Sahil Manchanda

PhD Scholar

Computer Science and Engineering
Indian Institute of Technology, Delhi

www.github.com/sahilm1992
http://www.cse.iitd.ac.in/~sahilm/
sahil.manchanda@cse.iitd.ac.in

EDUCATION

Ph.D, *Computer Science*, **Indian Institute of Technology Delhi**, *CGPA 8.73 / 10*	**2019-Cont**
M.Tech, *Computer Science*, **Indian Institute of Technology Guwahati**, *CGPA 9.14 / 10*	**2015-2017**
B.Tech, *Information Technology,* **Indraprastha University**, *New Delhi, 78.4%*	**2010-2014**
Senior Secondary, *Central Board of Secondary Education, New Delhi, 97 %*	**2010**
Secondary, *Central Board of Secondary Education, New Delhi, 91.8 %*	**2008**

EXPERIENCE

NAVER Labs, France	**Sep 2020- Mar 2021**
Research Intern, Machine learning and Optimization **Area**: Deep Reinforcement Learning for Combinatorial Optimization	
Conduent Labs (Formerly Xerox Research Center), Bangalore, India	**2017-2019**
Research Engineer, Machine learning and Statistics **Area**: AI for Transportation	
Adobe Systems, Delhi, India Software Engineer, Adobe Acrobat team	**2014-2015**

PUBLICATIONS

➢ **"TIGGER: Scalable Generative Modelling for Temporal Interaction Graphs",** Shubham Gupta, Sahil Manchanda, Srikanta Bedathur and Sayan Ranu To appear in **AAAI**, 2022 Link	**2022**
➢ **NeuroMLR: Robust & Reliable Route Recommendation on Road Networks** Jayant Jain, Vrittika Bagadia, Sahil Manchanda and Sayan Ranu, To appear in Advances in Neural Information Processing Systems (**NeurIPS**), 2021 Link	**2021**
➢ **GCOMB:Learning Budget-constrained Combinatorial Algorithms over Billion-sized Graphs** Sahil Manchanda, Akash Mittal, Anuj Dhawan, Sourav Medya, Sayan Ranu and Ambuj Singh Advances in Neural Information Processing Systems (**NeurIPS**), 2020 Link	**2020**
➢ **Representation learning of drug and disease terms for drug repositioning** Sahil Manchanda and Ashish Anand 3rd IEEE International Conference on Cybernetics (CYBCONF), Exeter, United Kingdom Link	**2017**

PATENT

➢ **Trained pattern analyzer for roll out decision** **Status**: Filed in USPTO - Link **Inventors**: **Sahil Manchanda**, Arun Rajkumar, Simarjot Kaur and Narayanan Unny	**2019**

PROJECTS

➢ **Robust and reliable route recommendation in road networks** *Guide: Dr. Sayan ranu, IIT Delhi*	**2020-2021**

- ○ Developed an inductive model using Lipschitz embeddings on GCN to learn road embeddings.
- ○ Model improved over existing work by 25% in terms of accuracy 25% in and 20% in terms of reachability. More effective in terms of answering queries over unseen data.

➢ **Learning Budget-constrained Combinatorial Algorithms over Billion-sized Graphs** *Guide: Dr. Sayan Ranu, IIT Delhi*	**2019-2020**

- Predict individual quality of nodes using Graph convolution network(GCN) and identify potential nodes.
- Deep Q network to predict nodes that collectively form a good solution by using GCN scores and locality of nodes as features. Importance Sampling for fast locality computation.
- Achieved quality similar to state of the art while being more than 2 orders of magnitude faster.

➢ **Graph generative modelling for labelled graphs**   **2019**
Data mining course project at IIT Delhi

- Extended GraphRNN(NeurIPS 2018) for graph generative modelling for handling node and edge labels.
- Domain agnostic implementation.

