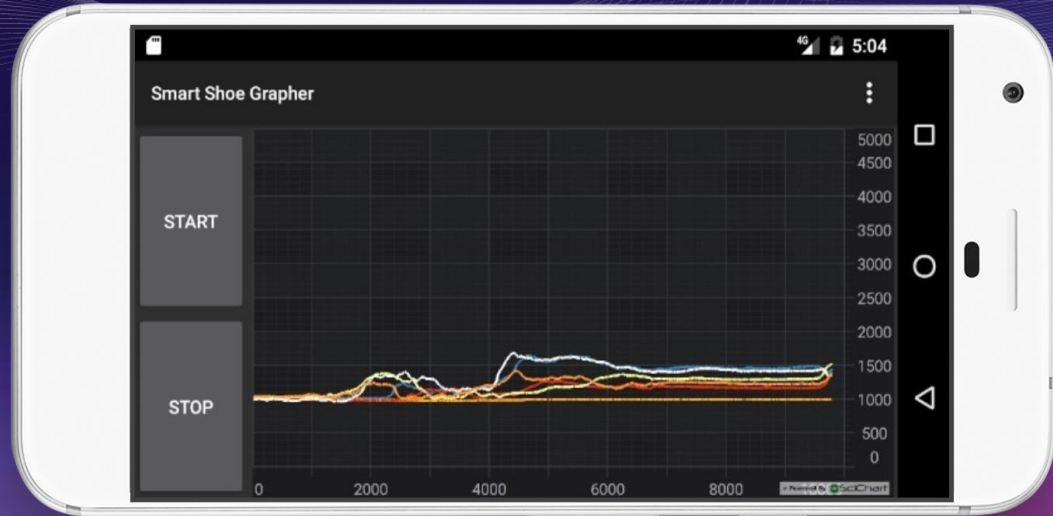




SCiCHART

CASE STUDY



Customer

MIT Biometric Robotic Lab

Industry

Biometrics, Robotics

Real time Charts for Robotics Telemetry data to be Visualized in an Android app

Identified Problem

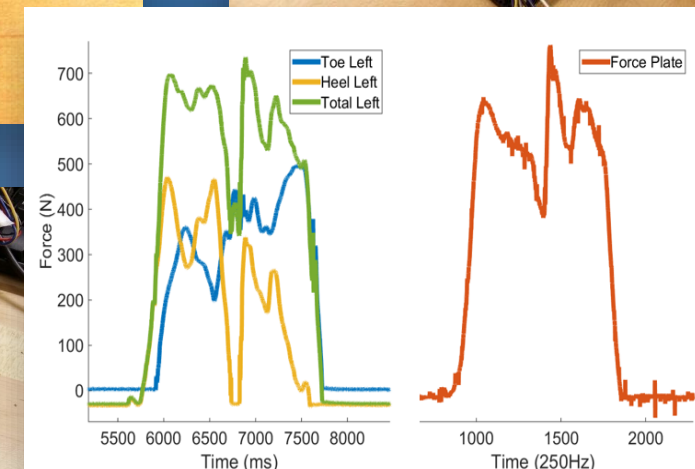
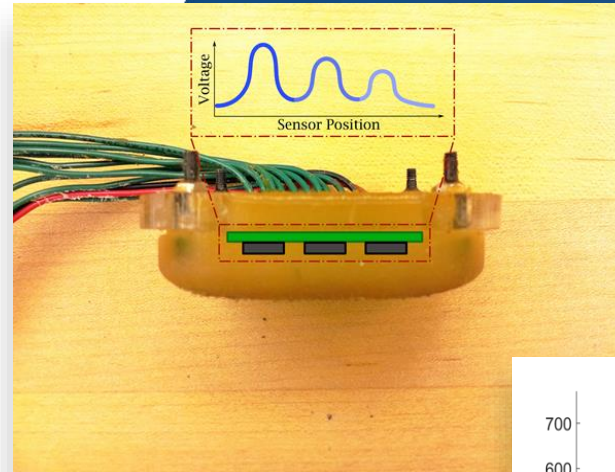
SciChart.Android

MIT needed to visualize force data provided by 'Smart Shoe' sensors in real-time. This telemetry data was transmitted from sensors by UDP to an Android device for visualisation.

