

EDUCATION

Netaji Subhas Institute of Technology, University of Delhi

B.E. in Computer Engineering; First Class with Distinction

CGPA: 8.344, Percentage: 75.94%

New Delhi

Aug 2014 - May 2018

Gyan Bharti School

Class XII, AISSCE

CBSE: 96.6%

New Delhi

March 2014

PUBLICATIONS & ARTICLES

S. Aggarwal, L. Aggarwal, M. S. Rihal and S. Aggarwal. *EEG Based Participant Independent Emotion Classification using Gradient Boosting Machines*. IEEE 8th International Advance Computing Conference (IACC), 2018, [doi:10.1109/IADCC.2018.8692106](https://doi.org/10.1109/IADCC.2018.8692106)

R. Sawhney, R. R. Shah, V. Bhatia, C. Lin, **S. Aggarwal** and M. Prasad. *Exploring the Impact of Evolutionary Computing based Feature Selection in Suicidal Ideation Detection*. IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), 2019, [doi:10.1109/FUZZ-IEEE.2019.8858989](https://doi.org/10.1109/FUZZ-IEEE.2019.8858989)

Yaman kumar, Debanjan Mahata, **Sagar aggarwal**, Anmol Chugh, Rajat Maheshwari, & Rajiv Ratn Shah. *BHAAV - A Text Corpus for Emotion Analysis from Hindi Stories* arXiv preprint, 2019, <https://arxiv.org/abs/1910.04073>

PATENTS

Method and electronic device for automatically animating graphical object, Ramasamy Kannan, Vishakha S.R, **Sagar Aggarwal**, Lokesh Rayasandra Boregowda , Indian Patent No. 202141014476, Aug. 2021

Model based Multi-View Scene Generation and Representation for AR & VR, Ramasamy Kannan, Lokesh Rayasandra Boregowda, **Sagar Aggarwal** , Indian Patent No. 202041038488, Jul. 2021

Method and electronic device for generating AR content based on intent and interaction of multiple-objects, Ramasamy Kannan, **Sagar Aggarwal**, Lokesh Rayasandra Boregowda , Indian Patent No. 202041043804, Oct. 2020

INDUSTRY EXPERIENCE

Flipkart Private Limited

Software Development Engineer II, WMS Inventory, Fulfilment Service Group

Bangalore

April 2021 - Present

- Developed *Unified Inventory View Platform (UIVP)* for internal teams, a system that consolidates 70 lakh warehouse records per month and creates an inventory snapshot in real time using spark, Hadoop, Kafka and Elastic search.
- Supported the team for warehouse on-call issues during *Big Billion Day 2021* festive sale with 250 million consumers in India.
- Was selected by manager to mentor and on board 3 new team members.

SAMSUNG Research Institute

Machine Learning Engineer, AR Rendering Engine Development, AR Vision Solutions

Bangalore

March 2020 - April 2021

- Improving *Selfie-Type (CES 2020)*
 - * Built 2D Hand-pose estimation module using Inception Net, ResNet, and MobileNet in the current solution.
 - * Designed and built hand calibration engine which helps with proper hand placement and collects initial calibration data.
 - * Researched, designed and prototyped novel key detection engines for improving the solution - trained finger, hand, tap detection networks (individual and multi-task learning) to improve precision and recall to approx 50% using hand pose data; leveraged the bend of fingers for different keys to train micro gesture classifier using LSTM with 60% precision and recall.

- * Co-proposed and implemented novel solution of displaying hand over the keyboard by extrapolating top-view from front view of hand, filed a patent ([2nd patent](#)) by expanding the idea for multi-view scene generation in AR/VR.
- * Designed guidelines for collection and annotation of over 3 lakh images for different networks.
- * Built an android application and integrated the networks using SNPE library on Note 10/S10.
- o *Samsung Fitness Application*
 - * Collected and crowd sourced video time series data for 10 exercises from multiple views using 6 Fold-2 phones.
 - * Trained body pose estimation module using COCO/MP-II dataset and fine tuned on the internal dataset.
 - * Developed the action recognition module for rep counting and exercise correction.
 - * Built an android application and integrated these modules.
- o Contributed to the development for displaying graphic effects(jumping, growing, shrinking etc.) on Augmented text based on the ambient sound and dominant color.
- o Filed 3 patents with team as co-inventor. ([See patents](#))
- o Mentored interns and proposed projects for *Samsung Student Ecosystem for Engineered Data (SEED) Lab*.

