

A Cost-Effective Smartphone Solution for Traffic Management in Marine Ports

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Outline

What is truck turnaround time?

How does it reflect the performance of terminals?

Existing Problems with its measurement

How it has been measured

Proposed solution

Conclusion & future work

Acknowledgement

What is Truck Turnaround Time

The time taken for a truck to enter then exit a terminal.

An indicator of Port performance

Traditionally, using expensive GPS equipments

"Derived from RFID data, and excludes lunch hour, breaks and trouble tickets." -
PierPass

No consensus on how to measure or validate anyone's measurement (lack of transparency)

Previous Work

Metropolitan Transportation Information System (METRIS)

by Digital Geographic Research Corporation

Expensive GPS equipment

No transparency

Not all parties involved

No real time report

Good Data Collection

Need for more accurate and less expensive devices to collect data

Good data leads to good analysis and better planning

Shorter truck turnaround time better performance in our freight system

Benefits to motor carriers, terminals, ports, cargo owners and above all, drivers

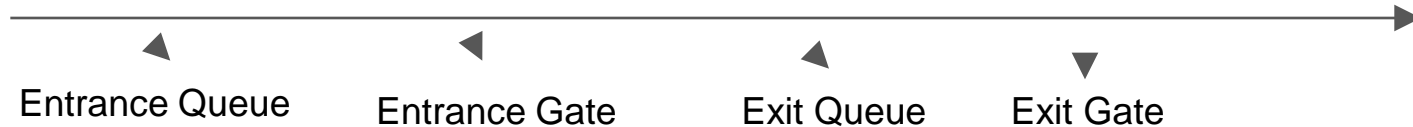
Categories of Truck Turnaround Time

Entrance Gate to Exit Gate

Entrance Queue to Exit Gate

Entrance Queue to Exit Queue

Entrance Gate to Exit Queue



Proposed Solution

Zlyne phone application

Through a simple web interface (zlyne.com)

Current exact location of a truck on a map with different views passed on privileges

Truck turnaround time filtered by:

hourly, daily, weekly, monthly and yearly

each terminal

motor carriers can filter for any driver

Our approach

Our method uses sensor rich smartphones

Accurate GPS signals fused with network signals

64% of American adults own a smartphone (from pewinternet.org)

Smartphones benefit from Geofencing technology

All phone data sent to a secure cloud (Zlyne.com) with real time access for all parties

Incentivize use to truck drivers by providing them with valuable information.

The Zlyne Software

An iOS and Android application for smart data gathering.

Using Location-based Services

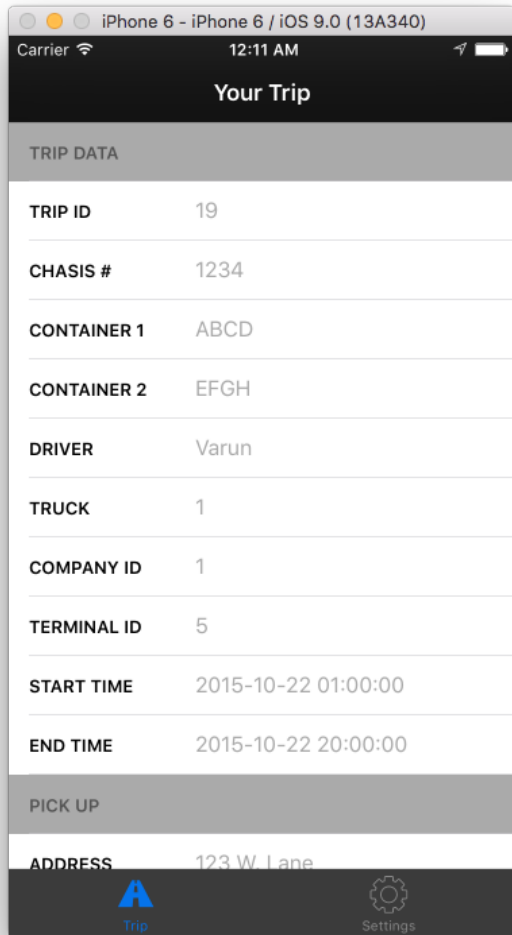
1. Geofences
2. Background Tracking

An intelligent administrative web application.

