Simran Barnwal

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Education

University of California San Diego Sep 2021-Mar 2023
Master of Science in Computer Science and Engineering GPA: 4.0/4.0

Key Courses: Design and Analysis of Algorithms, Software Engineering, Adv. Compiler Design, Programming Languages, Operating Systems, Database Theory

Indian Institute of Technology (IIT) Guwahati Jul 2015-Jun 2019
Bachelor of Technology in Applied Physics, Minor in Computer Science GPA: 8.77/10.0 Rank: 3/42

Key Courses: Data Structures, Algorithms, Software Engineering, Optimization Methods, Data Mining

Experience

Software Engineer Intern, Meta Jun-Sep 2022
- Designed and implemented optimal end to end APIs and async tasks for filtering and feature extraction from instagram reels
- Reduced average query cost, latency, query per second by 5%, 8% and 20% respectively

Software Development Engineer, Amazon Nov 2020-Sep 2021
- Mandatory TrackingId Validation: Automated update of tracking regexes of logistic parties for better shipping time estimation
- Designed framework for rule engine migration of shipping settings for sellers internationally

Data Scientist, Ola ANI Technologies Jul 2019-Oct 2020
- Designed ML prediction models for preferred car-category, potential cab-pass users, and user premiumness using derived metrics
- Design and maintenance of pipeline for corporate and network business metrics

Selected Publications

1 **Barnwal S**, Das V, and Bora PK. Deep learning based fully automated decision making for intravitreal anti-VEGF therapy. In International Conference on Pattern Recognition and Machine Intelligence 2019. Springer. doi: 10.1007/978-3-030-34872-4_17

2 **[Best Paper Award] Barnwal S**, and Peng W. Crowdsensing-based WiFi Indoor Localization using Feed-forward Multilayer Perceptron Regressor. In International Conference on Computational Intelligence in Data Science, 2019, pp. 1–6. IEEE. doi: 10.1109/ICCIDS.2019.8862117

Research Experience

1 **Classification of OCT images using Deep Learning** Jul 2018-Jun 2019
Bachelor's Thesis, IIT Guwahati
- Developed image segmentation and preprocessing algorithm specific to retinal OCT scans
- Designed a novel deep network called SimpleNet with 800x less parameters and 50x faster testing than state of the art
- Outperformed transfer learning models' accuracy, sensitivity, and specificity metrics by upto 6%, 15% and 6%, respectively

2 **Crowdsensing-based WiFi Indoor Localization using ANNs** May-Jul 2018
Summer Internship, University of Regina
- Designed a deep learning framework to localize indoor mobile users in a device heterogeneous scenario
- Outperformed state of the art mean positioning error and new device encounter error by upto 17% and 80%, respectively

3 **Stochastic Optimization of Throughput of Cognitive Radio Network** May-Jul 2017
Summer Internship, Hanyang University ERICA
- Designed a probabilistic algorithm to find the optimal transmission probability that maximizes the throughput of CRN
- Simulated the CRN using MATLAB and analyzed the effect of imperfect sensing and multiuser diversity on the throughput

Relevant Projects

2 **Implemented ChocoPy Compiler: Python to WebAssembly** Mar-Jun 2022
- Implemented all functionalities of the ChocoPy compiler, including inheritance github link
- Implemented for loops and iterators portion of a large shared ChocoPy Compiler

1 **Correcting Wikipedia Annotations using Data Mining** Aug-Dec 2018
- Designed an algorithm to web scrape and analyze annotations from Wikipedia Dump using BeautifulSoup and MySql
- Generated erroneous links through similarity rankings based on Generalized Levenshtein distance

Technical Skills

Proficient in: Python, C/C++, Haskell, SQL, MATLAB, JavaScript, HTML, Git, Linux, Windows
Familiar with: Android, R, PyTorch, Scala, Java, Apache Spark, Hadoop, Hive, CSS, Bash scripting

Awards and Honours

1 **Mitacs Globalink Research Intern Award**, University of Regina, Canada 2018
2 **Institute Merit Scholarship**, IIT Guwahati, India 2016
3 **Merit cum Means Scholarship**, IIT Guwahati, India 2015,17,18
4 **Kishore Vaigyanik Protsahan Yojana Fellow**, IISc Bangalore, India 2015