

# *life*Logger

never forget again

15-549: Embedded Systems Design

Team 20

Jian Cheung, Chris Jarret,  
Saxon Parker, Eleazar Vega-Gonzalez

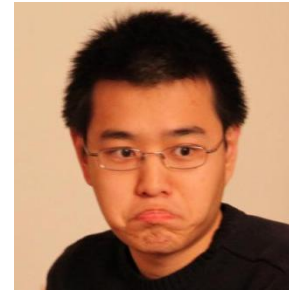
# The Crew



Eleazar Vega-Gonzalez  
evegagon@andrew.cmu.edu



Chris Jarrett  
cjarrett@cmu.edu



Jian Cheung  
jccheung@andrew.cmu.edu



Saxon Parker  
slparker@andrew.cmu.edu

<http://www.ece.cmu.edu/~ece549/spring12/team20/index.html>

*life*Logger

What if your journal wrote itself?

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# Our Solution

Never forget a place

Log everywhere you go

Never lose a thought

Take notes throughout your day

Never miss a friend

Get notifications when your friends are nearby

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# Our Features

Footprint of the day

Display your daily journey through life

Places of Interest of the day

Highlight key places of your day

Social integration

Find nearby friends in real-time

Personalized description of the day

Reflect on any important interactions

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# Functional Requirements

Collect GPS data onboard the lifeLogger

Communicate profile information using Bluetooth between two lifeLoggers

Notify the user about nearby friends in real-time on the smartphone

Transmit location data between

lifeLogger and Smartphone utilizing Bluetooth

Smartphone and Web Server utilizing WiFi

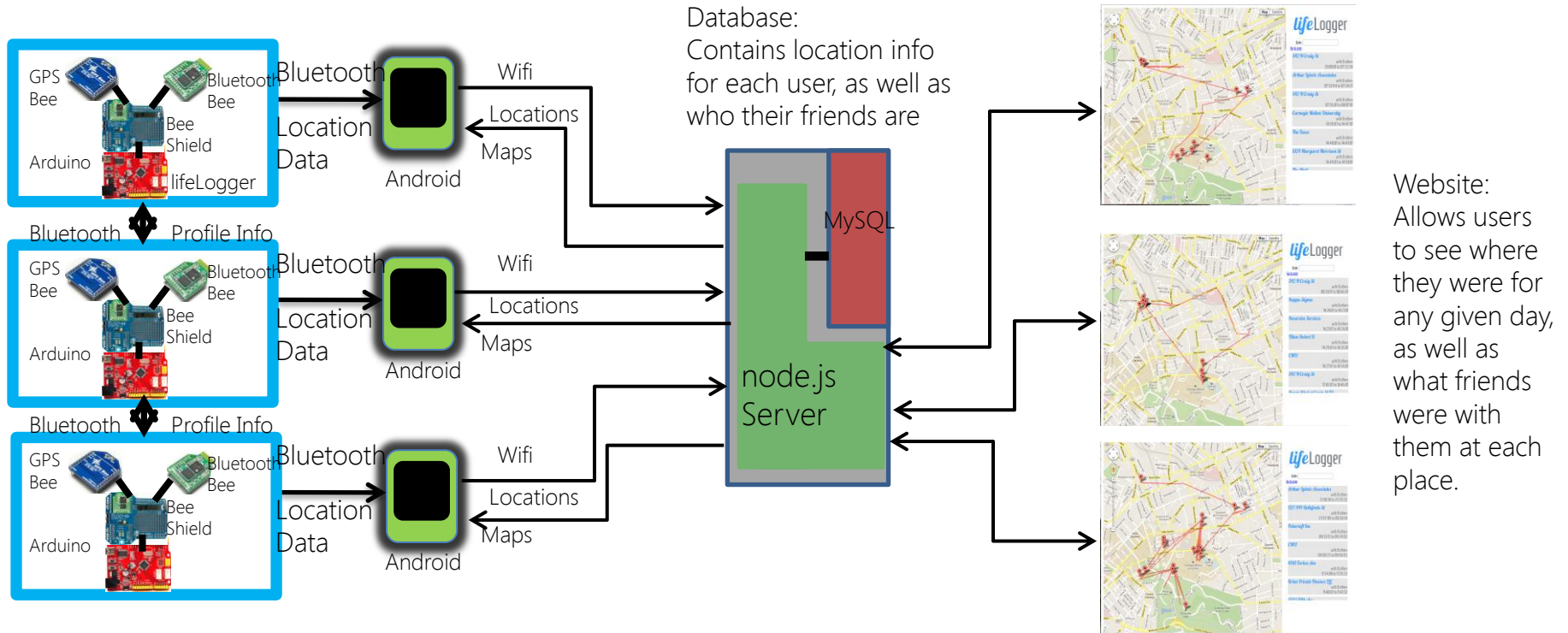
Analyze data on the web server