➢ **Vehicle Health Monitoring**   **2017-2018**
Conduent Labs, Bangalore, India
- Developed item-set mining based model for recommending rollout of vehicles for a US based fleet agency.
- The method mines defect patterns which led to failures in the past when fleet supervisors made rollout decision.

➢ **Mobility Analytics Platform - Descriptive platform for transportation network**   **2017-2018**
Conduent Labs, Bangalore, India
- Developed algorithms for estimating passenger alighting in bus/metro network using check-in data in a flat fare environment.
- Designed solution to support heterogeneous data -fare collection(paper ticket /smart card) and vehicle location data.
- Developed various functionalities using fare collection data and GTFS(vehicle schedule) such as estimating direction of vehicles, identification of missing vehicle stop times, alignment of real trips to scheduled trips.

➢ **Representation learning of drug and disease terms for drug repositioning**   **2017**
Guide: Dr. Ashish Anand, Indian Institute of Technology Guwahati
- Learned word vector representation of drug and disease terms from unstructured bio-medical text(PubMed).
- Enhanced vector representations using similarity information from structured data such as side-effect based drug similarity and gene based disease similarity etc.
- Used matrix completion approach to predict drug-disease associations.

KEY COURSES

➢ **Data Structures and Algorithms**	➢ **Intelligent Systems**	➢ **Database Management Systems**
➢ **Data Mining**	➢ **Artificial Intelligence**	➢ **Mobile robotics**
➢ **Mathematics for Computer Science**	➢ **Numerical methods**	➢ **Operating Systems**
➢ **Linear Algebra**	➢ **Probability**	➢ **Cryptography**

SKILLS

- **Platforms:** Windows, Linux
- **Programming languages:** Python, C, JAVA, and C++
- **Libraries:** Numpy, Tensorflow, PyTorch, CPLEX, SCIP, DGL, PyTorch Geometric

---

ACHIEVEMENTS

➢ **Graduate Aptitude Test in Engineering :** All India rank 273 among 115425 candidates.   **2015**
➢ **CBSE Merit certificate :** Received Merit Certificates for Computer Science and Mathematics for being in **top 0.1 %** of the successful candidates all over India.   **2010**
➢ **Merit certificate-National Cyber Olympiad:** Secured All India Rank 224.   **2009**

MISCELLANEOUS

➢ Student member, PhD interviews organizing team, CSE, IIT Delhi   **2020-2021**
➢ Teaching assistant at IIT Delhi - Computer networks, Data Structures and Algorithms, Database systems   **2019 - cont**
➢ Reviewer for AISTATS, TKDD and WSDM

Subreviewer for VLDB, EDBT, AAAI, WSDM, ICLR, CODS-COMAD,ICDM, KDD, ICDE, TKDE, CODS-COMAD.

➢ Student representative (M.Tech) - Department Post Graduate Programme Committee, Dept. of CSE, IIT, Guwahati.   **2016-2017**
➢ Teaching assistant at IIT Guwahati - Mathematics for Computer Science and Introduction to programming.   **2015-2017**
➢ Android application developer intern at School of Information Technology, Indraprastha University, Delhi.   **2013**

REFERENCES

➢ **Prof. Sayan Ranu, Associate Professor, IIT Delhi**
    sayanranu@iitd.ac.in
➢ **Prof.Srikanta Bedathur, Associate Professor, IIT Delhi**
    srikanta@iitd.ac.in
➢ **Dr. Jean-Marc Andreoli, Principal Scientist, NAVER Labs, Europe**
     jean-marc.andreoli@naverlabs.com
➢ **Dr. Narayanan Unny, Director, Big Data Labs, American Express, Bengaluru**
    narayanan.unny@gmail.com
➢ **Prof. Ashish Anand, Associate professor, IIT Guwahati**
     anand.ashish@iitg.ernet.in
➢ **Dr. Sourav Medya, Post-doctoral fellow, Northwestern University**
     sourav.medya@kellogg.northwestern.edu