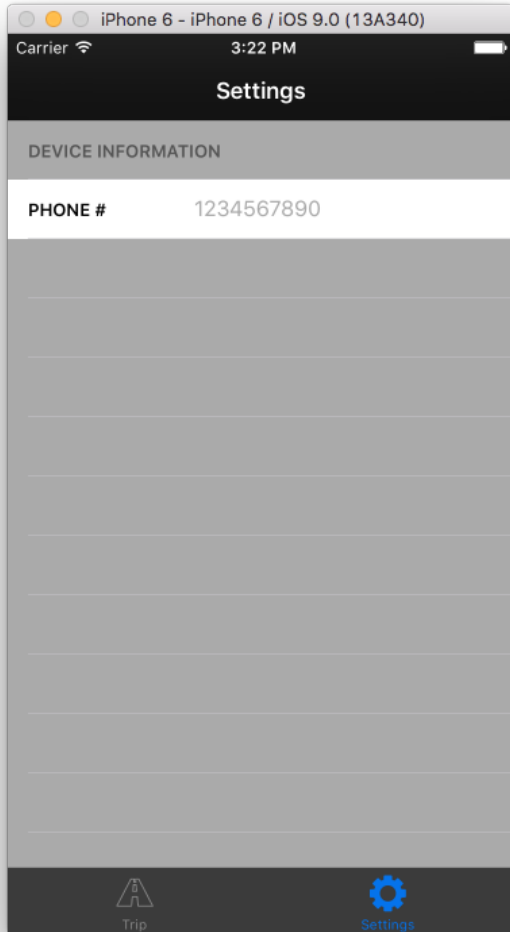
1. Register truck drivers
2. Assign trips to drivers
3. Gather and display data



Register a driver



Trip View



Settings View

Sign In :: Lanetracker.co

https://zlyne.com/auth/signin

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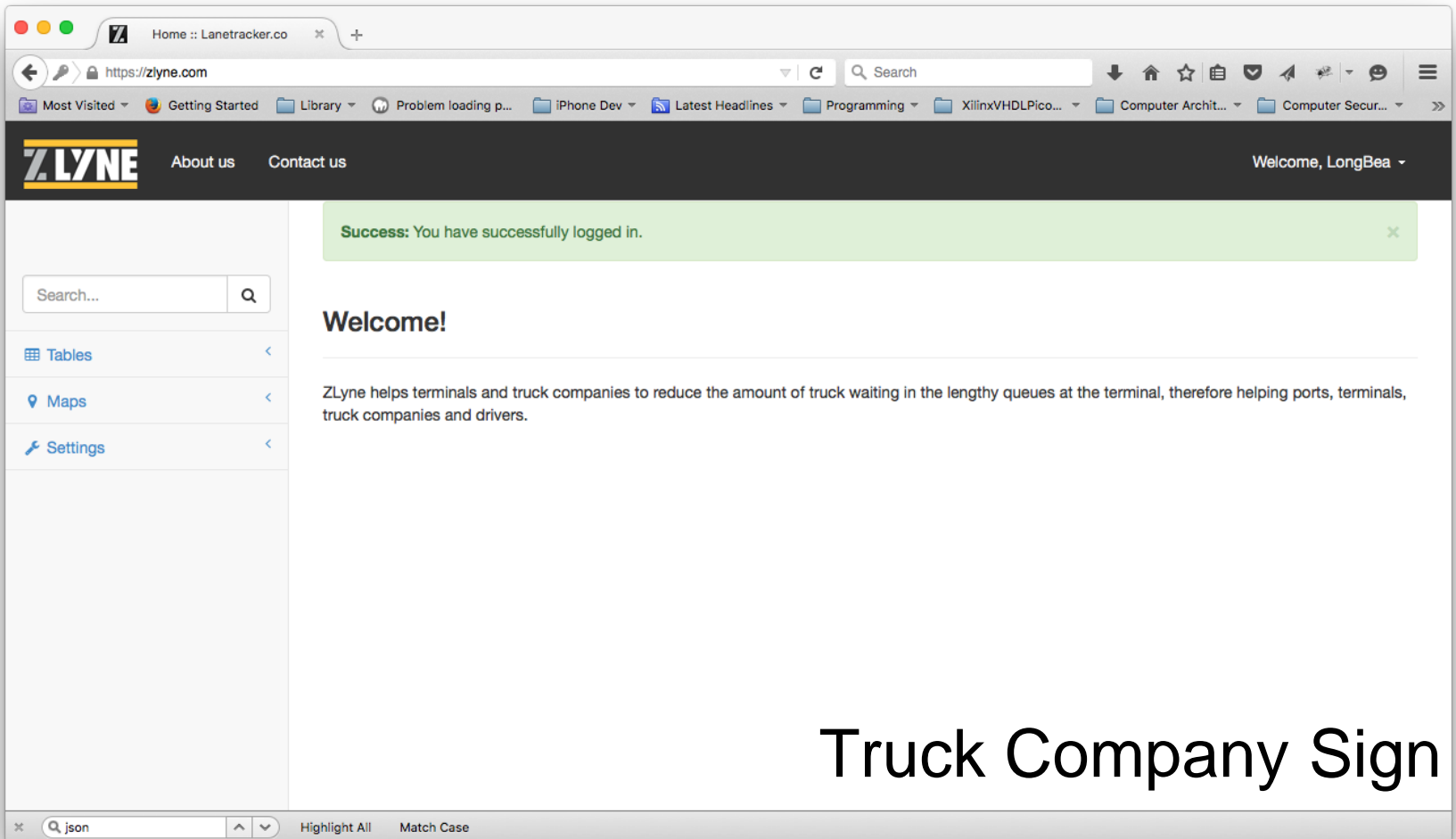
Email

