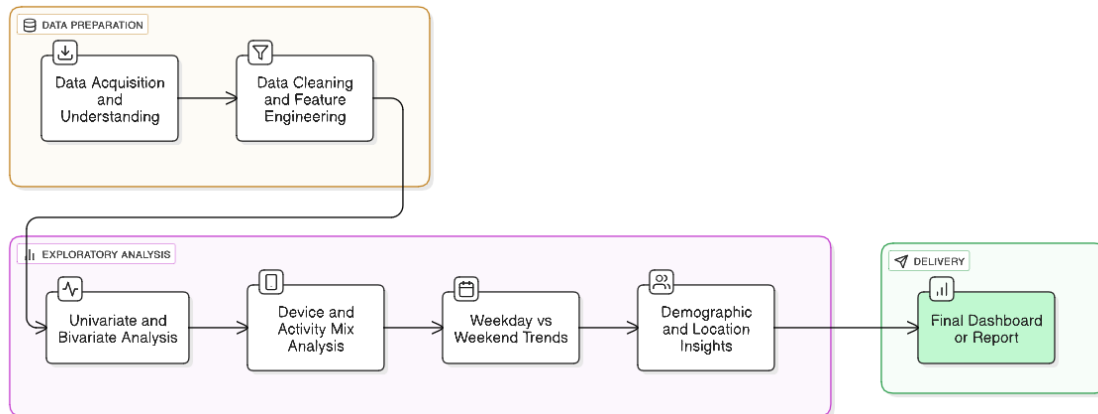
Dataset

Source: Kaggle — *Indian Kids Screentime 2025*
https://www.kaggle.com/datasets/ankushpanday2/indian-kids-screentime-2025

Modules to be Implemented

1. Data Acquisition and Understanding
2. Data Cleaning and Feature Engineering
3. Univariate and Bivariate Analysis
4. Device & Activity Mix Analysis
5. Weekday vs Weekend Trends
6. Demographic and Location Insights
7. Final Dashboard or Report
8. Documentation and Presentation

Project Flow

Week-wise Implementation Plan

Milestone 1: Data Foundation and Cleaning

Week 1: Project Initialization and Dataset Setup

- Define goals and workflow
- Load the dataset
- Explore schema, data types, size, and nulls
- Capture initial notes on quality and assumptions

Week 2: Preprocessing and Feature Engineering

- Handle missing values and inconsistent categories
- Create derived fields: age bands, weekday/weekend flags, device/activity shares
- Format any date/time fields
- Save preprocessed data for reuse; document logic
  Deliverables: Cleaned dataset, preprocessing summary, feature dictionary

Milestone 2: Visual Exploration and Topic Trends

Week 3: Univariate and Bivariate Visual Analysis

- Distributions of daily hours, age bands, device usage
- Compare screentime by gender, age band, and location type
- Build bar charts, histograms, boxplots, and line plots

Week 4: Device/Activity and Weekday/Weekend Analysis

- Compare device mix and activity categories across demographics

- Visualize weekday vs weekend differences and time patterns
  Deliverables: Minimum 8 visuals + observations on peak usage cohorts

Milestone 3: Segment & Insight Deep-Dives

Week 5: Cohort and Segment Analysis

- Identify top cohorts (e.g., age bands × device types)
- Heatmaps/stacked comparisons by demographic or location segments

Week 6: Seasonal/Calendar or Habit Patterns (if applicable)

- Monthly or term-time comparisons (if dates exist)
- Summarize segment-wise insights and possible drivers
  Deliverables: Seasonal/segment summaries and cohort insights

Milestone 4: Report and Presentation

Week 7: Visual Report or Dashboard Preparation

- Assemble a coherent storyline from visuals
- Build an interactive **Tableau or Power BI** dashboard with filters (age band, gender, location type)
- Ensure titles, labels, legends, and axis clarity

Week 8: Documentation and Final Presentation

- Create final report (PDF/README)
- Build slide deck and walkthrough of insights and dashboard interactions
  Deliverables: Final report or dashboard, slide deck, repository/package of assets
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Evaluation Criteria

- **Milestone Completion:** Data readiness, visuals, analysis, and interpretation achieved per plan
- **Visual Analysis Quality:** Clear, relevant, diverse plots; interpretability of visuals
- **Insight Discovery:** Cohort and usage insights backed by visuals
- **Presentation & Reporting:** Structured report, cohesive storyline, visually supported summary

Tech Stack

Data Handling: pandas, numpy
Visualization: matplotlib, seaborn, plotly
Dashboard: Tableau, Power BI
Documentation: Jupyter Notebook, PDF, GitHub