The problem which MIT faced was how to visualize big data on an Android App. Open source charting solutions were not able to provide the performance which MIT required.

Data & Preconditions

- Data is provided by 'Smart Shoe' force sensors
- Telemetry data transmitted to an Android App for charting
- SciChart Android chosen for 'Big Data' capabilities
- "Without SciChart, the High Performance Realtime Graphs would not be possible"



Project Motivation

SciChart.Android

Humanoid robots are not as great feats of dynamic locomotion as human beings and animals are.

Human beings have abundance of sensors on skin, in the form of mechanoreceptors that allow to sense pressure, vibrations and forces. To empower the next generation of legged robots, it is needed to develop similar multi-axis force sensors. Further more, using received data and machine learning, it is possible to map the local sampling of stress inside the polymeric footpad to forces with high accuracy.

The wearables in a form of smart shoes were developed that are capable of real-time measurement of force data.

The ultimate goal is to use these force sensing shoes to help assist the elderly and disabled during walking and for fall prevention and mitigation. Athletes can also benefit from the data collected during training to better optimize their workouts.

See original publication at <https://biomimetics.mit.edu/footpad-sensor>



Solution



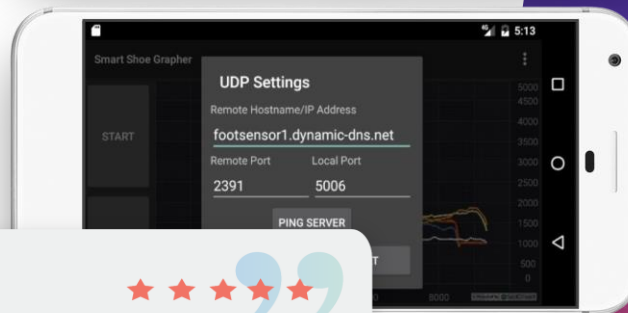
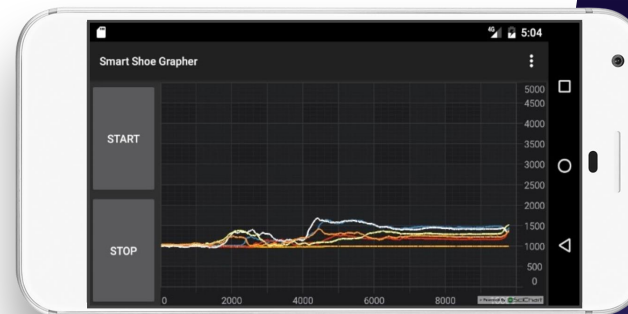
Android Chart Integration - SciChart Android Charts were integrated by MIT into their own app for reading and visualising foot sensor forces as telemetry data via UDP packets.

Big Data Capabilities - SciChart's big data capabilities were used by MIT to plot huge amounts of data. Several sensors outputting data at 1kHz resulted in charts with tens or hundreds of thousands of points. These were displayed smoothly by SciChart Android's realtime charting engine.

Smooth, rich touch interaction - was enabled, to allow Pinch to Zoom, Drag/Touch to Pan, Axis Drag and tooltips on all SciChart.Android charts.

Big Data Handling of many series with tens of thousands of points

Fast and Smooth charts without UI slowdown



Without SciChart, the High Performance Realtime Graphs would not be possible –

M.Chuah, MIT

About SciChart

SciChart is a cross-platform WPF, iOS, Android and Xamarin Scientific & Financial Charting Library.

SciChart supports rendering of complex, interactive, real-time charts with many millions of data points for demanding scientific, medical and financial applications and embedded systems that require high performance, rich interaction and smooth updates.

Find out more about SciChart at <https://scichart.com>

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