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Physical State Analytics with Machine Learning

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Who is Sandeep & Jaime

This is where the subtitle goes

Jaime Sanchez

- Sales Engineer for Splunk
  - With Splunk for 2.5 years
- Experience
  - Security, IT Ops, Business Analytics
  - Technical Sales: Virtual Team & Field
  - Current: Virtual Team
- Favorite Factoid:
  - It would take ~ 1 million mosquitoes, each sucking once, to completely drain the average human ~ Chris

Sandeep Vasani

- Forward Deployed Software Engineer
  - 10 months @ Splunk

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Agenda

- What is Physical State Analytics
- Basic overview of sensors
- How did we do it?
  - Machine Learning with Splunk
  - Data Collection
- Demo
- Quick Recap

What is Physical State Analytics

General Overview

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Physical State Analytics

What does it consist of…Time Travel?

- Consists of Spatial and Temporal contextual information
  - Space
  - Time
  - Real-time data collection & Analytics

What Problem Are We Solving?

Why is sensor data important?

Sensor Data can be leveraged for commercial applications for detecting movement pattern and prediction.

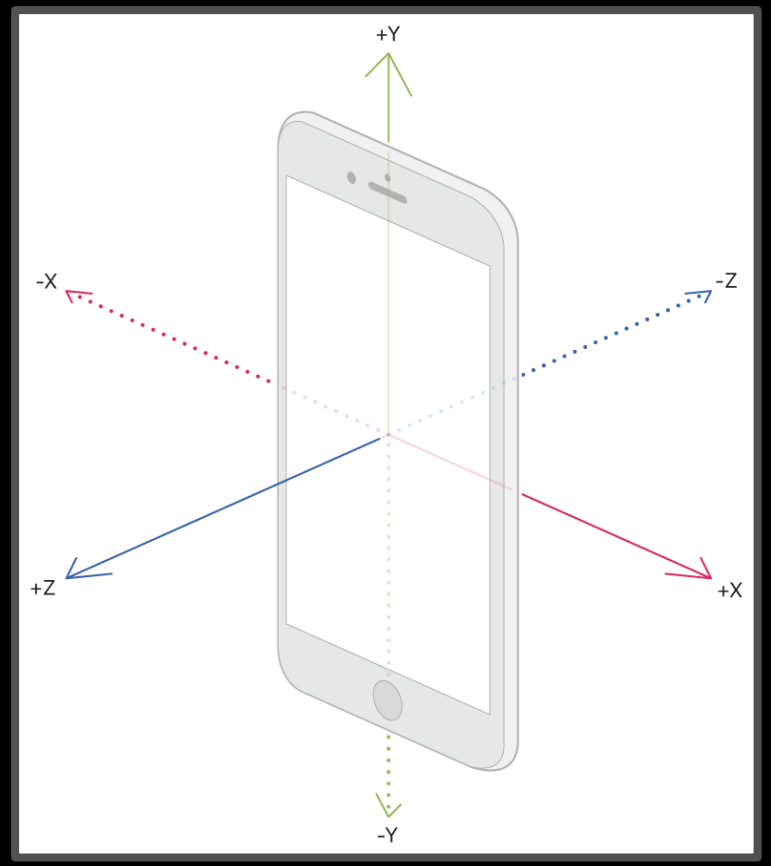
What is our movement: stationary, walking, running?

Mobile Phone Sensors

- Ambient Light
- Proximity
- Cameras
- **GPS**
- **Accelerometer**
- **Gyroscope**
- Microphone
- Compass