Password

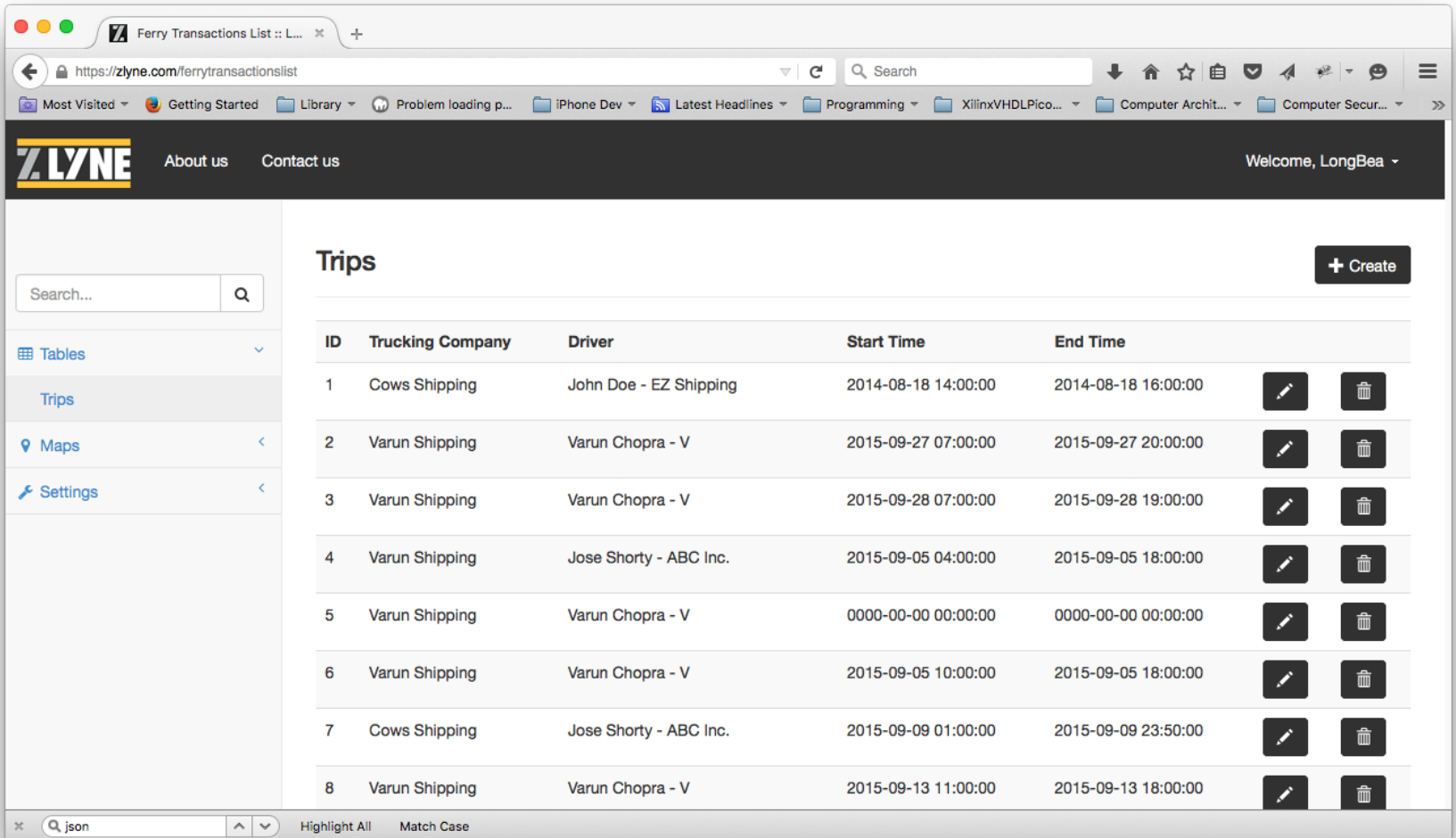
Remember me

[I forgot my password](#)

Q json Highlight All Match Case



Truck Company Sign In



Search...

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Trips

[+ Create](#)

ID	Trucking Company	Driver	Start Time	End Time		
1	Cows Shipping	John Doe - EZ Shipping	2014-08-18 14:00:00	2014-08-18 16:00:00	<input type="text" value="edit"/>	<input type="text" value="delete"/>
2	Varun Shipping	Varun Chopra - V	2015-09-27 07:00:00	2015-09-27 20:00:00	<input type="text" value="edit"/>	<input type="text" value="delete"/>
3	Varun Shipping	Varun Chopra - V	2015-09-28 07:00:00	2015-09-28 19:00:00	<input type="text" value="edit"/>	<input type="text" value="delete"/>
4	Varun Shipping	Jose Shorty - ABC Inc.	2015-09-05 04:00:00	2015-09-05 18:00:00	<input type="text" value="edit"/>	<input type="text" value="delete"/>
5	Varun Shipping	Varun Chopra - V	0000-00-00 00:00:00	0000-00-00 00:00:00	<input type="text" value="edit"/>	<input type="text" value="delete"/>
6	Varun Shipping	Varun Chopra - V	2015-09-05 10:00:00	2015-09-05 18:00:00	<input type="text" value="edit"/>	<input type="text" value="delete"/>
7	Cows Shipping	Jose Shorty - ABC Inc.	2015-09-09 01:00:00	2015-09-09 23:50:00	<input type="text" value="edit"/>	<input type="text" value="delete"/>
8	Varun Shipping	Varun Chopra - V	2015-09-13 11:00:00	2015-09-13 18:00:00	<input type="text" value="edit"/>	<input type="text" value="delete"/>

Browser window showing the URL `https://zlyne.com/addferrytransaction`. The page title is "Add a Ferry Transaction".

Navigation menu: **Z.LYNE** | About us | Contact us | Welcome, Varun

Left sidebar navigation:

- Search...
- Tables
- Maps
- Charts
- Settings

Main content area: **Ferry Transactions** Add a Ferry Transaction

Form fields:

- Truck Company: ACE Shipping
- Driver: John Doe - EZ Shipping
- Truck ID: ABCDEFG
- Chasis Number: Enter a Chasis Number
- Container ID ONE: Enter a Container Number
- Container ID TWO: Enter a Container Number
- Pick Up Address: Enter an Address
- Pick Up City: Enter a City
- Pick Up State: Enter a State
- Pick Up Zip: Enter a Zip

