

# GAUTHAM KRISHNA GUDUR

## Research Assistant

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## EXPERIENCE

### Research Assistant

#### Solarillion Foundation

📅 Feb 2016 – Ongoing    📍 Chennai, India

- Leading a team of four to develop a Human Activity Recognition system robust to mobile-sensing heterogeneities using Deep Learning.
- Developing a real-time Occupancy Prediction engine for a show in collaboration with one of the top 3 movie multiplex chains in India.
- Led a team of five and worked on a Dynamic Gesture Recognition system using accelerometers with Machine Learning approaches.

### Teaching Assistant

#### Solarillion Foundation

📅 Jan 2017 – Ongoing    📍 Chennai, India

- Mentored students by helping them develop their approach towards problem-solving and taught them fundamental concepts in programming and embedded systems.

### Undergraduate Student Researcher

#### SSN College of Engineering

📅 Feb 2015 – Mar 2017    📍 Chennai, India

- Worked on a funded HCI research project of Neurocinematics, where real-time cognitive responses of film viewers are captured using EEG.
- Worked on choosing the best-suited mote for two IoT scenarios, by analyzing their RPL performance metrics on a Contiki testbed.

## PUBLICATIONS

### 👥 Conferences

- "HARNet: Towards On-Device Incremental Learning using Deep Ensembles on Constrained Devices." Accepted at 2nd International Workshop on Embedded and Mobile Deep Learning (Co-located with ACM MobiSys 2018).
- "A Generic Multi-modal Dynamic Gesture Recognition System using Machine Learning." Presented at IEEE Future of Information and Communication Conference (FICC 2018), Singapore.
- "Electroencephalography Based Analysis of Emotions Among Indian Film Viewers." Presented at International Conference on Advanced Informatics for Computing Research (ICAICR 2017), Springer.
- "Analysis of Routing Protocol for Low-power and Lossy Networks in IoT Real Time Applications." Presented at 4th International Conference on Recent Trends in Computer Science & Engineering (ICRTCSE 2016), Procedia Computer Science, Elsevier.

### 📄 Poster

- "Neurocinematics: The Intelligent Review System." Presented at 3rd International Conference on Cognition, Brain and Computation (CBC 2015), IIT Gandhinagar.

## EDUCATION

### B.Tech in Information Technology

#### Anna University (SSN College of Engineering)

📅 Grad. Apr 2017    📍 Chennai, India

Cum. GPA: 7.41/10 - First Class

### HSC (Class XII)

#### DAV Higher Secondary School, Gill Nagar

📅 Grad. May 2013    📍 Chennai, India

Scored an overall of 94.25%

### AISSE (Class X)

#### SBOA School & Junior College

📅 Grad. May 2011    📍 Chennai, India

Cum. GPA: 10/10

## SKILLS

### Programming

Expert Python C C++  
Intermediate R Java HTML/CSS  
JavaScript PHP Bash  
Basic Android SQL

### Hardware & Software

Arduino Raspberry Pi  $\LaTeX$   
Linux (Ubuntu) Contiki OS Octave  
Git Microsoft Office Suite

### Tools & Frameworks

Numpy Scipy Pandas Keras  
PyTorch Scikit-Learn TensorFlow  
NLTK Flask AWS

## AREAS OF INTEREST

Machine/Deep Learning IoT  
Activity Recognition Computer Vision  
Gesture Recognition NLP  
Cognitive Computing

## NOTABLE PROJECTS

### Movie Occupancy Prediction Engine

**Solarillion Foundation**

📅 Sep 2017 – Ongoing

**Tools & Framework:** Python | Pandas | MS-SQL | Scikit-Learn | PyTorch

Extracted nearly 10 TB of transactional data (over past 5 years) using AWS, structured them using MS-SQL & extracted behavioral features to forecast show occupancy of a movie. Currently working on deploying a beta application into production.

### Intelligent Bus Stop Recognition System

**Undergraduate Thesis, SSN College of Engineering**

📅 Jan 2017 – Apr 2017

**Language & Platform:** Python | Numpy | Anaconda | RaspberryPi Zero

Developed a recognition engine on a Raspberry Pi Zero platform that automatically identifies bus stops using images (dataset) acquired from cameras placed on a bus using a hybrid nearest-neighbor classifier.

### Gest-Face

**Personal Project**

📅 April 2017

**Language & Framework:** Python | OpenCV | HaarCascade | PyQt5

Developed a Gesture/Facial recognition system that can recognize gestures, as well as detect the number of faces of users in real-time. The system was rendered as an application using PyQt5.

### Deep Learning Projects

**Online Coursework & Kaggle**

📅 May 2017 – Ongoing

**Language & Framework:** Python | Numpy | PyTorch | Tensorflow

- Completed Stanford's graduate Deep Learning course CS231n: Convolutional Neural Networks for Visual Recognition, Udacity Deep Learning.
- Datasets used:
  - CIFAR-10 (CV)
  - notMNIST (CV)
  - Street View House Numbers (CV)
  - Text8 - Wikipedia (NLP)

### Real-Time Sentiment Analyzer of Twitter Trends

**Personal Project**

📅 Dec 2016

**Language & Framework:** Python | NLTK | Scikit-Learn | Tweepy | PyQt5

Implemented an application that gives the live Twitter trend graph of a tweet using an ensemble voting and a TextBlob classifier. The real-time mood (pos/neg) of the scraped tweets is presented to the user.

### Speed Control of DC Motor using Arduino

**Solarillion Foundation**

📅 Feb 2016

**Platform & Hardware:** AtMega328 | 12V DC Motor | IR Sensor

Devised a feedback based algorithm using Proportional controller to automatically self-stabilize the error between Reference speed and Measured speed ( $\pm 4$  RPM) of a 12V DC Motor with external load.

## COURSEWORK

### Undergraduate

- Programming & Data Structures: I & II
- Operating Systems
- Database Management Systems
- Design & Analysis of Algorithms
- Artificial Intelligence
- Compiler Design
- Data Warehousing & Data Mining
- Grid & Cloud Computing
- Data Analytics

### Online Certifications (MOOCs)

- **University of Washington | Coursera**
  - Machine Learning Specialization (4 courses)
  - A Case Study Approach
  - Regression
  - Classification
  - Clustering & Retrieval
- **Stanford University | Coursera**
  - Machine Learning
- **UC-San Diego | Coursera**
  - Algorithmic Toolbox
  - Data Structures
- **John Hopkins University | Coursera**
  - R Programming

## ACHIEVEMENTS

### Scholastic

- **97<sup>th</sup> percentile in HackerRank (Algorithms Domain)**
- Undergraduate **Financial Research Grant of INR 24,000** by College Management
- Certification of Merit for Grade A1 in all subjects in AISSE
- Top 10 percentile in 42<sup>nd</sup> National Mathematics Talent Competitions
- 86<sup>th</sup> percentile in 13th National Science Olympiad (NSO)

### Non-Scholastic

- Division/State Badminton Player (Under-19)
- Event Organizer of "Data Nuggets" - a Data Science event, Invente2k16
- Completed all 10 levels of UCMAS Mental Arithmetic (Abacus)
- 29<sup>th</sup> Rank overall in Grade 3 Keyboard