Gaurav Sinha

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Samsung Research and Development

Senior Software Engineer
July, 2018-Present

Patent And Publications

[1] **Method and System of Network Handover on Transport Layer**

Madhan Raj, C Nam, **Gaurav Sinha**, Gunjan K Chaudhary, Karthikeyan A, Sunghee Lee, S Jayaseelan, D S Sabareesh, Harikrishnan N (*Switching mechanism for TCP, UDP, and QUIC protocol which uses Machine Learning*)*
US Patent Application No.: US20210092657A1

[2] **Method and System for MPQUIC over QSOCKS in Wireless Network**

Madhan Raj, S Jayaseelan, **Gaurav Sinha**, Bhagwan Dass Swami, Gunjan K Chaudhary, Karthikeyan A
US Patent Application No.: US20200288316A1

[3] **Generic Search Optimizer and Library Books Recommendation System**

Chandan Suri, **Gaurav Sinha**, Arpita Singh, Shalini Batra
International Research Journal of Engineering and Technology (IRJET), 2020 | Volume 7, Issue 8

[4] **QSOCKS: 0-RTT Proxification Design of SOCKS Protocol for QUIC**

Madhan Raj, Sukhdeep Singh, S Jayaseelan, M K Maheshwari, Gunjan K Chaudhary, **Gaurav Sinha**
IEEE Access Journal, 2020 | Volume 8

[5] **CQUIC: Cross-layer QUIC for next generation mobile networks**

Gaurav Sinha, Madhan Raj, S Jayaseelan, Gunjan K Chaudhary
IEEE Wireless Communication and Networking Conference 2020

[6] **Novel MultiPipe QUIC protocols to enhance the wireless network performance**

Gunjan K Chaudhary, Harikrishnan N, Karthikeyan A, Madhan Raj, S Jayaseelan, **Gaurav Sinha,** Debabrata Das
IEEE Wireless Communication and Networking Conference 2020

* Being used in Samsung Flagship Smartphones as 'Connect4Sure' solution

Research Experiences

EDCOVASP: Early Detection of Covid using Audio Signal Processing   *May 2020 - Sept 2020*

- Data Preprocessing and cleaning the scraped data from Twitter and gathered data from medical institutions to generate samples and embeddings.
- Fine-tuned existing model VGG-16 over youtube videos for detecting cough vs non-cough audio sample.
- Used the traditional Tree-Based algorithm of scikit learns to detect covid patients with accuracy ~85%.

Search Optimization for University's Central Library   *Spring 2017 - Winter 2017*

Guide: Prof. Shalini Batra, Thapar Institute of Engineering & Technology

- Used data-driven approaches for finding dense correspondences between textual data of nearly 100 million books.
- Use of NLP pipeline and ISBN indexing to issue tags by finding correlation using descriptor similarity between books and then using the Hidden Markov Model for stochastic predictions.
- The solution outperformed legacy search in the library, achieving an accuracy of 85%.*.

Morphological Segmentation using stack LSTM   *Summer 2017*

Guide: Prof. A.K. Singh, IIT B.H.U.

- Worked over *Morpho Challenge 2010* dataset by implementing state-of-the-art Morfessor Baseline method.
- Devised an algorithm to capture underlying grammatical construction to extract morphemes.
- Optimized the algorithm using likelihood predictions, thereby achieving an F-score of 44% for the English language.

Genetically Modified Tetris

Thapar Institute of Engineering & Technology

Fall 2016

- Implemented the Genetic Algorithm into Tetris taking into account all possible block combinations.
- Used variation, inheritance, limited space, competition for natural selection along with two-point crossover.
- Experiments outperformed the fuzzy logic-based Tetris and achieved a maximum of 4 million line clearances.

*** More Projects hosted over Github*

Experience

Samsung Research and Development

Senior Software Engineer

March 2020 - Present
Bangalore, India

- Working over Network Daemon (Netd) to manage and control the background processes of Android.
- Developing solutions that use protocols like QUIC, HICN, STUN to enhance user experience on 5G Samsung smartphones.
- Building Intelligent Machine learning solutions for wireless networks for smart packet routing and vertical handovers.