Change Profile Details :: x +

https://zlyne.com/account/change-password

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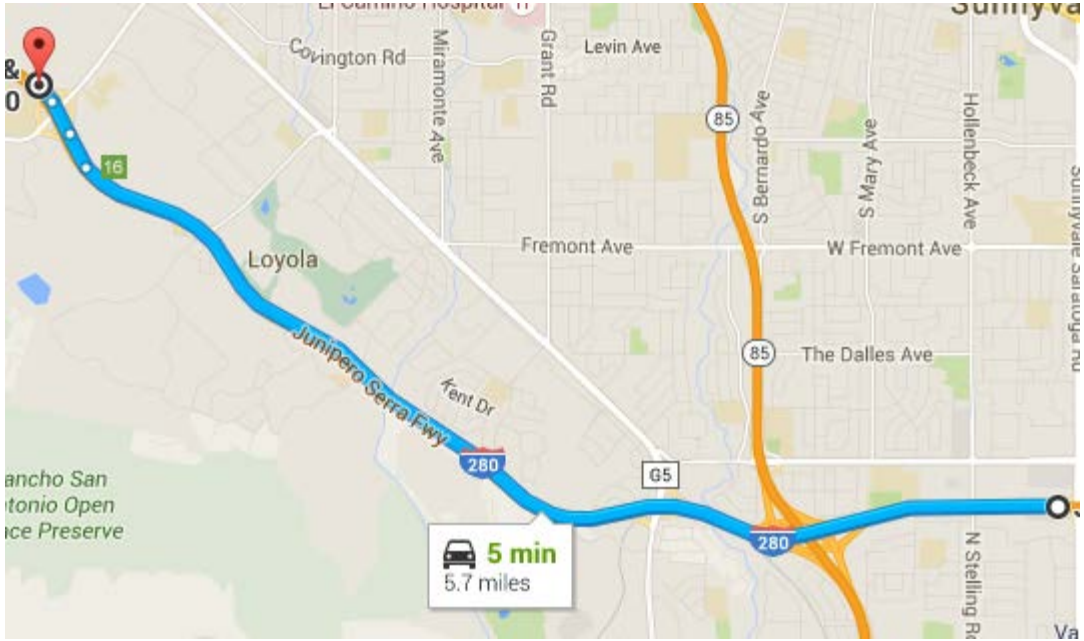
Current Password

