

Progress Report

Project: Running Data Visualisation App

Design Work and Research

Before starting implementation, I conducted the following design work:

1. **Data Analysis:** Analysed 168 activity records exported from Garmin and identified suitable metrics for visualisation (distance, pace, heart rate, activity type).
2. **Template Study:** Examined the structure of the provided PieChart constructor and designed BarChart and ScatterPlot following the same pattern. This ensures consistency and makes the code easier to maintain.
3. **UI Sketches:** Created layout sketches for each visualisation, planning the placement of axis labels, titles, legends, and interactive elements.

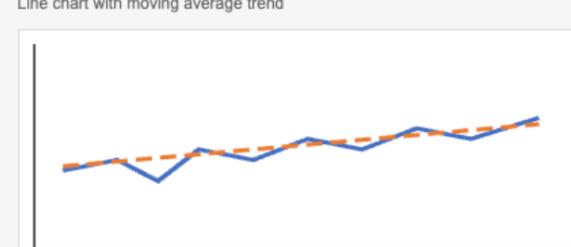
Running Data Visualisation - UI Design

1. Monthly Distance
Bar chart showing distance per month



Target: 100km/month

2. Pace Progress
Line chart with moving average trend



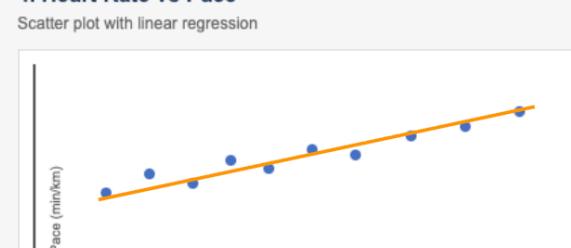
Target: 6.00/km pace

3. Activity Types
Pie chart with dropdown selector



Toggle: Count / Distance

4. Heart Rate vs Pace
Scatter plot with linear regression



Interactive tooltips on hover

Technical Decisions

- **Data Processing:** Converted Japanese CSV column headers to English and parsed pace strings ("6:30") into decimal minutes (6.5) for calculations.
- **Statistical Analysis:** Implemented Pearson correlation coefficient to measure the relationship between heart rate and pace. Added least squares linear regression to show the trend line.
- **Moving Average:** Used a 10-run window to smooth pace data and reveal long-term improvement trends.

Code Written So Far

- `bar-chart.js` (~90 lines): Reusable bar chart constructor
- `scatter-plot.js` (~150 lines): Scatter plot constructor with interactive tooltips
- `monthly-distance.js` (~130 lines): Monthly distance visualisation
- `pace-progress.js` (~260 lines): Pace progress with moving average
- `activity-types.js` (~135 lines): Activity types pie chart with dropdown
- `heartrate-vs-pace.js` (~250 lines): Heart rate vs pace scatter plot

Total: approximately 1,000 lines of new code.

What I Intend to Do Next

For the final submission, I plan to add:

1. **Goal Tracker** - Progress gauge toward 100km/month goal
2. **Pace Zones** - Visualisation of target pace (6:00/km) achievement rate
3. **Cumulative Distance** - Animated area chart showing total distance over time
4. **Marathon Dashboard** - Comprehensive view combining key metrics for Osaka Marathon preparation