

# Belal M. K. Said

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## Education

### Rutgers University-New Brunswick

09/2015 - 05/2019

Bachelors of Science in Computer Science

Dean's List (every semester)

GPA: 3.83/4.00

**Relevant Coursework:** Data Structures, Computer Architecture, Discrete Structures, Probability Theory, Artificial Intelligence, Circuits

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## Technical Skills

**Proficient:** C/C++, Java, Javascript (Node.js, JQuery), Python (numpy, pandas), C# (ASP.Net, WPF), Matlab, SQL (MySQL, MSSQL). **Familiar:** PHP, Go, IOS, Flask, CUDA. **Technologies:** Git, Bash, Linux, Windows, Visual Studio, Eclipse

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## Experience

### Colgate-Palmolive - Software Engineering Intern - Piscataway, NJ

06/2017 - Present

- Built and designed OMNIPAL, an all-knowing web application that uses natural language to expose multiple data APIs
- Built a RESTful API in Node.js to standardize voice command matching using MonogoDB as the NoSQL database
- Designed a library from scratch in javascript that generates simple machine learning models for OMNIPAL

### PRACSYS under Professor Kostas Bekris - Research Assistant - New Brunswick, NJ

06/2017 - Present

- Designed a path planner in C++ for Baxter's arm, a multi-jointed robotic arm with seven degrees of freedom, using Ceres Solver to solve the constraint system and then using A\* to find the optimal action-path

### SteerSuite under Professor Mubbasir Kapadia - Research Assistant - New Brunswick, NJ

06/2016 - 08/2016

- Coordinated with a team of PhD students to optimize SteerSuite, a crowd simulator written in C++
- Reduced simulation time by 17% by implementing bounding boxes and Dynamic Bounding Volume Hierarchies
- Designed and coded a C# plugin to incorporate SteerSuite into Autodesk Revit and make it user friendly

### AllState Insurance - Data Analysis Intern - Edison, NJ

06/2014 - 09/2014

- Designed an algorithm in python that uses decision trees to determine which customers are likely to switch
  - The algorithm uses a custom score to sort potential customers and optimize with feedback from customer service
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## Projects

### Speed Prediction (Matlab/Caffe) - github.com/belalmksaid/speed\_prediction

07/2017 - Present

- Predicted instantaneous speed of a moving car from a live dashcam video within  $\pm 1$  mile accuracy by using Farneback optical flow, a deep learning network, and exponential moving average

### PacmanAI Lab (Javascript) - github.com/belalmksaid/PacmanAILab

01/2017 - Present

- Implemented genetic algorithm with simple neural networks to teach an AI how to play pacman in javascript
- Built a simple framework from scratch to emulate multithreaded applications to avoid freezing the browser

### Internet of Things (Javascript/Node.js) - github.com/belalmksaid/loi

01/2014 - 03/2017

- Connected home electronic devices such as lamps, a fridge, a microwave, and a minivan to the internet using electrical IMPs and mapped them to a Node.js server
- **Won Internet of Things award from Intel at PennApps 2014**

### C# Raytracer (C#/C++) - github.com/belalmksaid/Disque-Raytracer

07/2014 - 08/2016

- Developed a raytracer from scratch based on the book *Physically Based Rendering* by Matt Pharr. The goal of the project is to optimize raytracing using supersampling combined with multithreading and GPU assistance
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## Extracurriculars

### IEEE - PacBot Team Captain - github.com/belalmksaid/PacBotCode

10/2015 - Present

- Created an algorithm for the bot to navigate a maze and avoid the ghosts, optimized in Assembly to run on teensyduino. The robot was designed using a custom PCB circuit and a 3D printed body
- **Won first place at Harvard PacBot Competition 2017**