to be able to detect when two friends are nearby

to present the user a view of the data

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# Architecture



# lifeLogger

# Experiments

## lifeLogger Tests

Seconds taken to establish GPS fix

BlueTooth data Throughput

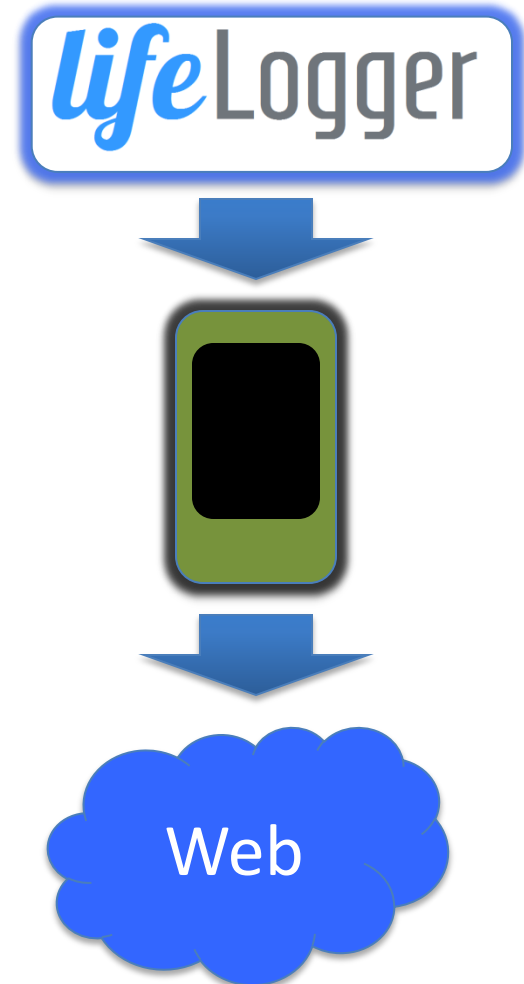
## Android Application Tests

Phone End-to-End Latency/Throughput

Manual Upload Latency/Throughput

## GPS Accuracy

Latitude/Longitude Accuracy of a fixed point





# Insights

Packet throughput dependant on Android OS

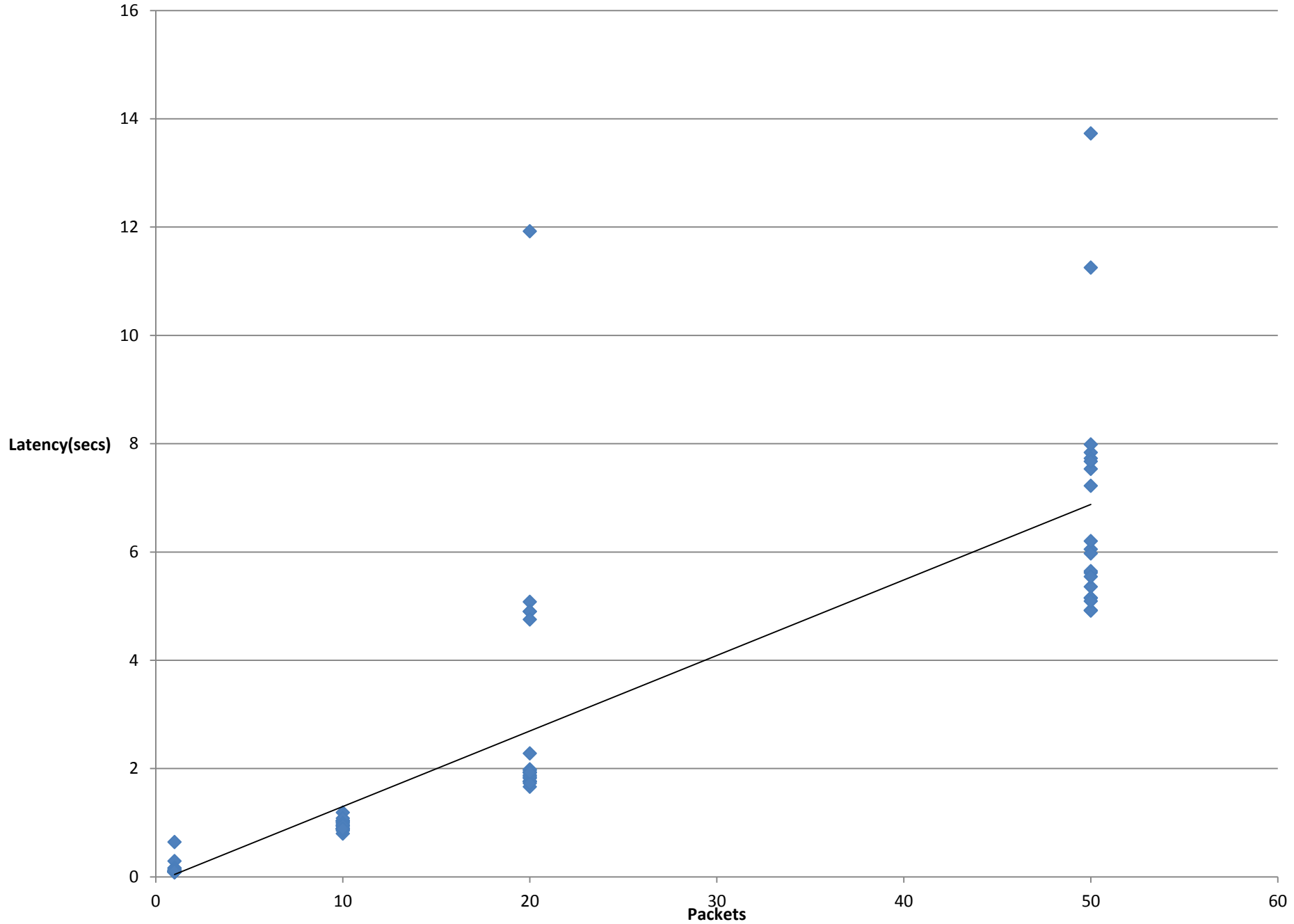
Latency determined by when scheduler decides we can run

Throughput of Bluetooth and Wifi provide adequate throughput for timely real-time data transfer