Software Engineer

July 2018 - Feb 2020
Bangalore, India

- Designed the new destination request format for QSOCKS.
- Developed the proxy solution over QUIC protocol for mobile device gaming applications
- Developed an on-device Machine Learning solution that improves user network performance in weak network conditions

Software Development Intern

January 2018 - June 2018
Bangalore, India

- Worked over Big Data technologies for the Video and Web Quality services (VWQS) calculating the KPIs for the data gathered by operators using Apache spark.
- Optimized the query processing time of the existing data analysis system using Apache Kylin by almost ~63%.

WNS Global Services Pvt. Ltd.

June 2016 - July 2016

Software Development Intern

Gurgaon, India

- Worked in Analytics Team as a full stack developer, to calculate set KPIs using SQL procedures.
- Analyzed the North American Airlines data and calculated KPIs over Tableau.

Aspiring Minds Assessment Pvt. Ltd.

May 2016 - July 2016

Test Developer

Gurgaon, India

- Worked part-time in the Research Team in Code Rating Project and graded 960 codes.
- Prepared dataset used in Automata Code Evaluation to grade coding problem.

Education

Thapar Institute Of Engineering and Technology

2014-2018

Bachelor of Engineering in Computer Engineering   *GPA:8.97*   *Punjab, India*

Awards & Honors

- Recipient **Samsung Excellence Award** as **'Star Performer: The Mountain Mover'** for contributions to Machine Learning Solutions in Networking at Samsung Research, Bangalore. [Q1, 2021]
- Winner of **Merit Award** for team solution presented in **5G Ideation Contest** for gaming solution using QUIC. [May 2020]
- Recipient Samsung Citizen Award as **'Technical Innovator'** at Samsung Research, Bangalore. [H1,2020]
- Recipient Samsung Citizen Award in **'Advance Development** 'Category at Samsung Research, Bangalore. [H1,2020]
- Recipient Samsung Citizen Award in **'Research to Development'** Category at Samsung Research, Bangalore. [Q3,2019]
- Recipient of **Merit Scholarship** for two consecutive years. [2014, 2015]

Community Service

- **Undertook expenses** of a student of 1 year affected by Global Pandemic COVID at Manali Public School, India. [2020]
- Joined **'Pratigya'** a Non-Governmental Organization to teach Mathematics Classes for the underprivileged. [2016-17]
- Active Blood Donor.

Extracurricular & Co-curricular Activities

- Represented the Communication Protocol team in **Badminton** at Samsung Research, Bangalore. [2019]
- Part-Time **photographer** undertaking assignments for photoshoots.
- **Convenor and Finance Head**: Creative Computing Society, largest technical society in Thapar University. [2016-17]
- **Honorable Mention** as **National Coordinator** of **IDEATHON, 2015** nation-wide startup incubation contest organized by Greymeter Services Private Limited.
- **Core Member Saturnalia**, the Techno-Cultural Fest of Thapar University. [2015-16]
- Technical Member: Creative Computing Society. [2015-16]
- Technical Member: Microsoft Student Chapter. [2015-16]
- Technical Member: Computer Society of India. [2015-16]
- **Campus Ambassador: Kshitij** the annual Techno-management fest IIT Kharagpur. [2015-16]
- **Convenor "Thaparlympics"** Interdepartmental sports meet at Thapar University. [2015]
- **Core Member "Urja"** sports fest of Thapar University. [2015]
- Represented Computer Science Department in Badminton at Interdepartmental sports meet "Thaparlympics". [2015]
- **Coordinator Engifest**: cultural fest of Delhi Technological University. [2015]

Certifications

- CS231n: Convolutional Neural Networks for Visual Recognition   *August 2020*
- Sequence Models by deeplearning.ai   *Organization: Coursera*   *January 2020*
- Improving Deep Neural Networks by deeplearning.ai   *Organization: Coursera*   *December 2019*
- Neural Networks and Deep Learning by deeplearning.ai   *Organization: Coursera*   *November 2019*
- Data Science Specialization by John Hopkins University   *Organization: Coursera*   *July 2019*
- Machine Learning with Python & Python for Data Science   *Organization: Cognitive Class*   *June 2018*