GAUTHAM KRISHNA GUDUR

Machine Learning Engineer & Independent Researcher

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📍 Chennai, India   🔗 gauthamkrishna-g.github.io   ⭕ github.com/gauthamkrishna-g   </> hackerrank.com/gauthamkrishna_g

EXPERIENCE

Machine Learning Engineer
SMARTCARDIA (EPFL)

📅 May 2018 – Nov 2018   📍 Chennai, India

Developing insightful **machine learning, deep learning models** and **feature engineering** for analysis of various biomarkers in patients, thereby providing unique health insights. Frameworks mostly used: **Python**, **scikit-learn**, **TensorFlow**, **Weka**.

Research & Teaching Assistant
SOLARILLION FOUNDATION

📅 Feb 2016 – July 2018   📍 Chennai, India

- Co-led a team of four to develop **Deep Learning** ensemble models for **Human Activity Recognition (HAR)** system on constrained devices.
- Developed a real-time **Occupancy Prediction engine** for a movie in collaboration with one of the **top 3 Indian movie multiplex chains**.
- Led a team of five and worked on a **Dynamic Gesture Recognition** system using accelerometers with Machine Learning approaches.
- Mentored students by helping them develop their problem-solving approaches in programming & 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

- <u>Gautham Krishna Gudur</u>, Prahalathan Sundaramoorthy, **"ActiveHARNet: Towards On-Device Deep Bayesian Active Learning for Human Activity Recognition"**, WristSense '19 workshop, @IEEE PerCom 2019 (Submitted).
- <u>Gautham Krishna Gudur</u>, Ateendra Ramesh, Srinivasan R, **"A Vision-based On-Device Scalable & Intelligent Bus Stop Recognition System"**, PerAwareCity '19 workshop, @IEEE PerCom 2019 (Submitted).
- Prahalathan Sundaramoorthy, <u>Gautham Krishna Gudur</u>, Manav Rajiv Moorthy, R Nidhi Bhandari, Vineeth Vijayaraghavan, **"HARNet: Towards On-Device Incremental Learning using Deep Ensembles on Constrained Devices"**, 2nd International Workshop on Embedded and Mobile Deep Learning (EMDL '18), @ACM MobiSys 2018.
- <u>Gautham Krishna G</u>, Karthik Subramanian Nathan, Yogesh Kumar B, Ankith A Prabhu, Ajay Kannan, Vineeth Vijayaraghavan, **"A Generic Multi-modal Dynamic Gesture Recognition System using Machine Learning"**, Future of Information and Communication Conference (IEEE FICC) 2018.

RESEARCH INTERESTS

Deep Learning   Ubiquitous Computing   Applied Machine Learning   Algorithms   Computer Vision   Active Learning   Physical Activity Sensing   IoT Analytics   Health-care Informatics   NLP

SKILLS

Programming

Expert Python   C/C++

Intermediate Java   SQL   HTML/CSS   JavaScript   Bash

Basic Android   R   Octave

Hardware & Software

Arduino   Raspberry Pi   LaTeX   Git   Linux   Windows

Tools & Frameworks

NumPy   Pandas   TensorFlow   Keras   Scikit-learn   PyTorch   OpenCV   NLTK   PySpark   Flask   Weka   AWS

EDUCATION

B.Tech in Information Technology
Anna University

📅 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%

REFEREES

Vineeth Vijayaraghavan
✉ Director, Solarillion Foundation
Dr. Srinivasan Murali
✉ CEO, SmartCardia SA, EPFL
Prof. Srinivasan R
✉ Professor, SSN College of Engineering
Prof. Bhalaji N
✉ Assoc. Prof., SSN College of Engineering

- **Gautham Krishna G**, Krishna G, Bhalaji N, **"Electroencephalography Based Analysis of Emotions Among Indian Film Viewers"**, Advanced Informatics for Computing Research, Springer, ICAICR 2017.
- **G Gautham Krishna**, G Krishna, N Bhalaji, **"Analysis of Routing Protocol for Low-power and Lossy Networks in IoT Real Time Applications"**, Procedia Computer Science, Elsevier, ICRTCSE 2016.

📄 Poster

- N Bhalaji, G Krishna, **G Gautham Krishna**, **"Neurocinematics: The Intelligent Review System."**, 3rd International Conference on Cognition, Brain and Computation (CBC 2015), Indian Institute of Technology (IIT), Gandhinagar.

NOTABLE PROJECTS

Intelligent Bus Stop Recognition System

Undergraduate Thesis, SSN College of Engineering

🗓 Jan 2017 – Apr 2017

Tools & Framework: Python | Numpy | TensorFlow | Raspberry Pi
Developed an embedded vision-based bus stop recognition engine, using **ConvNets** & **hybrid nearest-neighbor classifiers**. **Data augmentation**, **Incremental Learning** and **Bayesian Active Learning** strategies were simulated for bus-stop scalability.

Movie Occupancy Prediction Engine

Solarillion Foundation

🗓 Sep 2017 – Mar 2018

Tools & Framework: Python | Pandas | MS-SQL | scikit-learn | Keras
Dealt with terabytes of transactional data ($\sim$5 years), structured them and extracted behavioral features to forecast the movie occupancy ($\pm$6 MAPE) using statistical **time-series algorithms** and **Recurrent Neural Nets**. Deployed the beta application into production.

Machine Learning/Deep Learning Projects

Online Coursework, Kaggle, Personal

🗓 May 2017 – Ongoing

Tools: Python | Numpy | scikit-learn | OpenCV | TensorFlow | GraphLab
Projects and datasets like: ● **TamilNIST**: Live Tamil Character Recognition ● CIFAR-10, notMNIST, Image Captioning, Text8- Wikipedia ● Machine Learning MOOC projects & assignments. Kindly visit my **Github page** for implementations.

OTHER PROJECTS

Active Learning & handling Incremental Data Imbalance:
Currently working on **Bayesian active learning** strategies and utilizing data augmentation in image & sensor data, thereby **handling class data imbalance** during incremental learning.

YOLO Object Detector: Developed an object recognition module using **YOLO v3**, **OpenCV** and **PyQt5**, that provides accurate real-time bounding boxes on images & videos with confidence scores.

Real-Time Sentiment Analyzer of Twitter Trends: Implemented an application using **NLTK** and **scikit-learn** to graph the real-time Twitter mood trend (pos/neg) using **ensemble voting** and **TextBlob classifier.**

COURSEWORK

Undergraduate

- Programming & Data Structures: I & II
- Operating Systems
- Database Management Systems
- Design & Analysis of Algorithms
- Artificial Intelligence
- Compiler Design
- Data Warehousing & Data Mining
- 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
- **Google | Udacity** - Deep Learning
- **Stanford University** - CS231n
- **fastai** - fastai

HONORS & AWARDS

Scholastic

- **97th 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 42nd National Mathematics Talent Competitions

Non-Scholastic

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