New Password

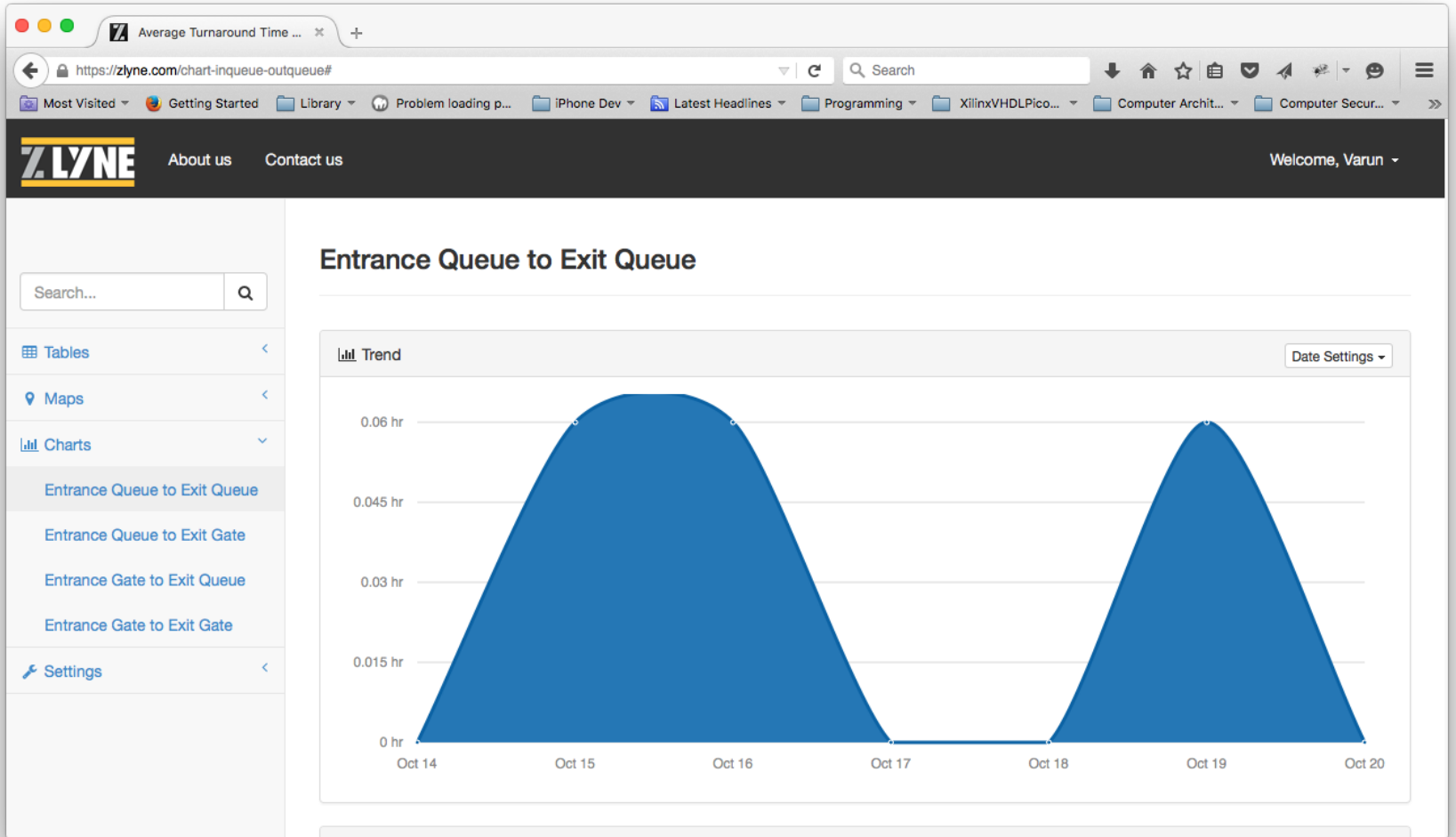
Confirm Password

