# The FarmBoyz

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## Problem

Twenty-five percent of chicks that are raised to become egg-laying hens do not survive into adulthood. Threats to chicken health include disease, predation, overcrowding, heat stress, theft, and bullying from other chickens. Currently, no system exists which alerts farmers if the health of their flock is at risk.
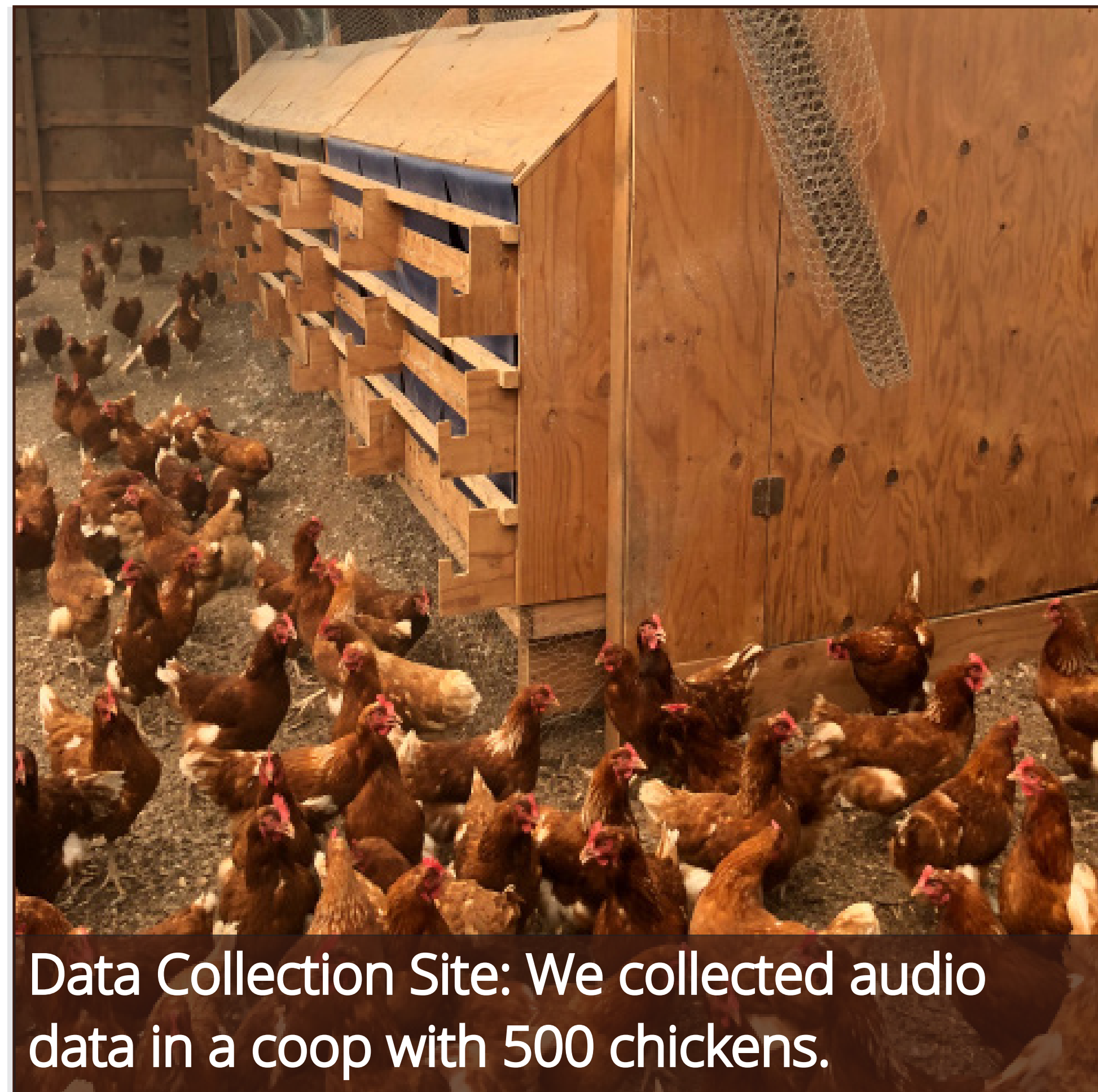

Data Collection Site: We collected audio data in a coop with 500 chickens.


Hawk Attack: Farmers regularly described predation as a major threat.

## Approach

We performed qualitative interviews with farmers (n = >15) and visited multiple farms (n = 4) to understand farmer pain points. We also acquired two chickens to perform behavioral studies. We captured acoustic data using microphones at a partner farm and then analyzed the data through our anomaly-detection algorithm. We classified one type of anomaly.


System: The microphone was located seven feet above the flock.

