CARDEA LABS

CASE STUDY

SciChart.WPF

Dynamic Visualization of ECG signals on a portage ECG device

Customer

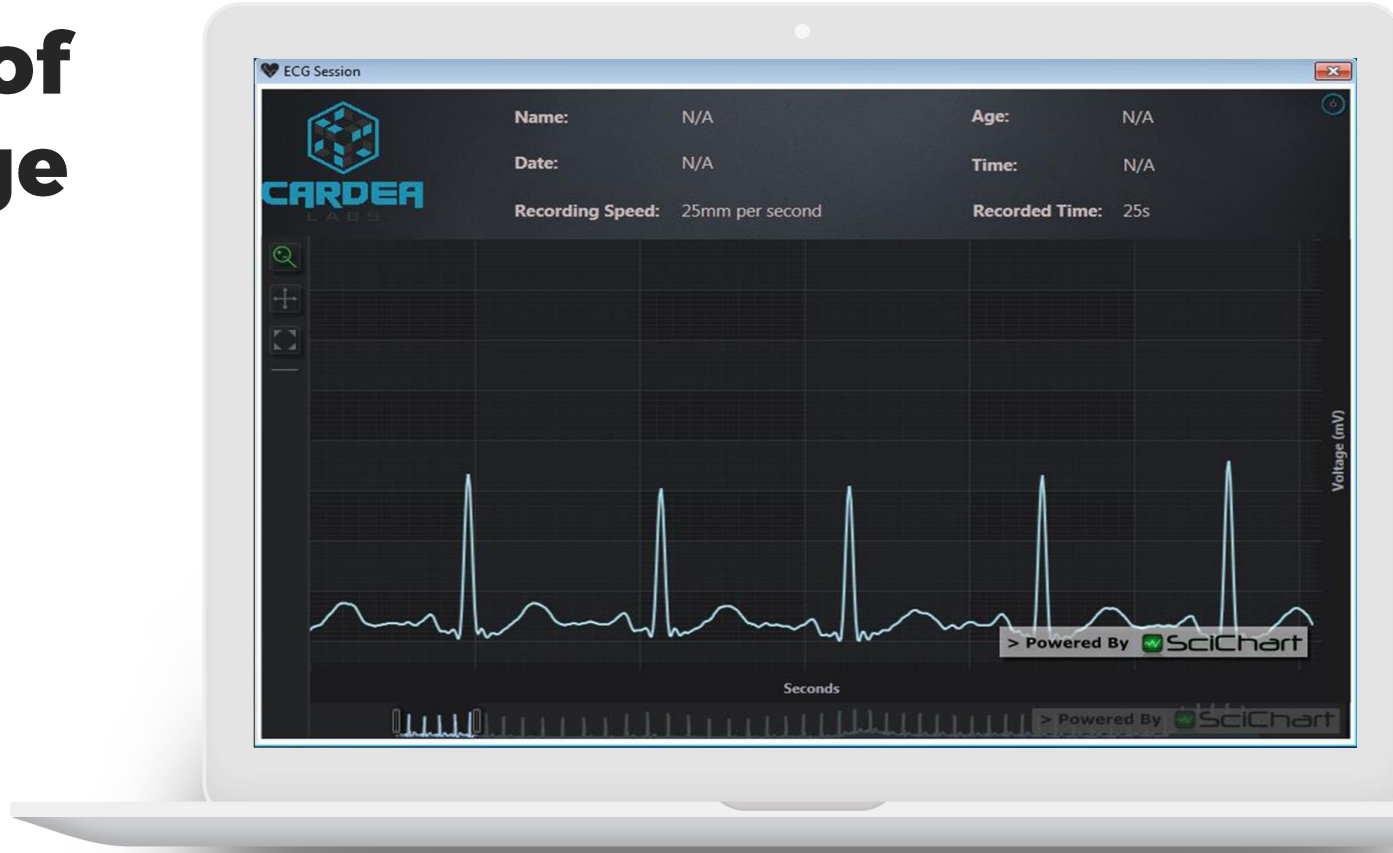
Cardea Labs and Cardea Biomedical Technologies Pvt. Ltd

Industry

Medical equipment, Healthcare

Notes

This implementation has been done as part of SciChart “Free Educational license” for academic and non-profit projects.



