# Alekh Karkada Ashok


CONTACT INFORMATION

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RESEARCH INTERESTS

Convolutional Neural Networks, Recurrent NN, Machine Learning, Image and Signal processing.

EDUCATION

**RV College of Engineering, India** **July 2014 - Present**

*Bachelor of Engineering*

- Selected to Team Vyoma - Student UAV team (20 students selected from 1500 applications)
- Selected to Ashwa Racing - Race car project (30 students selected from 1200 applications)
- Received **A** grade in 8 courses (Awarded for Outstanding Performance in a course)

**Jawahar Navodaya Vidyalaya, Chikmaglur** **March 2009 - March 2014**

- AISSE (CBSE Board) - scored CGPA of **10/10** **2012**
- AISSCE (CBSE Board) - scored **94.4%** **2014**

SCHOLASTIC ACHIEVEMENTS

- Cleared **JEE Mains 2014** - taken by 1.3M students
- Cleared **JEE Advanced 2014** - taken by 150K students
- Secured a rank of **744 (99.6th percentile)** at the Common Entrance Test taken by more than 200K students
- Qualified at **Indian National Math Olympiad - 2013**
- Awarded the **Summer Research Internship** at 1byZeroLabs, Bangalore among 100 applications.
- Received **Academic Excellence Award** for academic year 2012-13 and 2013-14 for outstanding academic performance at JNV Chikmaglur
- **Represented the state** of Karnataka in National Level Science Exhibition.
- Secured **first place** in Oracle India Quiz - 2016
- Secured **first place** in HackMania Bangalore hackathon
- Secured AIR (All India rank) 12 in the **National Olympiad of Science** 2012 (conducted by SSE)
- Secured AIR 23 at **National Cyber Olympiad 2012**
- Awarded AIR 8 in the **National Science Talent Search Examination** 2013 (by Unified Council)
- Selected for the **RVCE Android App development team**

EXPERIENCE

– **Software Engineering Intern at Walmart Labs** **January 2018**

Offered the role of Software Engineering Intern at Walmart Labs, Bangalore.

– **Research Intern at 1byZero Labs** **June 2016 - January 2017**

Worked directly under *Mr. Kevin Roy* (CTO, 1byZero Labs) on various research projects. Have worked on utilizing cutting edge technologies like Deep Learning for real life solutions.

– **Lead Programmer at Team Vyoma** **June 2015 - May 2016**

Worked under the supervision of *Prof. R S Kulkarni* (HOD, Aerospace Dept.) on various projects related to UAVs and Drones. Worked on improve Autopilot System. Improved the capability of the sensors used, by error estimation. Have worked on sensor fusion.

ONGOING PROJECTS

**Deep Learning approach to Video Compression** *January 2017 - Present*

*Advisor - P Nagaraju, ME(PhD)*

- Developing techniques to predict frames from previous frame info.
- Developing various coding schemes with an eye for real life implementaion.
- Developing using Keras with TensorFlow backend.

COMPLETED PROJECTS

**Human body part estimation using CNNs** *October 2016 - Jan 2017*

*Advisor - Mr. Kevin Roy(CTO, 1byZeroLabs)*

- Designed a system to estimate human pose from single depth images.
- Interfaced Texas Instruments ToF camera to acquire depth images of subjects.
- Developed algorithms to predict bone joint positions so as identify the gestures being executed.

**Forest Fire detection system prototype using Deep Learning** *April 2017*

*Detects forest fires in dense forests and aids in fire control*

- Forest areas are scanned using satellite images continuously and monitored for fires.
- On detection, people and fire fighters nearby are alerted using android app.
- Estimates fire front advancement and plans out control lines based on wind, humidity etc

**Hey Avika!** *August- September 2016*

*Voice controlled home automation system like Google Home for the blind*

- Developed a voice controlled system for blind people to help in their day-to-day activities. The system accepted voice commands and all outputs were voice - alleviating the need for point-click or keyboard which is very tough/impossible for the blind.
- Responded to commands like "play music", "search for", "navigate" etc.
- Implemented OCR functionality to read books when the user issues "read book" command.
- Implemented home automation to control appliances like light bulbs, fans etc. through voice commands.

**Self driving car using OpenCV** *October 2016*

*Trained and implemented a neural network to drive a car.*

- Aimed at making self driving feature available to all cars. Made a system which can be used as an add-on over existing cars.
- Trained a Neural Network using OpenCV. The whole system was built with least cost possible.
- Added multi-threading to significantly reduce the latency of the system.
- The system was considered to be one of the best at Mercedes-Benz hack.bangalore.

**Official RVCE 8th mile Android App** *Dec 2016-Jan 2017*

*Android app for the RVCE annual fest -8th mile*

- Selected to Official Android App team for the RVCE's official fest.
- Made an Android App which listed retrieved all the events from a remote server and displayed them a custom UI.
- Implemented functionality to 'register', 'add to wishlist' and 'like' events.
- Implemented a feature to contact for help, aimed at students from other colleges.
- The app can guide visitors to locations in the college.

**Water leakage detection system** *Oct-Nov 2016*

*Water leakage detection using just sound*

- Aimed at making the cheapest device possible. Whole device would cost less than 1 USD
- Devised methods to detect water leakage with only sound.

**Luxury car controller Android App** *July 2016*

*Android app to control various systems inside a Luxury car*

- Made an Android App which communicated via BlueTooth to control various systems inside the car
- The app can control the music system, seat recline and lights inside the car
- Implemented by a luxury car company in Bangalore

**Distress call system** *Jun-July 2016*

*IoT based device designed to in times of distress*

- Designed a device which can send the location, small audio clip to a designated number on click of a button
- Designed to as small as possible so that it can be worn as an ornament.

**Occupancy detector using Passive Infrared Sensor** *March 2016*

*A device which can be used to detect presence of human beings in a room*

- Developed a device which can detect the occupancy of a room and relay it to a server.
- The occupancy of the room can be viewed via Internet or local network.
- Ideal for washrooms or check if professors are in their cabin beforehand.

RELEVANT COURSES

- Linear Algebra and ODE
- Data Structures and Algorithms
- Math I, II, III & IV
- Computer Organization
- Introduction to Logic
- Operating Systems
- Programming in C Languages
- Digital Signal Processing
- Machine Learning[1]
- Digital Image Processing
- Microprocessors and Microcontrollers
- Neural Networks for Machine Learning[2]
- Computer Networks
- Convolutional Neural Networks[3]
- Analog Electronics
- Analog Communication
- Digital Modulation and Coding

SKILLS

- **Programming Languages**
  C, C++, Python, Java, MATLAB, Bash, HTML, CSS, JavaScript
- **Other Tools**
  TensorFlow, Keras, Scikit-learn, Git, LaTeX, Android SDK
- **Communication**
  **Proficient** - English, Hindi, Kannada, Malayalam

HACKATHONS

- NASA-SAP Labs SpaceApps Challenge
  - **Final 5 among 78** teams.
- HackMania Series
  - Secured **First place**.
- Robert Bosch Connected Machines Hackathon
- Mercedes Benz Hack.Bangalore

[1]Offered by Prof. Andrew Ng, Stanford University on Coursera.org
[2]Offered By Prof. Geoffrey Hinton on Coursera.org
[3]Offered by Andrej Karpathy et al., Stanford University