# Enabling Rapid Deployment of Low-Cost Scalable Fever Screening Network

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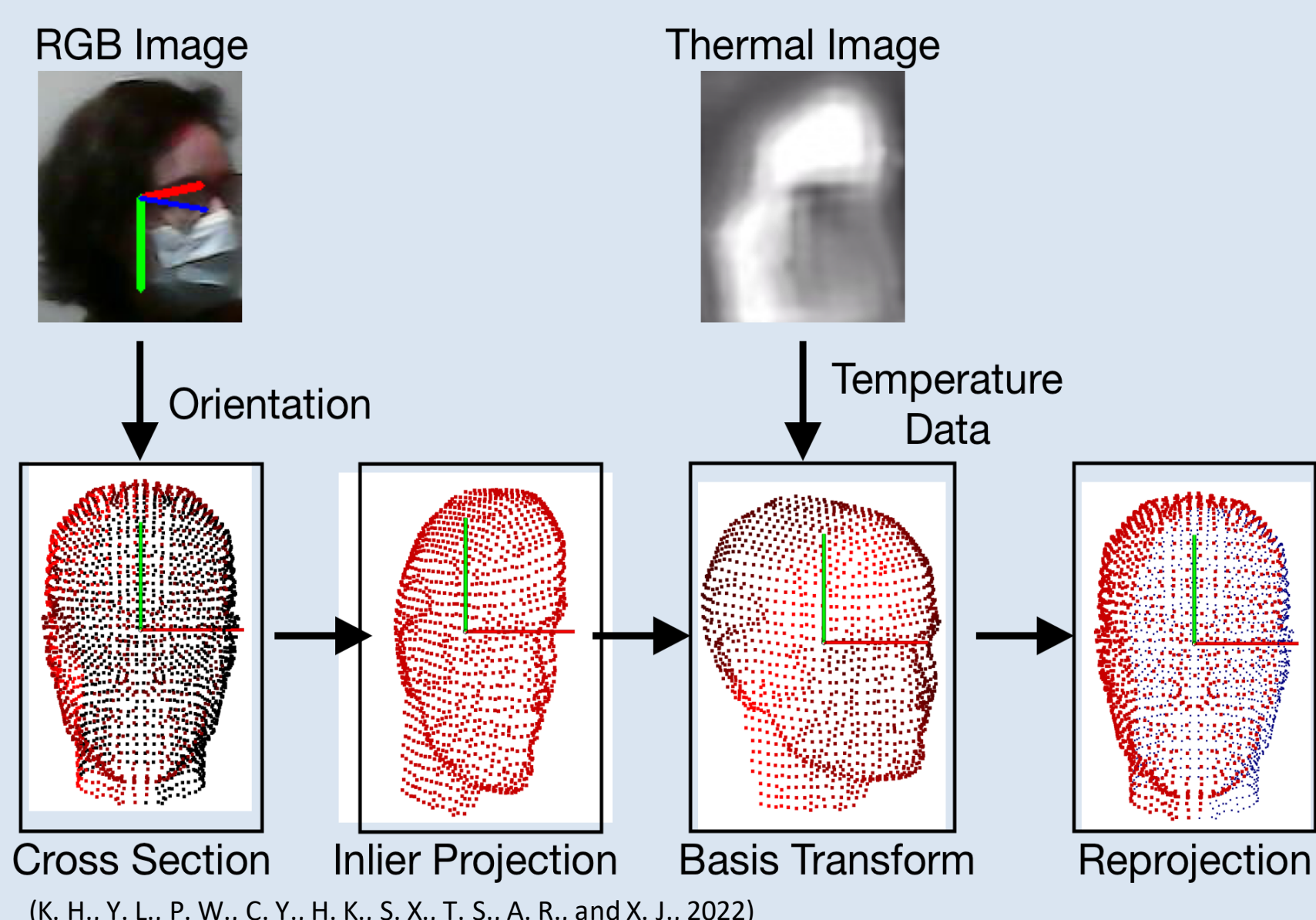Department of Electrical Engineering, Columbia University

## Purpose

- Measuring people's temperature has become crucial in the modern world since the recent pandemic. Most measuring devices are misleading, and people misuse them by putting the wrong part of their body in front of the temperature camera, getting an imprecise reading.

Alexandrine, 2020

- We wanted a device that offered a simpler way to measure temperature and determined a faster, and more accurate way to measure someone's temperature.

## Overview

- The FLIR ONE Pro LT RGB thermal camera is connected to a ®Jetson Nano™ mini-computer which detects multiple people either walking, or standing by it, and creates a 3D model of their head, to then determine the temperature on their forehead.

