

# Krutarth Rao

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## Objective

Use Computer Science knowledge to efficiently solve real world problems through an internship.

## Education

Bachelor of Science in **Computer Science** (Expected: May 2018)

Minor in Economics

Overall GPA: 3.82

## Relevant Coursework

C/C++, Python, Java, Discrete structures, Data Structures and Algorithms, Computer Architecture, Systems programming, Scientific writing and Presentation, Micro, Macro & Managerial Economics, etc.

## Experience and Course Projects

- **Memory allocator in C (2016)**  
Implemented memory allocator in C for systems programming course. Utilized coalescing on free list data structure on heap memory space. Also covered memory allocation by C and C++ of runtime objects to the memory's Heap, Stack or BSS. Used debugging tools like gdb and ddd
- **Unix Shell (2016)**  
Designed a UNIX compatible shell with IO Redirection between commands, Pipes between commands, Background and Zombie process handling, Environment variables, cd command, Wildcarding, signal handling, Robustness (limiting the no. of crashes), subshell, tilde expansion and Line editor. Coded in C and utilized Valgrind for debugging.
- **HTTP server in C (2016)**  
Implemented a HTTP server in C to process browser/HTTP requests and offer directory browsing using a TCP connection through sockets.
- **Airline tickets (2015)**  
Implemented Dijkstra's, Prim's, Eulerian tour and Binary heap data structure to select airline tickets for shortest path and etc. in a graph data structure in C++ using adjacency list. Also used pointers and templates to create data structures like Single/Double Linked Lists and generic Array Lists in C++ for similar projects.
- **Qt based flowchart designer in C/C++ (2015)**  
Extended a full GUI application with the Qt API. Application was a basic diagram designer for generic flowcharts using 2D shapes. Project required efficient utilization of data structures, understanding a new API and documentation in C++.
- **Server and Client application, Parallel programming and OOP in JAVA (2014)**  
Developed a multithreaded Server and client application using SocketServer API over LAN and WAN for the backend of the Purdue SafeWalk application. A team project requiring good work division and time coordination to efficiently pool together each member's work. Also covered stream IO over networks and utilizing various Java library data structures such as Hash maps, Stacks, Queues etc.

## Leadership and Activities

- **Recipient of Purdue Summer Stay Scholarship & Research position in Cryptography team**  
Received a scholarship for full tuition for summer classes along with a research position in the computer science program at Purdue University. Currently working in a research team to use cryptography primitives in a non-disclosure communication protocol. Key tools being used include watermarking, digital signatures, Bitcoin, etc.
- **CS180: Java Programming Undergraduate Teaching Assistant at Purdue (Paid position)**  
Recruited by the teaching staff to assist in teaching the course for the semesters to follow. Explained features/techniques students can use to solve the given problem with JAVA. Also helped debug student's code.
- **Officer at Purdue Boxing Club (as of 2014)**  
Elected in a leadership role at the PBC. Driving the club to improve visibility on digital platforms and social media.
- **Cambridge International AS and A Level Applied Information and Communication Technology**  
Set the record for the highest grade attained at my High School for applied ICT at AS level in 2014. Also attained the best overall results in the Cambridge international GCSE in my high school.
- **Member of National Kenya Under-19 Cricket Team (as of 2013)**  
Member of the Under-19 camp in the 2013 and played under the current Kenyan captain in a franchise team.