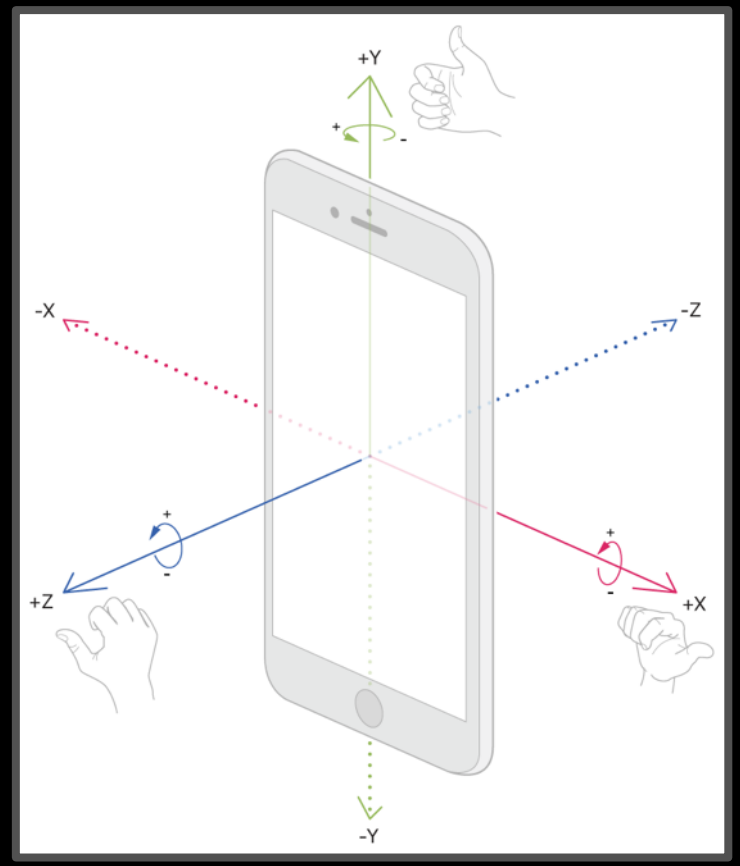
- Phone Usage
  - Light Sensor – Screen Dimming
  - Proximity – Phone usage
- Content Capture
  - Camera – Image/Video Capture
  - Microphone – Audio capture
- Location Mapping
  - GPS – Global Location
  - Compass – Global Orientation
- Device Orientation
  - Accelerometer & Gyroscope – Local Orientation

Accelerometer



- Measures changes in velocity along the x, y, and z axes

Gyroscope



- Measures the rotation rate around the x, y, and z axes

How Did We Do It?

General Overview

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Custom Machine Learning with the Splunk Platform

Ecosystem — Splunk's App Ecosystem contains 1000's of free add-ons for getting data in, applying structure and visualizing your data giving you faster time to value.

MLTK — The Machine Learning Toolkit delivers new SPL commands, custom visualizations, assistants, and examples to explore a variety of ml concepts.

Splunk — Splunk Enterprise is the mission-critical platform for indexing, searching, analyzing, alerting and visualizing machine data.

Operationalized Data Science Pipeline

Collect Data	Clean & Munge	Search & Explore	Pre-processing Feature Selection	Choose Algorithm	Build, Test, Improve Models	Operationalize Monitor Alert	Visualize & Share
Ecosystem	Ecosystem	Splunk	MLTK	MLTK	MLTK	MLTK	Ecosystem
Splunk	Splunk		Splunk	Splunk	Splunk	Splunk	Splunk

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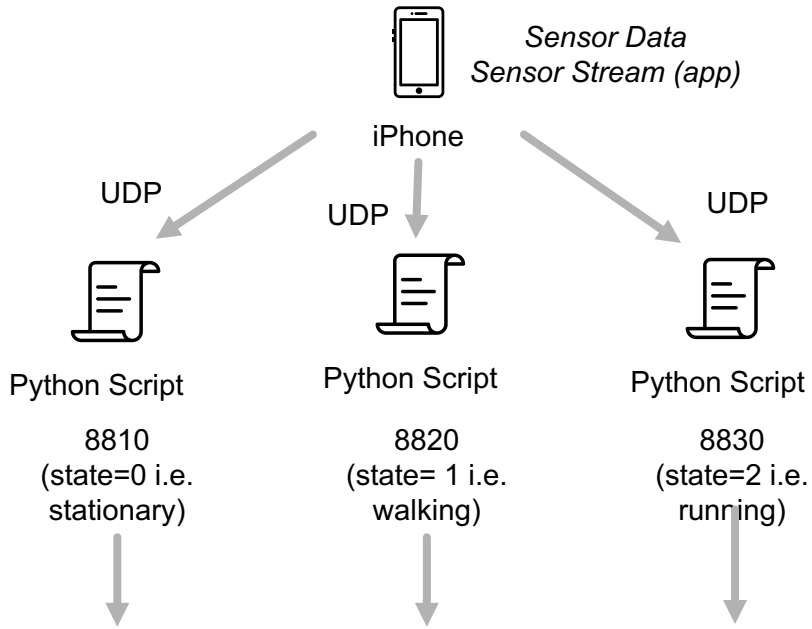
Data Collection



