

# Data Acquisition System for Passive Airway Resistance Estimation Research

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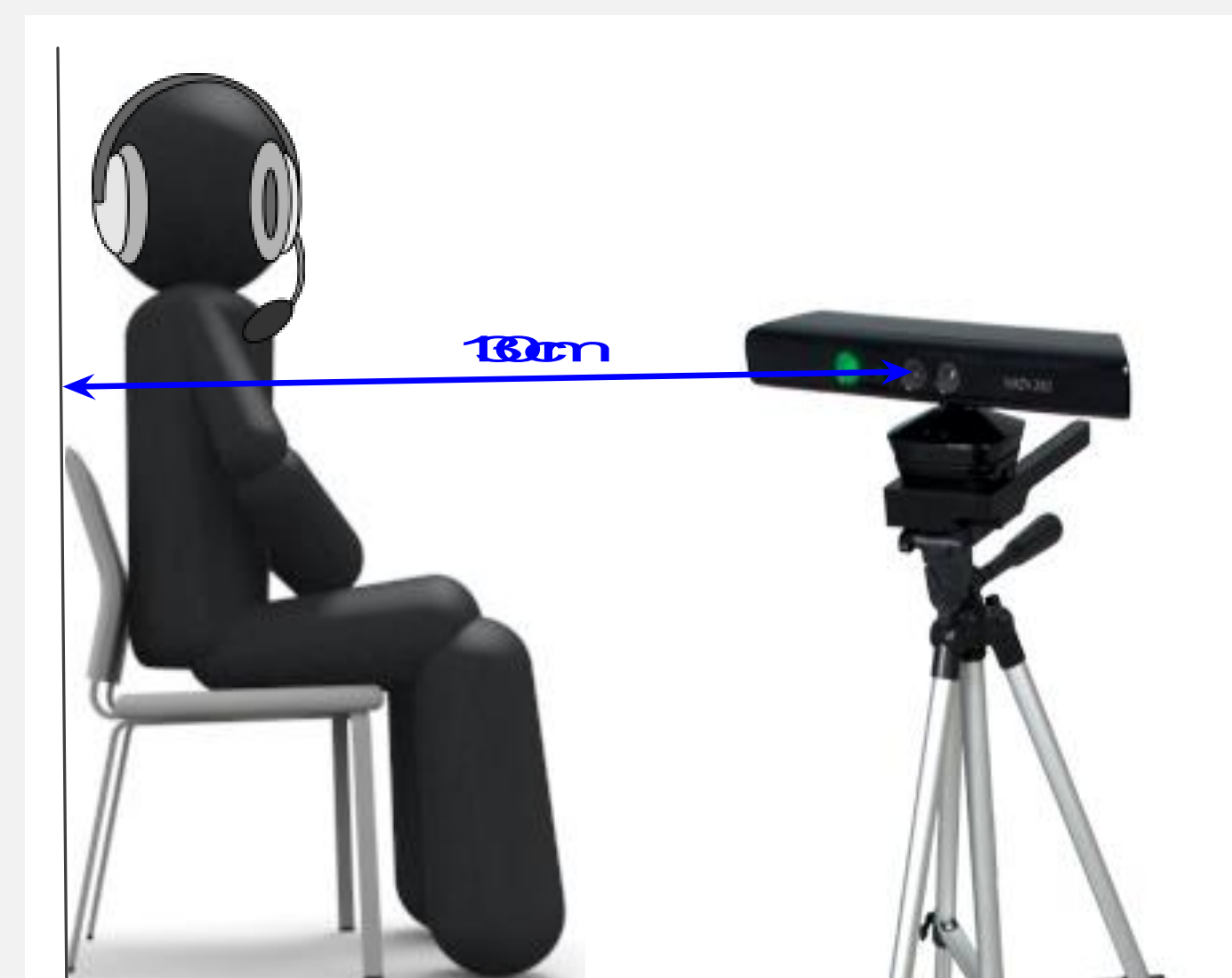
## Problem

- Obstructive respiratory diseases such as RSV infection, Asthma, and Bronchiolitis are leading cause of hospitalization in infants and young children.
- Current methods of respiratory diagnosis requires active and obtrusive tests that are not suitable for infants.
- VB-PARE proposes a non-contact system using the Microsoft Kinect.

