



Computing &  
Information Sciences

## Senior Project, Fall 2016 BOLO Flier Creator - Version 6



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### Problem

Police officers of Pinecrest Police Department constantly find misconduct and crimes during their shifts. The new information officers come across can be useful for other officers, not necessarily in the same department. The information should be available to be seen quickly by other officers and hidden from the public.

BOLO (Be On the Look Out) Flier Creator solves these problems by providing a secure, expandable, and fast web application to allow user from different Police Departments to view BOLOs. This has the potential to allow the police to solve crimes and find lost persons quicker.

### Current System

The system is hosted on a Linux server running:

- Node.js Backend
- Express
- Pug (Jade) Frontend
- MongoDB (NoSQL) Database

Version 5.0 of the system was built on the Cloudant DB, an IBM dependent database where all persistent data of the BOLO program is kept. Because of the security need by the Police Department, The database can not be hosted by another company. In version 6.0, the System was changed to and is currently being used by MongoDB, a secure NoSQL database, so that it can be hosted on a private server.

### Requirements

Requirements on the web application includes the following:

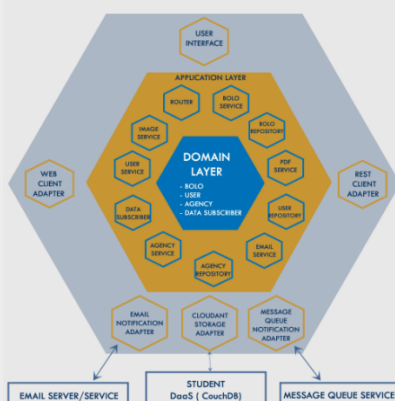
- Login with a user account
- Create, search, and View BOLOs
- Upload Photos for BOLOs and Agencies
- Ability To create different categories for different bolos
- Can Activate / Deactivate Users and Agencies
- Have a permanent Root user that has full control
- Edit webpages, such as "About Us" and "User Guide"
- Download data analytics for data analysis

### Implementation

The system/server can run on a windows or Linux platform. The Application is web based, so was built using HTML 5 and CSS 3 with Bootstrap and Bootswatch for theming on the client side. The pages for the clients are rendered using Pug, a frontend view engine for node formerly know as jade, that uses JavaScript on the DOM to display HTML elements. Node.js, with express, will run on the server for the application logic and website routing. The BOLOs, users and agencies are stored on the MongoDB database. Any emails for BOLO conformation and user creation are handled using Sendgrid, a secure email handler.

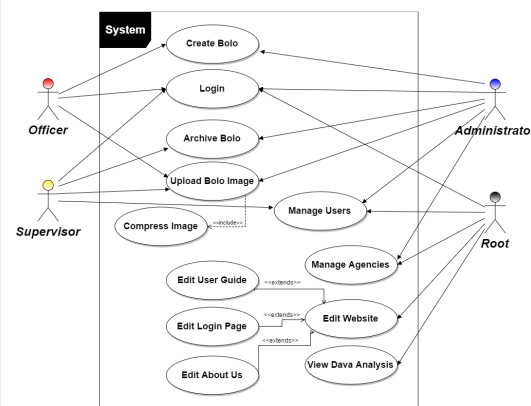
### System Design

The system was designed with a Client - Server and a Model-View-Controller architecture.



### Object Design

The functionality of the system is laid out below



### Verification

#### Unit Test

ID	BOLO_ImageCompression_1
Purpose	Sunny-day test to check if a large .jpeg image (>1 megabyte) is compressed to less than 500kb
Precondition	<ul style="list-style-type: none"> <li>• The user is signed in as an administrator</li> <li>• The node app is running</li> <li>• The node app is connected to database</li> </ul>
Input	*.jpeg image of size 1.38 megabytes
Expected Output	"Image is of size [<500KB]"

### Screenshots

#### BOLOs List ->

<- Example  
BOLO  
Details

### Summary

#### Web Application

This application is extremely useful for police officers to share information between each other. Now that the server and database will be hosted on Pinecrest agencies servers, The information will be secure and confidential between users.

#### Personal Experience

The project was a great experience. Working with the Pinecrest Police Department building on a existing web application was a great eye opener to what is to come in the future career of software development.

### Acknowledgements

I want to thank my team member Brian Zamora for being an excellent team player and assisting me during the development of BOLO Version 6.