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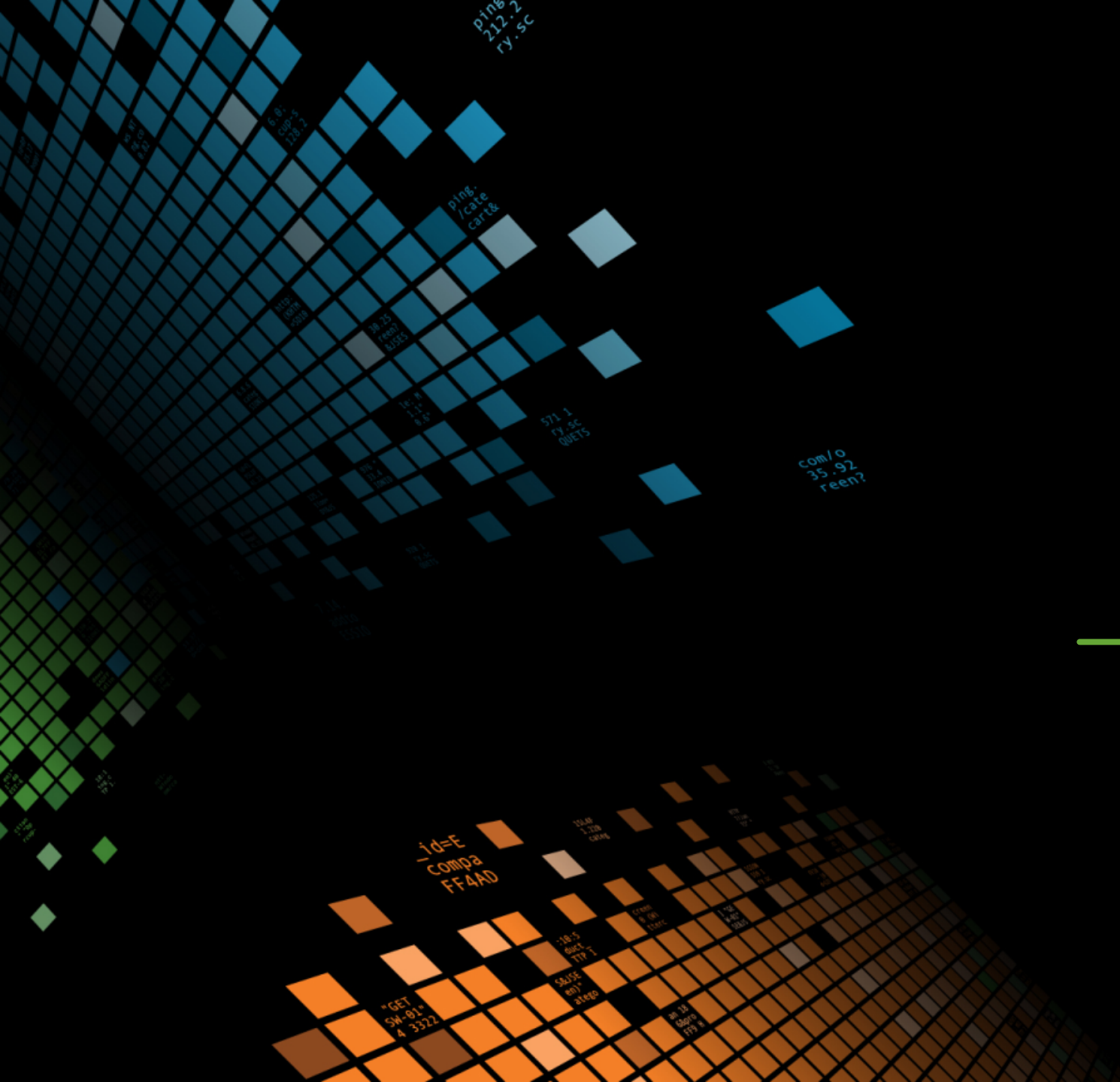
MLTK



Splunk Demo

Presented by Sandeep

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Use Cases and Applications

General Overview

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Applications

Where can I use this data?

- Health
  - Track health and wellness
- Marketing
  - Advertising
- Social Networks
  - Classification of what state the user was in while interacting with social media (like taking a picture)

Key Takeaways

This is where the subtitle goes

1. Valuable insights from Sensor data
2. Experiment with features and algorithms
   - Not all features created equal
3. The more data the better
   - E.g. Different orientations of holding the device

Thank You

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