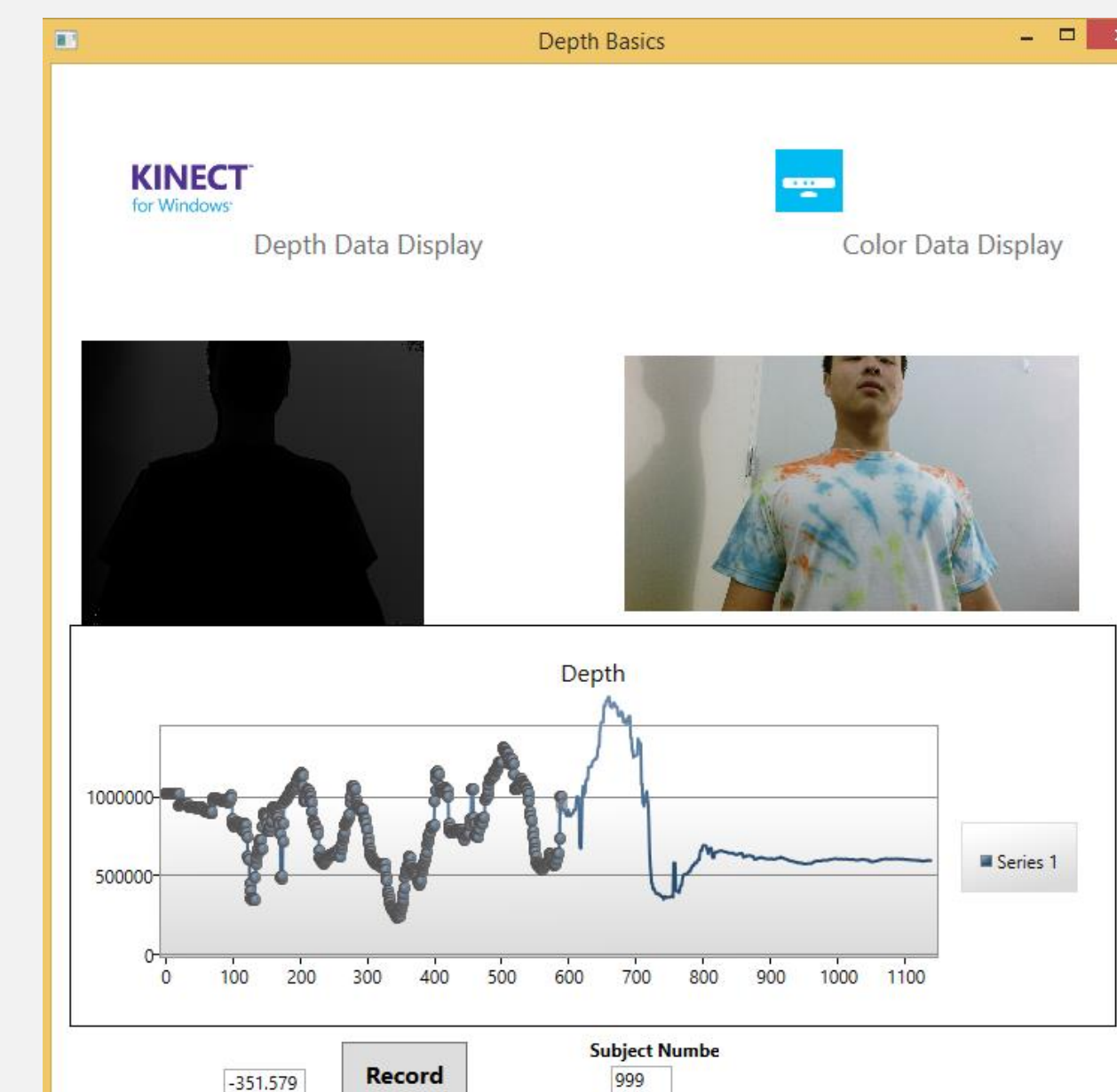
## Solution

- The Das:Parer combines non-contact methods to measure airway resistance with traditional medical instruments to facilitate future research.
- The system includes:
  - Microsoft Kinect
  - Pulse Oximeter
  - Throat Microphone
  - Spirometer
  - Respiratory Effort Band
- The design organizes the various biosignals into a comprehensive GUI.
- The GUI displays a respiratory health status calculated from the Kinect data.