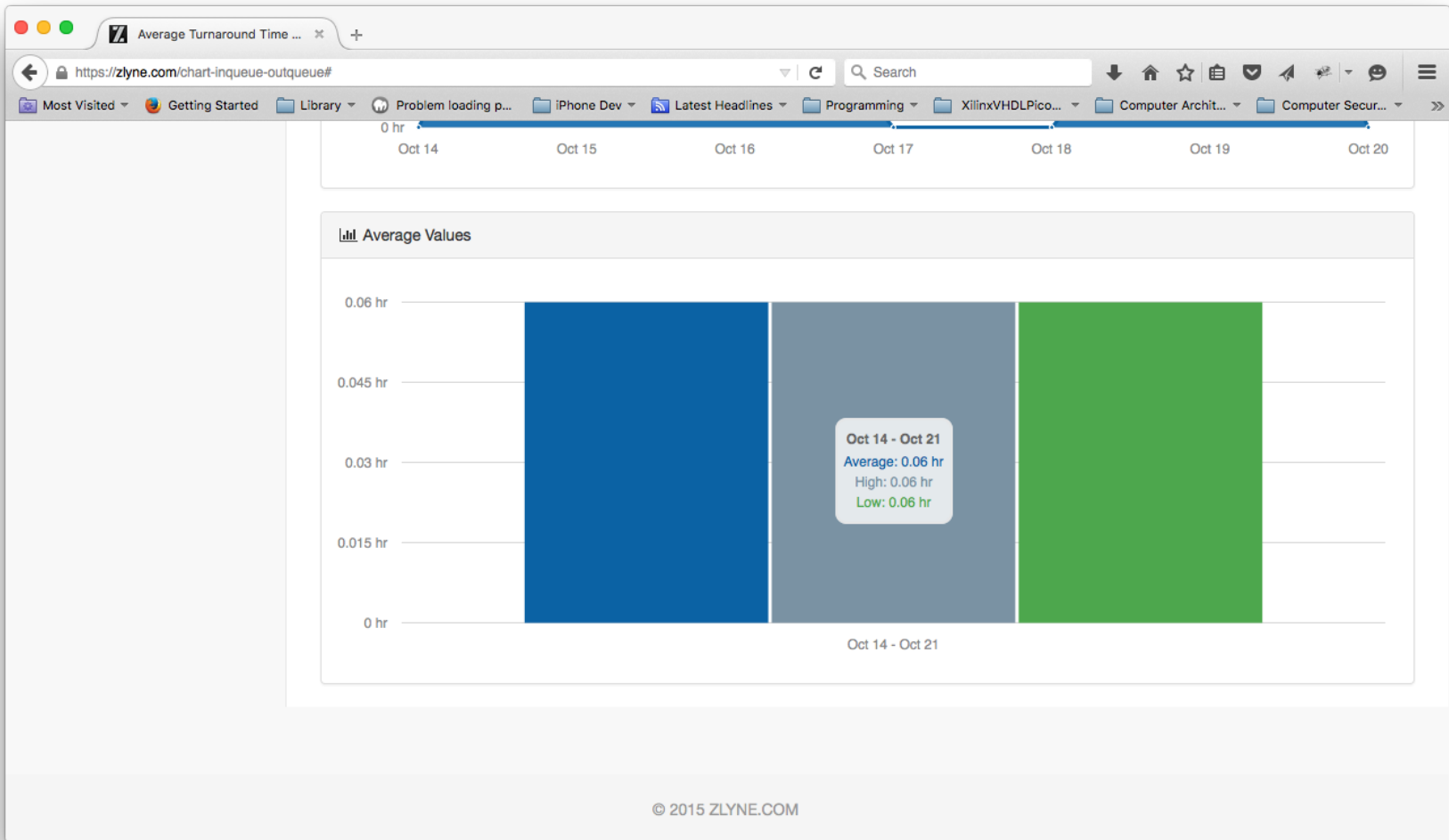
[I forgot my password](#)