SAMSUNG Research Institute

Bangalore

Software Engineer, Elderly Care Service, IoT Services

July 2018 - March 2020

- o
- o Built and deployed 7+ microservices on AWS dealing with emergency events, endpoints, and real time monitoring handling millions of users.
- o Worked with camera, voice and testing for cross-functional dependencies in emergency feedback service.
- o Conceptualized the custom API designs for OCF capabilities for different IoT devices such as Lux and event cameras.
- o Performed query optimisations on Sql and DynamoDB.

SAMSUNG Research Institute

Bangalore

Software Engineering Intern, Voice Intelligence R&D

June 2017 - July 2017

- o Implemented CNN models for execution of contextually aware (scope based) voice commands with 60% accuracy.
- o Reduced speed and training time by 10%.
- o Familiarisation with bag of words, Doc2Vec and TF-IDF embeddings.

RESEARCH EXPERIENCE

Indraprastha Institute of Information Technology

New Delhi

Research Intern with Dr. Rajiv Ratn Shah

July 2018 - September 2019

- o Contributed to [BHAUV](#), a crowd-sourced dataset of 20K Hindi sentences and constructed baseline classification models for sentiment analysis.([See Article on arxiv](#))
- o Built [BWSAT](#), a tool for generating rating scale for any lexicon using Best-Worst-Scaling Algorithm, extracted 14K hindi words samples along with their meaning from various sources(Leipzig, dictionary, etc.)
- o Analysed Social Sent Paper to generate domain specific sentiment lexicon using LeipZig corpus.
- o Published a paper which studies the use of firefly algorithm for feature selection in classifying tweets with suicidal ideation.([See Conference Publications](#))

Netaji Subhas University of Technology

New Delhi

Undergraduate Research Assistant with Dr. Swati Aggarwal

July 2017 - May 2018

- o Built **EFEACT**, a general purpose for EEG analysis using signal processing techniques, feature selection and classifiers for any EEG dataset.
- o Implemented feature extraction modules using time, frequency, time-frequency domain analysis and multi electrode methods in MATLAB.
- o Published a paper with moderate accuracy improvement and decreased execution time using statistical features and Gradient boosting algorithms on DEAP Dataset.(See [Conference Publications](#))

PROJECTS

Traffic Sign Recognition, Winter Training, 2017

A traffic sign recognition system trained on GTSRB dataset and LeNet with 97% accuracy.

NSIT Connect - Android Version of the College's official app | [Code](#) | [Playstore](#)

Part of nsitonline team and built location module for searching nearby hangout places, attendance tracker, notifications using GCM and contributed to overall development of the app.

NSIT Connect - Windows Version of the College's official app | [Code](#)

Independently developed the app from scratch and designed modules like college news update, timetable and schedules, video play using YouTube, code radar, and more.

CryOut – A Social Welfare, Crime Monitoring & Prevention App | [Hack@NSIT](#) | [Code](#)

Developed android app for Social Welfare theme - file a complaint, discussion forum, NGO registration, and instant SOS help feature.

GameZone, Winter Training Project, 2016 | [Code](#)

A gaming console with Puzzle Maker, Brick Braker and Poker.

PROGRAMMING SKILLS

Languages : Java, Python, SQL, C++

Technologies and Frameworks : Spring-Boot, Micro Services, PostgreSQL, MySQL, DynamoDB
Kafka, Spark, HDFS

Deep Learning Frameworks : Keras, Tensorflow

ACCOMPLISHMENTS

Professional Certification - 4th Level of Samsung's SWC Certification(Success Rate - 30% employees of SRIB), 2019

Nipun Award - Best Award for IoT solutions for Elderly Care Service, 2019

Scholarship - Higher Education - under INSPIRE (5 years), Govt. Of India, 2014

Olympiad Rank - 164 - SOF International Mathematical Olympiad (IOM), 2013.

Bronze medal - National Level Maths Talent Test - Manav Sthali School, 2013

Vice Captain - School Team, Skating Hockey – Goalkeeper, 2009

TEACHING/LEADERSHIP EXPERIENCE

Project Assistant for *SEED Lab* - Proposed projects for Lab at KLE Tech Univeristy, 2020

Windows App Lead Coordinator, NSIT Online - Created Windows version of college official app.

Google Developer Student Club Mentor, Core Team | [Github](#) - Took sessions on Android Development.

Director of Resource Management, Retract Regency Of NSIT - Organized collection drives, workshops, events like Masoom Duniya, Sadbhavna etc. for children with special abilities. Involved in managing IT and Financial Resources for the team.