## Kinect Setup



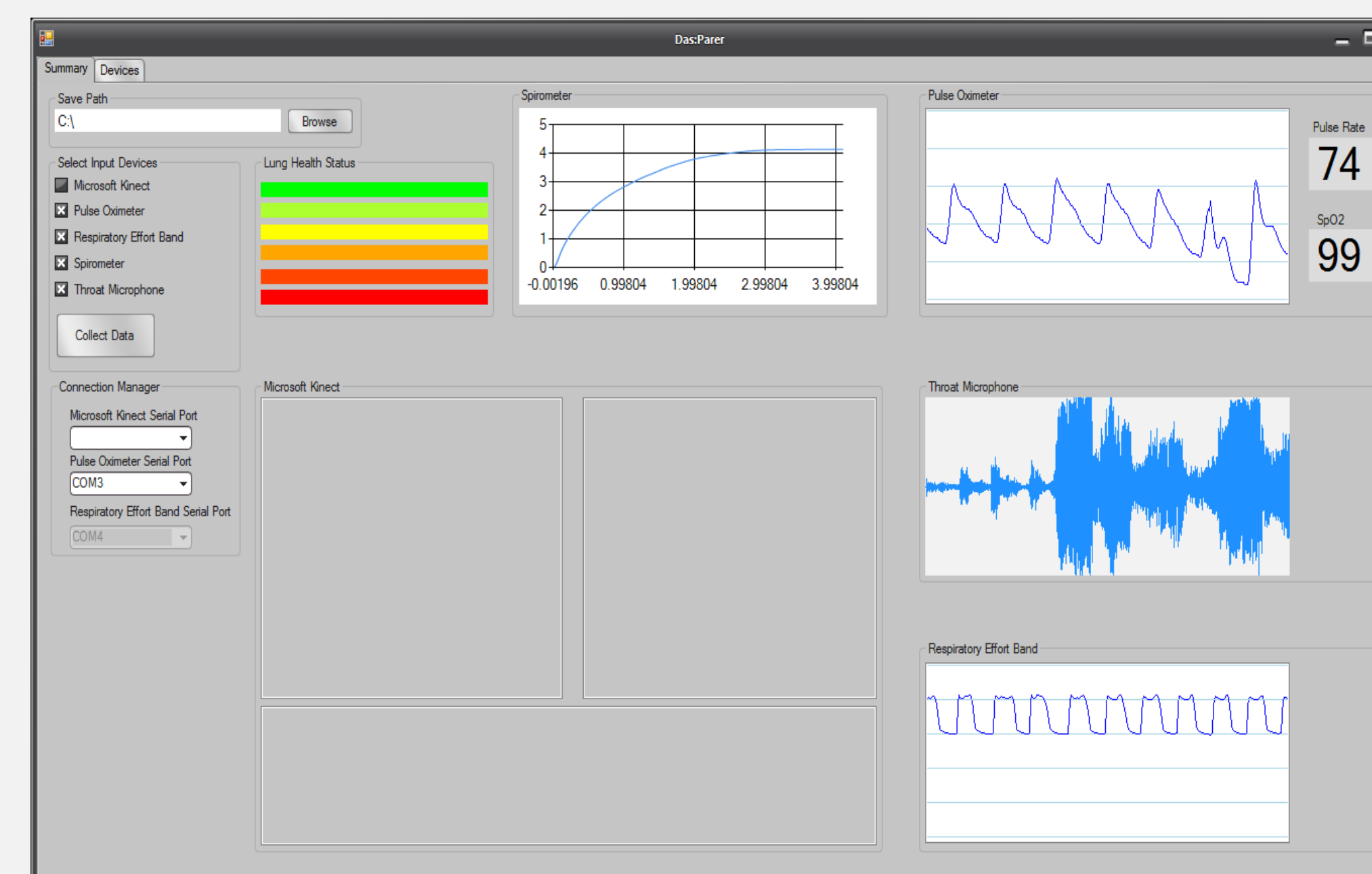
## Kinect User Interface



## System Setup



## Comprehensive User Interface



Device	Biosignals Collected By Device
Microsoft Kinect	<ul style="list-style-type: none"> <li>• Depth Data</li> <li>• RGB Video</li> <li>• Audio Data</li> </ul>
Pulse Oximeter	<ul style="list-style-type: none"> <li>• Pulse Rate</li> <li>• PPG</li> <li>• SpO2</li> </ul>
Respiratory Effort Band	<ul style="list-style-type: none"> <li>• Chest Cavity Volume</li> </ul>
Throat Microphone	<ul style="list-style-type: none"> <li>• Wheezing Sounds</li> <li>• Barks</li> </ul>
Spirometer	<ul style="list-style-type: none"> <li>• FEV1</li> <li>• FVC</li> </ul>

## Future Work

- Improve airway resistance model using data collected by Das:Parer
- Crib-Mounted Infant Monitoring System
- Mobile App to promote patient-doctor interactions via telemedicine