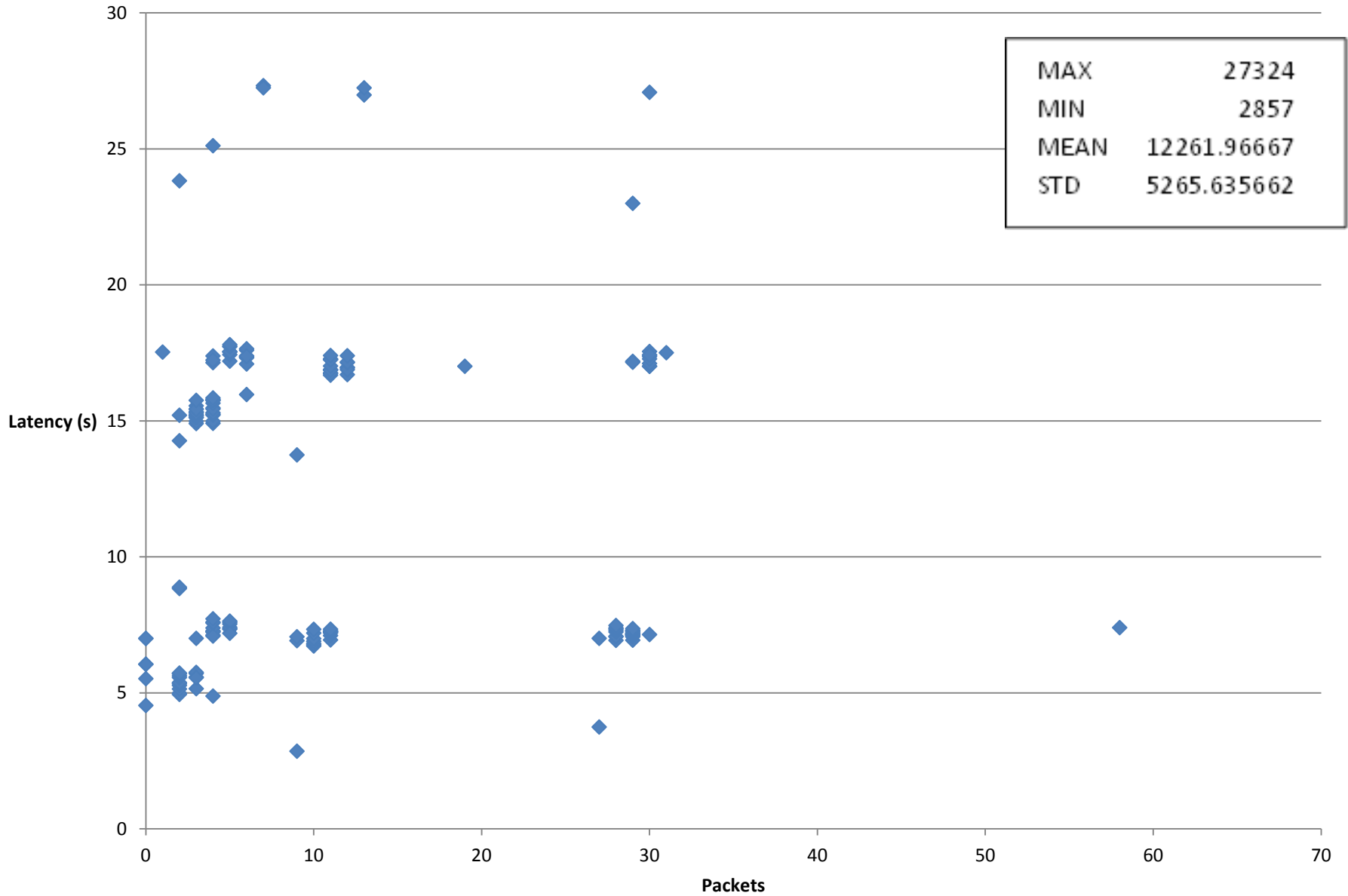
Accuracy of GPS Bee was more consistant than location data collected from Galaxy S

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# Manual Upload to Server Latency



# Background Service Process Packet Latency



# Performance

Ultimately, focus was on reliability over speed

The user never sees data transfer or uploading,  
so it is more important that the transfers  
are reliable rather than quick

Many fail-safes put in place to ensure the system  
can recover from errors both in hardware  
and software

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# Other Features

## Device to Device Bluetooth Communication

In order to provide real-time notifications of nearby lifeLoggers, device-to-device communication has been established between lifeLoggers.

Our implementation allows for scalability between multiply nearby lifeLoggers.

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# Next Steps

## Custom Hardware

A custom PCB coupled with a LiPo battery would help reduce the size and battery life of the device. A smaller device would be less obtrusive and provide a better user experience.

## Photo Uploading

Allow the user to take pictures on their Android phone and upload them to the server, so they can be integrated into their digital journal.

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# Conclusions

## Learned

Android, Arduino, BlueTooth, node.js, MySQL, GPS,  
Designing User Interfaces

## Accomplished

Device to device communication, Android background  
services, web design, developing usable User Interfaces

## Different

Use parts with proper documentation, restructure  
Android app based on knowledge acquired during  
development,

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