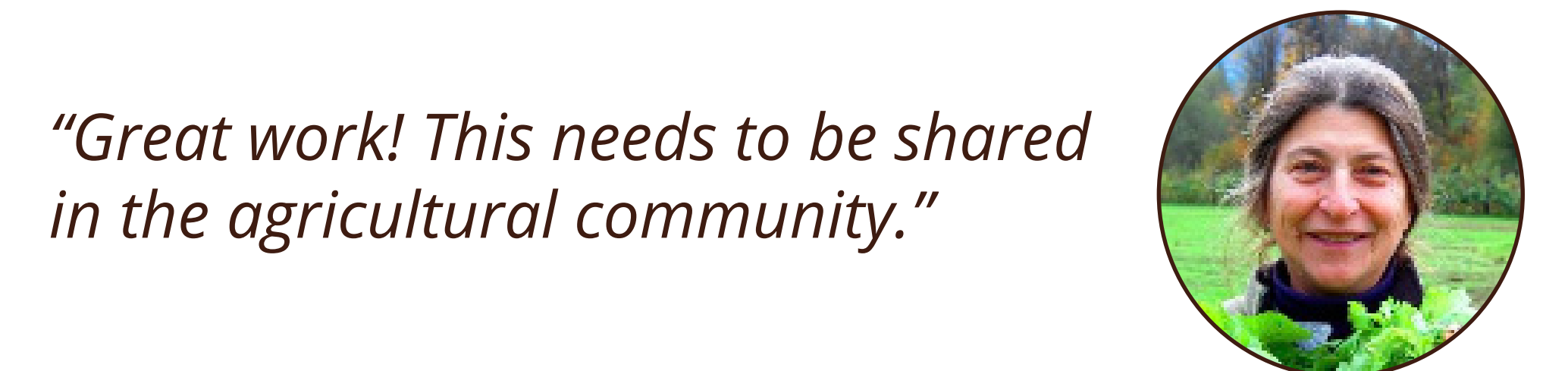*"It's like a baby monitor for chickens."*

**Farmer Tamar**
Kelsey Creek Farm

*"This system could act as an extra farmhand for me."*

**Farmer Jerry**
Stokesberry Farm

*"Great work! This needs to be shared in the agricultural community."*

**Farmer Anne**
Blue Heron Farm

## Solution

We continously send 10-second audio clips through our sub-edge to the cloud. Our machine-learning algorithm then analyzes this data, identifies changes in chicken vocalization patterns, and detects acoustic anomalies. When an anomaly is detected, SMS and email alerts are sent to the farmer with information about the event.
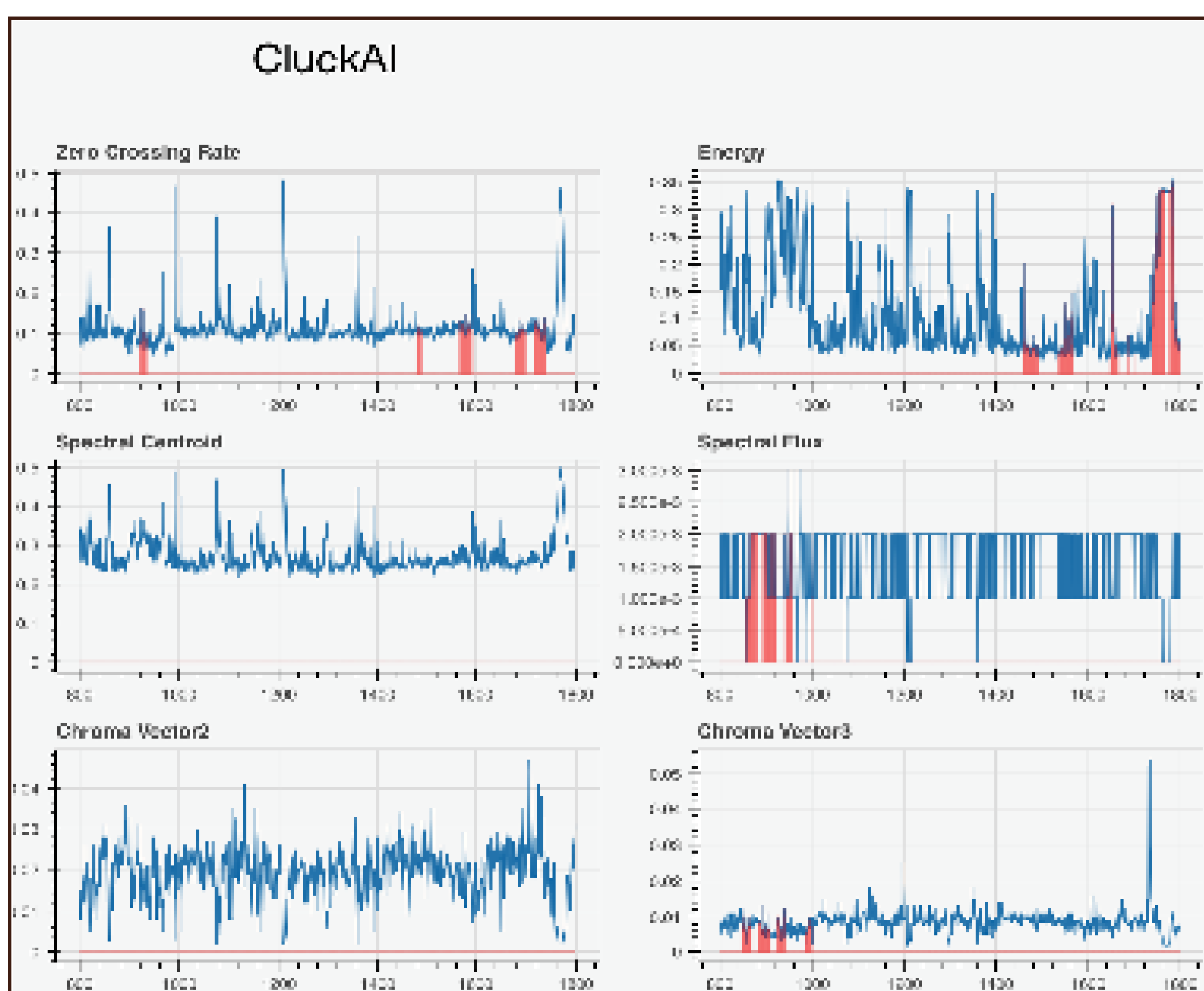

