Sagar Aggarwal

Email : sgaggarwal2009@gmail.com

LinkedIn ⋄ Github ⋄ https://sagar-aggarwal.github.io/   Mobile : +91-8860213878

EDUCATION

Netaji Subhas Institute of Technology, University of Delhi   New Delhi
B.E. in Computer Engineering; First Class with Distinction   *Aug 2014 - May 2018*
CGPA: *8.344*, **Percentage**: *75.94%*

Gyan Bharti School   New Delhi
Class XII, AISSCE   *March 2014*
CBSE: *96.6%*

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**

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**

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-Vew 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   Bangalore
***Software Development Engineer II**, WMS Inventory, Fulfilment Service Group*   *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   Bangalore
***Machine Learning Engineer**, AR Rendering Engine Development, AR Vision Solutions*   *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.
- ○ *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.
- ○ Contributed to the development for displaying graphic effects(jumping, growing, shrinking etc.) on Augmented text based on the ambient sound and dominant color.
- ○ Filed 3 patents with team as co-inventor. (See patents)
- ○ 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*
- ○
- ○ Built and deployed 7+ microservices on AWS dealing with emergency events, endpoints, and real time monitoring handling millions of users.
- ○ Worked with camera, voice and testing for cross-functional dependencies in emergency feedback service.
- ○ Conceptualized the custom API designs for OCF capabilities for different IoT devices such as Lux and event cameras.
- ○ Performed query optimisations on Sql and DynamoDB.

SAMSUNG Research Institute   Bangalore
Software Engineering Intern, *Voice Intelligence R&D*   *June 2017 - July 2017*
- ○ Implemented CNN models for execution of contextually aware (scope based) voice commands with 60% accuracy.
- ○ Reduced speed and training time by 10%.
- ○ 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*
- ○ Contributed to **BHAAV**, a crowd-sourced dataset of 20K Hindi sentences and constructed baseline classification models for sentiment analysis.(See Article on arxiv)
- ○ 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.)
- ○ Analysed Social Sent Paper to generate domain specific sentiment lexicon using LeipZig corpus.
- ○ 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*

- Built *EFEACT*, a general purpose for EEG analysis using signal processing techniques, feature selection and classifiers for any EEG dataset.
- Implemented feature extraction modules using time, frequency, time-frequency domain analysis and multi electrode methods in MATLAB.
- 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 | Code
A traffic sign recognition system trained on GTSRB dataset and LeNet.

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, Rotract 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.