x json Highlight All Match Case



Estimate distance between gates 5.7 miles







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Entrance Queue to Exit Queue

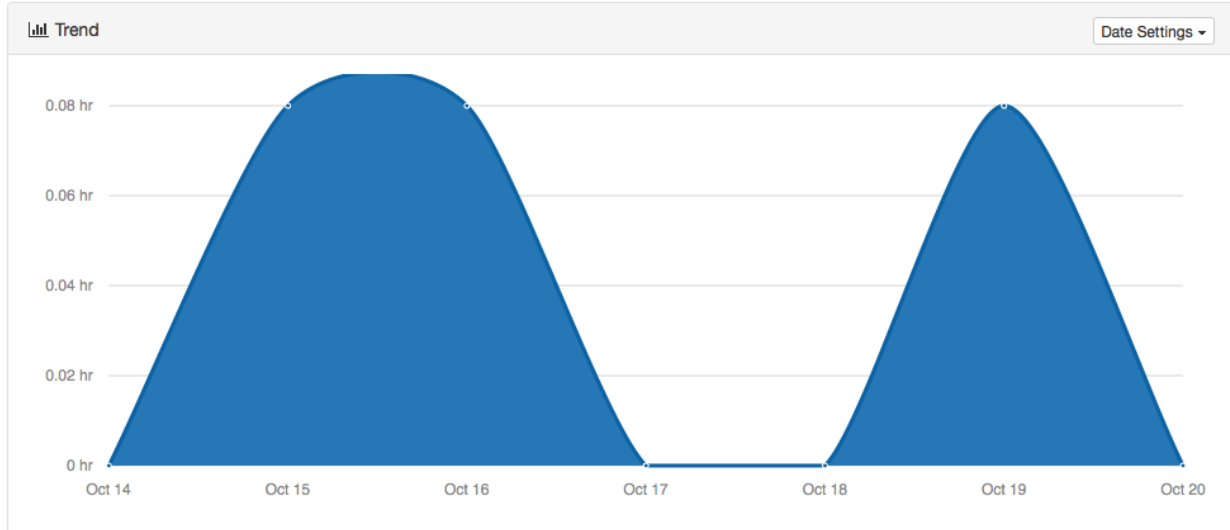
Entrance Queue to Exit Gate

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Entrance Queue to Exit Gate





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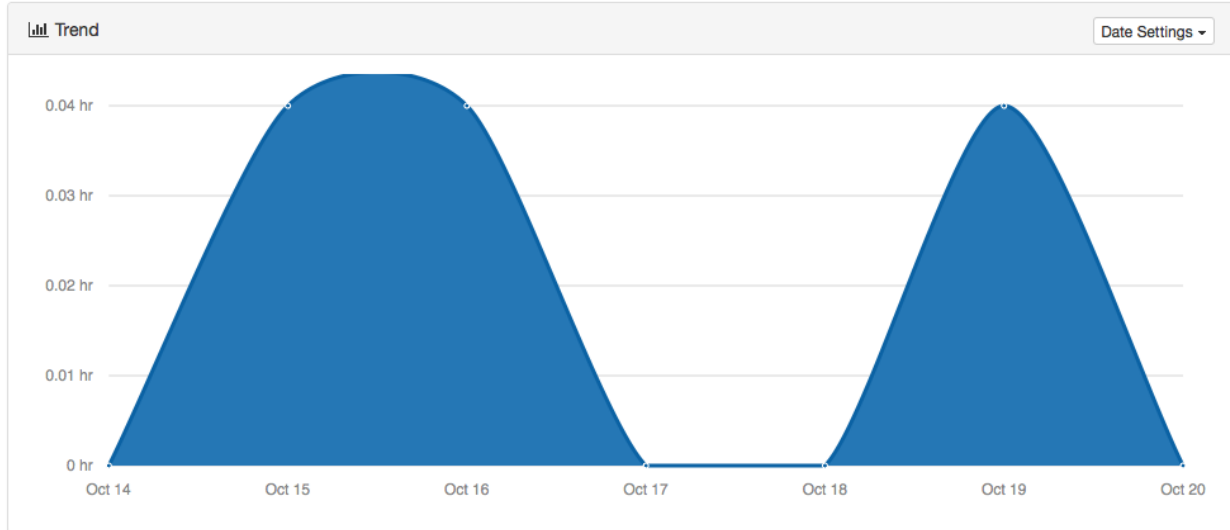
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Entrance Gate to Exit Queue





