

ANIRUDH AJITH

Indian Institute of Technology Madras

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Education

Indian Institute of Technology Madras <i>B. Tech, Computer Science and Engineering; CGPA: 9.51</i>	2018 – 2022 <i>Chennai, India</i>
AECS Maaruthi Magnolia PU College <i>Department Of Pre-University Education, Karnataka; 96%</i>	2016 – 2018 <i>Bangalore, India</i>
National Public School, Rajajinagar <i>Central Board of Secondary Education; CGPA: 10</i>	2004 – 2016 <i>Bangalore, India</i>

Internships

Microsoft India (R&D) Pvt Ltd • Pending.	May – Jul 2021
Flutura Decision Sciences & Analytics <i>Python, TensorFlow, Keras</i> • Developed computer vision models based on <i>YOLOv4</i> and <i>Retinanet</i> . • Created computer-vision products for multiple clients from scratch on problems including 1) autonomous defect detection in die-casted components, 2) autonomous cell-phone usage detection and 3) autonomous defect detection in printed circuit boards.	May – Jul 2020
Professor Rupesh Nasre, IIT Madras <i>Kotlin, Android Studio</i> • Researched, scripted and created multiple instructional videos on selected topics in parallel processing. • Created an Android app from which the videos could be viewed.	May – Jul 2020
Professor Hema Murthy, IIT Madras <i>Python</i> • Worked on a summer project exploring fundamentals of linear regression and other topics in machine learning.	May 2019

Research Projects

Sample-specific attention-head masks in BERT models • As a part of a college Undergraduate Research course, performed experiments testing possible applications of trained sample-specific attention-head masks in BERT models. • Developed a technique to detect adversarial inputs during test-time using their sample-specific masks using mask-inversion, layer-wise predictions, etc. • Adapted CutMix algorithm to embedding vectors for data-augmentation. • Achieved accuracies of between 0.8055 and 0.9027 accuracy on adversarial input detection on four GLUE datasets.	<i>Professor Prathyush Kumar</i> Feb – Apr 2021
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Selected Course Projects

image2image translation <i>PyTorch</i> • implemented, tested and benchmarked a unified framework proposed by a CVPR paper on Image to Image Translation for Domain Adaptation	<i>Professor Anurag Mittal</i> Dec – Jan 2021
σ-promoter classification <i>PyTorch</i> • augmented a SOTA model for σ -promoter classification in <i>E. coli</i> by introducing attention layers and residual connections to increase accuracy by 1.6%.	<i>Professor Manikandan Narayanan</i> Nov – Dec 2020
device driver <i>C, RISC-V</i> • Wrote a UART device driver for <i>ZephyrRTOS</i> for the RISC-V <i>Shakti E-class Parashu</i> SOC. • Performed testing on a physical SOC unit.	<i>Professor Chester Rebeiro</i> Nov – Dec 2020
C compiler <i>C, x86 assembly, Lex, Yacc</i> • Wrote an compiler for a slightly stripped-down version of C using the tools Lex and Yacc. • Wrote an LR(1) context free grammar for C and encoded it into Yacc, designed logic to carry out code generation and implemented 6 parse-tree level optimizations.	<i>Professor Rupesh Nasre</i> Jul – Nov 2020
16-bit computer <i>C++</i> • Created a functional computer with a simple 16 bit architecture (in a simulator) bottom-up using only NAND gates. • Wrote an assembler, and a basic compiler for an LL(2) high-level language in C++.	<i>Professor V. Kamakoti</i> Jul – Nov 2019

Personal Projects

automated attendance system | *TensorFlow, Keras*

May – Jul 2020

- Created an autonomous attendance system pipeline for classrooms using the popular neural networks *MTCNN* and *FaceNet*.
- Wrote a KNN-like algorithm to match faces from a PTZ camera feed to personal identities using a database containing ~4 photographs each of students' faces.

process wallpaper | *Python, Bash*

Aug - Sep 2019

- Wrote a set of Python and bash scripts which periodically set the desktop wallpaper to a wordcloud of the most resource-intensive processes running.
- This project became semipopular on GitHub and was mentioned on an episode of a podcast called *Linux Unplugged*.

web development | *React, Angular, nodeJS, Bash*

Oct – Jan 2020

- Worked on front-end and back-end development for the official website of *Saarang 2020*, the annual IIT Madras cultural fest.

miniprojects | *Python*

Oct – Jan 2020

- classic games** Created clones of *Snake* and *2048*.
- gp** Created and implemented a personal multi-platform pseudorandom strong password generation scheme
- breaking-badify** Wrote a script which creates images of input text using symbols from the periodic table.

Scholastic Achievements

2016 **KVPY** Secured All India Rank 108 in Kishore Vaigyanik Protsahan Yojana (SA)

2016 **NTSE** Secured National Talent Search scholarship

2017, 18 **Indian National Olympiads** National Finalist in Astronomy in 2017 & 2018 (State rank 1, National top 1%), Physics in 2018 (State rank 4, National top 1%) and Merit Certificate for State top 1% in Chemistry

2015-18 **Zonal Computing Olympiad / Informatics Olympiad** National finalist every year from 9th to 12th grade

2017 **National Mathematics Talent Contest** Secured All India Rank 9 in Ramanujan contest

2016, 17 **Regional Mathematics Olympiad** Selected for Indian National Mathematics Olympiad Training Camp

Coursework

computer science: Introduction to Programming (+ Lab); Discrete Mathematics for Computer Science; Programming and Data Structures (+ Lab); Foundations of Computer Systems Design (+ Lab); Languages, Machines and Computation; Design and Analysis of Algorithms; Computer Organisation and Architecture (+ Lab); Object-Oriented Algorithms Implementation and Analysis Lab; Pattern Recognition and Machine Learning; Compiler Design (+ Lab); Operating Systems (+ Lab); Paradigms of Programming; Algorithmic Approaches to Computational Biology; Foundations of Deep Learning; Reinforcement Learning; Statistical Foundations of Data Science

mathematics: Multivariable Calculus; Series and Matrices; Basic Graph Theory; Probability, Stochastic Processes and Statistics; Differential Equations

other: Basic Electrical Engineering; Introduction to Electrodynamics; Newtonian Mechanics; Chemical Bonding and Reactivity; Introduction to Thermodynamics and Kinetic Theory; Principles of Economics; Fundamentals of Operations Research; Life Sciences

online: Machine Learning; Neural Networks and Deep Learning; Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization; Structuring Machine Learning Projects; Convolutional Neural Networks; Sequence Models

Technical Skills

languages: C, C++, Python, Julia, JavaScript, Bash

software: Linux, Git, Docker, GNU Octave, L^AT_EX, GIMP, Google Sketchup

development: HTML, CSS, JavaScript, nodeJS, ReactJS, Angular

operating systems: Linux, Windows

Positions of Responsibility

Computer Vision and Intelligence Group

2019

Project Member

Indian Institute of Technology Madras

Developmental Operations Team, Saarang 2020

2019

Coordinator

Indian Institute of Technology Madras

Computer Science Association

2013 – 2014

President

National Public School, Rajajinagar