- The *SIFTER* uses a 3D printed case made with Fusion 360. We also minimized the number of cables in the system by making a small compartment in the case, designed to be adjustable, so it can capture temperature from different angles.

RGB Image　　Thermal Image

Orientation　　Temperature Data

Cross Section　Inlier Projection　Basis Transform　Reprojection

(K. H., Y. L., P. W., C. Y., H. K., S. X., T. S., A. R., and X. J., 2022)

## System Architecture

- **FLIR ONE Pro LT (Thermal Camera)**

  This small RGB thermal camera allows for easy deployment while detecting multiple people, it allows for early detection of a future pandemic.

- **® Jetson Nano™ (Micro Computer)**

  The Jetson Nano contains a python program which creates the 3D sketch of a person!

- **Both Devices with their Case:**

  The *SIFTER* uses a client server model to send the screening information to a computer.

## Applications

- Mall Entrances and Stores
- Doctors' Offices
- Restaurants
- Ultimately any crowded area

## Test Scenarios

- **Distance and Standard Deviation:** This device has a deviation of 0.6˚ (F) in a 3.5m distance, while most thermal scanners have a 1˚ (F) deviation in 0.5m.
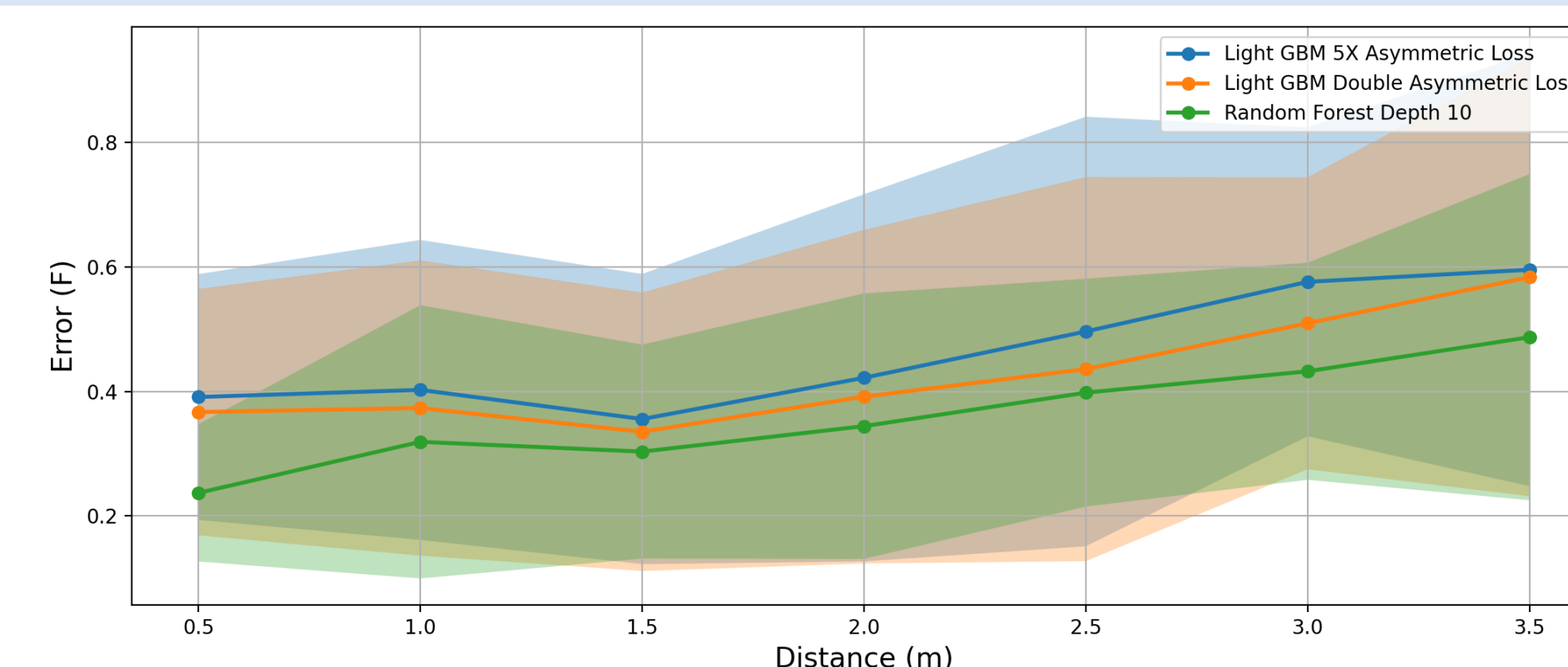
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- **Multi-person:** This device can measure the temperature of many individuals at a time.

Thermal RGB Camera

Micro Computer

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