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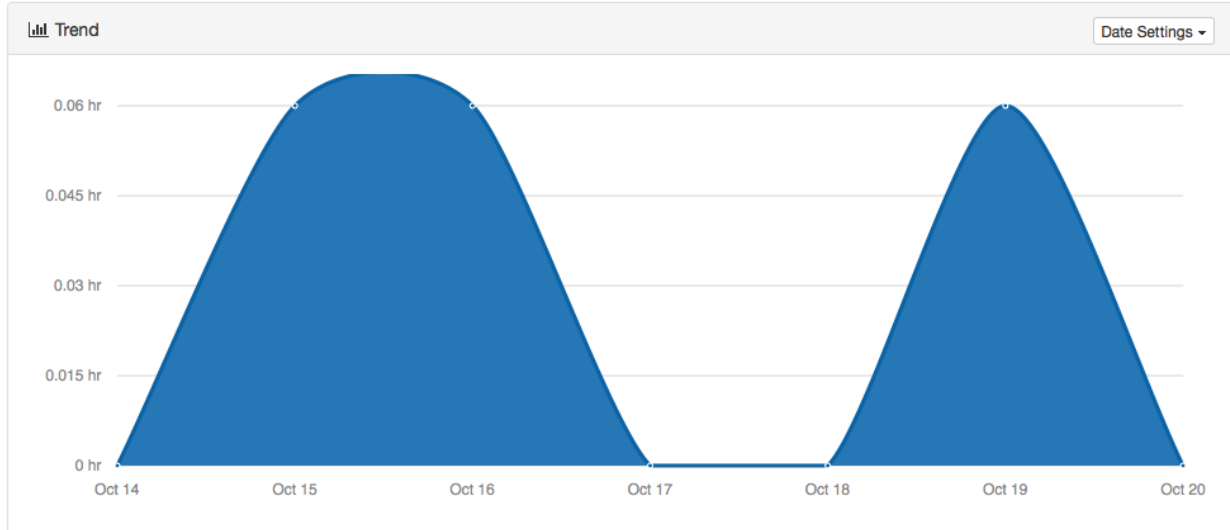
Entrance Queue to Exit Gate

Entrance Gate to Exit Queue

Entrance Gate to Exit Gate

Settings

Entrance Gate to Exit Queue



Conclusion and Future Work

A new low cost method of monitoring marine ports traffic

Transparent truck turnaround time and performance monitoring

Analysis of traffic data

Better planning by all parties based on traffic data

Acknowledgment

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Thank You

Demo