

# Neal Karpe

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## Work Experience

- Summer '18 **Software Engineering Intern**, *ARRIS*, Sunnyvale, California, USA.  
Worked in 'Ruckus IoT' division at Ruckus Networks (an ARRIS company) HQ. Contributed 4000+ lines in the product's front-end source code. Also developed a Simulator software for IoT Gateways and End-Points. The Simulator uses multithreaded MQTT clients with a common state database, and simulates a wide range of Zigbee/BLE IoT device profiles & capabilities.
- Winter '17 **Mobile Application Development Intern**, *Froogal.in*, Hyderabad, India.  
Developed a cross-platform mobile application which connects highway travelers with restaurants. Provides restaurants located on highways with map-based tracking of customer's location, so that the order can be kept ready by the time the customer arrives.

## Education

- 2016–2020 **B.Tech (Hons.), Computer Science and Engineering**, *International Institute of Information Technology (IIIT)*, Hyderabad, India, *CGPA - 8.87/10*.
- 2014–2016 **Senior Secondary**, *Telangana Board of Intermediate Education*, *Sri Chaitanya Junior College*, Hyderabad, India, *Percentage - 97.5*.
- 2012–2014 **Secondary**, *CBSE*, *Oakridge International School*, Hyderabad, India, *CGPA - 10/10*.

## Research

- August 2018 – present **Honours Research**, *Data Sciences and Analytics Center*, IIIT Hyderabad.  
Working on a 'Research Paper Sequence Suggestion' project under Dr. Vikram Pudi.

## Skills

- Languages C, C++, Python, Ruby, JavaScript, Racket, MIPS (Assembly Language), Bash, MATLAB
- OS GNU/Linux, Windows
- Web Dev HTML5, CSS, Bootstrap, jQuery, AJAX, ReactJS, Redux
- Frameworks Flask, Ruby on Rails, React Native, OpenGL
- Databases MySQL, SQLite, XQuery, Solr, Neo4j

## Projects

- Python **Ultimate Tic-Tac-Toe (UTTT) Bot**, (*Team of 2*).  
Developed an agent that guesses the optimal move using minimax algorithm with alpha-beta pruning, and a smart heuristic function. Placed 2<sup>nd</sup> in AI-course UTTT tournament out of 75 bots.
- C **Linux Shell**.  
Created a bash shell with features like piping, redirection, background & foreground processes, etc.
- Python **Proxy Server**.  
Used socket programming to develop an HTTP web proxy server that caches web pages.
- Flask, JS & SQL **Photo Gallery Web Application**.  
Built an Instagram-like web application using Flask, JavaScript, and SQL.

- Python **Bomberman game.**  
Developed a terminal-based Bomberman game in Python, without the help of any libraries like pygame, ncurses, etc.
- Ruby on rails **Quiz Portal.**  
Developed a state-restoring quizzing application using Ruby On Rails.
- HTML5, CSS & Flask **Felicity Buzz Website.**  
As a team, developed University Fest website using HTML5, CSS, and Flask.
- C++ **2D Animated Game.**  
Built an arcade game (inspired by 'Pacman Killer') in C++ using OpenGL. Incorporated laws of physics and various real-world phenomena (gravity, sinking in water, magnetic field, etc.) into the game.
- C++ **3D World.**  
Made a complex 3D world emulation using OpenGL in which the user operates a boat and shoots monsters. Implemented many detailed features (wind, booster, coins, bosses, etc.) as well as camera views.

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## Achievements & Co-Curriculars

- **Dean's List '17:** Top 5% in academics in Spring 2017.
- **JEE Advanced:** Ranked 2185 (top 0.01% in India) in Joint Entrance Exam (JEE) Advanced.
- **SAT Subject Tests:** Scored 800/800 in Mathematics, Physics and Chemistry.
- **Piano:** Awarded Grade 5 Piano Certification by Trinity College, London.
- **Basketball:** Represented Oakridge International School in CBSE National Basketball Meet 2013. Won two city Inter-School Tournaments as part of the same team.

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## Relevant Courses Taken

Statistical Methods in AI, Data Warehousing and Data Mining, Introduction to Databases, Artificial Intelligence, Computer Programming, Data Structures, Algorithms, Discrete Mathematics, Group Theory & Complex Algebra, Complex Integrals & Probability Theory, Formal Methods, IT Workshop I & II, Structured Systems Analysis & Design, Computer Architecture, Operating Systems, Computer Networks, Digital Signal Analysis & Applications, Graphics