SCICHART®
> High Performance Realtime Charts

Low Cost Non-Invasive Healthcare Solutions

Cardea Biomedical & Cardea Labs in conjunction with the miBEAT hardware package design complete, innovate and cost-effective software solutions for the pressing clinical needs of India and rest of the world.

miBEAT

An open source Biomedical Engineering Application Toolkit designed to help engineers build a Medical Grade data Acquisition system with ease

> *miBEAT is a project to achieve cheap homemade portable ECG devices that can achieve medical grade clarity. Our project was only limited by charting until I discovered SciChart. With its smooth UI and various other features, it was a cake-walk upgrading various aspects of the project.*

Jaivignesh Jayakumar, student and developer at miBEAT project

The Visualization Challenge

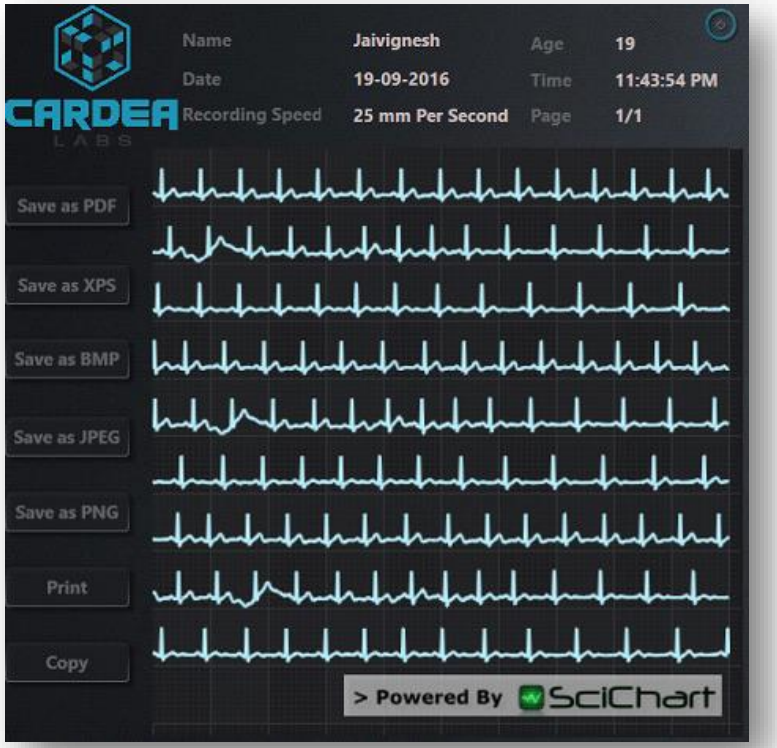
Cardea needed a dynamically updating chart at 250 points per second with data acquisition through Bluetooth connection for an ECG device derived from the miBEAT hardware platform.

Limitations

Using an open source charting solutions alongside the miBEAT biomedical engineering application toolkit hardware. Cardea Labs project suffered from severe UI lag and general disruption to the smoothness of operating.

Hardware & Requirements

To handle ECG data streams in Realtime via Bluetooth on windows 10 64bit and Windows 7 64 bit. To plot voltage signals incoming from an ECG sensor on the go whilst maintaining a smooth user interface and retaining an export function at 250 points per second.



miBeat Functionality Print Window

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Solution Provided

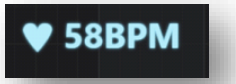
High Performance Capabilities
SciChart's high performance capabilities were utilised to meet all of Cardea Labs visualization requirements. SciChart was able to handle 250 points per second in realtime and retain a smooth UI easily.

Comprehensive Charting Examples & Chart Types
Cardea Labs used the FIFO functionality of SciChart based on our ECG theme to generate a real time scrolling ECG monitor. All chart surfaces used FastLineRenderableSeries to render a XyData series in Realtime.

Rich Core WPF Charting Functionality
The print and export functionality were employed to export to XPS,JPG,BMP and PNG allowing data to be collated outside of the application. The session window was upgraded to make use of the Pan, Scroll and Zoom functionality included in SciChart Rich Touch functionality as well as overlaid reticules and interaction capabilities accessed by dragging and scrolling to show sections of data in the viewport.

FIFO scrolling Trace

RubberBandXyZoomModifier



Heart rate calculator

The Overview Control (Scroll)

I'm extremely grateful for all the support the SciChart team has offered over the past year.

Jaivignesh Jayakumar

Jaivignesh is a student at Vellore Institute of Technlogy, Vellore. He is also a part time .NET application developer for Cardea Labs and is currently working on the miBEAT project

Please read more: http://cardea-labs.com/article_licensing_final.php

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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.

SciChart Ltd
16 Beaufort Court, Admirals Way,
Docklands. E14 9XL. London.
United Kingdom

Web: https://www.scichart.com
Contact us at: sales@scichart.com