Anomaly Detection: We used multiple audio features to build our algorithm.
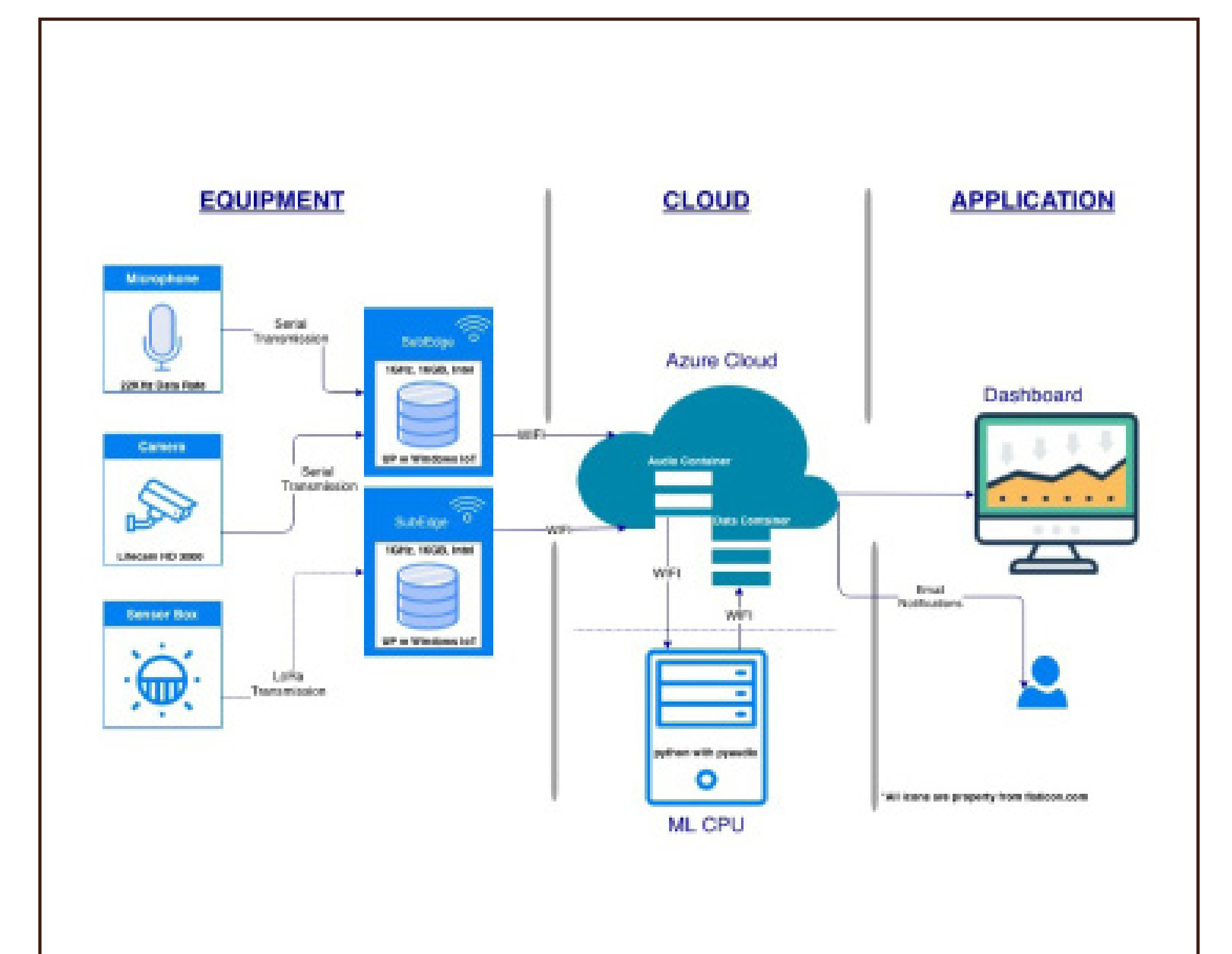

System Architecture: We utilize hardware, cloud computing, and mobile.