GAUTHAM KRISHNA GUDUR

Machine Learning Engineer & Independent Researcher

@ gauthamkrishna.gudur@gmail.com 📞 +91 969.814.1161 🎂 12-May-1996 in linkedin.com/in/gauthamkrishna-g
📍 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

- Developed insightful **machine learning, deep learning models** for analyzing **biomarkers** like Sleep apnea, Troponin, Hemoglobin, Blood Pressure & Glucose, to provide unique insights into patients' health.
- **Engineered features** for imbalanced time-series clinical data, and modeled classification & regression architectures using ensembled tree-based algorithms and Recurrent neural networks (LSTMs).

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

- **Gautham Krishna Gudur**, Prahalathan Sundaramoorthy, **"ActiveHARNet: Towards On-Device Deep Bayesian Active Learning for Wearable Activity Recognition"**, IEEE BSN 2019 (Submitted).
- Prahalathan Sundaramoorthy, **Gautham Krishna Gudur**, 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.
- **Gautham Krishna G**, 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).
- **Gautham Krishna G**, Krishna G, Bhalaji N, **"Electroencephalography Based Analysis of Emotions Among Indian Film Viewers"**, Advanced Informatics for Computing Research, Springer, ICAICR 2017.

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

- **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** and **Incremental 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