Vinayak Gupta

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Research Interests

Neural Models for Continuous-Time Sequences

I design neural models for learning the dynamics of continuous-time sequences. In detail, my thesis addresses problems related to – limited training data, asynchronous data collection in sequences, event-imputation, end-to-end sequence generation, activity recognition in videos, and spatial recommendation for users – in temporal sequences using point processes and graph networks.

Selected Publications

V. Gupta and S. Bedathur. *ProActive: Self-Attentive Temporal Point Process Flows for Activity Sequences*. **KDD 2022**.

V. Gupta, S. Bedathur, and A. De. *Learning Temporal Point Processes for Efficient Retrieval of Continuous Time Event Sequences*. **AAAI 2022**.

V. Gupta, S. Bedathur, S. Bhattacharya, and A. De. *Modeling Continuous Time Sequences with Intermittent Observations using Marked Temporal Point Processes*. **ACM TIST 2022**.

V. Gupta and S. Bedathur. *Doing More with Less: Overcoming Data Scarcity for POI Recommendation via Cross-Region Transfer*. **ACM TIST 2022**.

V. Gupta, S. Bedathur, S. Bhattacharya, and A. De. *Learning Temporal Point Processes with Intermittent Observations*. **AISTATS 2021**.

V. Gupta and S. Bedathur. *Region Invariant Normalizing Flows for Mobility Transfer*. **CIKM 2021**.

A. Likhyani*, V. Gupta*, P. Srijith, P. Deepak, and S. Bedathur. *Modeling Implicit Communities from Geo-tagged Event Traces using Spatio-Temporal Point Processes*. **WISE 2020**.

S. Maurya*, V. Gupta*, and V.K. Jain. *LBRR: Load Balanced Ring Routing Protocol for Heterogeneous Sensor Networks with Sink Mobility*. **WCNC 2017**.

Industry Experience

Amazon Inc. Jan 2022 – June 2022
Applied Scientist-Intern

Working with ML team on time-sensitive reward distribution for users in Amazon Pay using their transactions. It involves modeling periodicity and missing events in purchase records of a user.

Siemens Healthineers AG May 2016 – Jan 2017
Research Intern

Designed ML models to improve the image quality in radiography.

Ongoing Projects

Smartphone activity-based Spatial Recommendation
A transformer-based recommendation model that uses app-usage logs of a user's smartphone to learn her mobility preferences.

Neural Embeddings for Relational Databases
A BERT-based model for learning representations for entities in an RDBMS by considering inter-and intra-table relationships.

Education

2017 – 2022 **Ph.D. Candidate**
Computer Science & Engineering
Indian Institute of Technology
Delhi, India.

2013 – 2017 **Bachelor of Technology**
Computer Science & Engineering
Indian Institute of Info. Technology
Jabalpur, India.

Honors and Awards

2022 NASSCOM AI Game-Changer: Finalist
2021 Outstanding Doctoral Paper: AI-ML Systems.
2021 Review score of 10/10 for AISTATS paper.
2021 SIGIR student registration grant for CIKM.
2015 All India 9th Rank in ABU Robocon.
2015 UG Project selected for Make In India.
2013 Top 2% in JEE among 1.4 million aspirants.

Skills

Proficient Python – Tensorflow, Keras, Torch MATLAB, PHP, and AWS.

Intermediate C, C++, MySQL, and PySpark.

Courses

TA Information Retrieval, Machine Learning, Data Mining, Data Structures, Computer Networks, and Intro. to Programming.

Credit Deep, Machine & Reinforcement Learning, Computer Architecture and Networks, Software Engineering, and Game Theory.

Presentations

2022 ACM Academic Research Symposium.
2021 Amazon Research Days.
2021 Doctoral Symposium: AI-ML Systems.
2019 MIT-IBM AI Research Week, Boston.
2019 Research Symposium, IIT Delhi.
2016 Siemens Healthcare Exhibition, Erlangen.

Professional Services

Reviewer SIGIR, AAAI, WSDM, and WWW.

Other Activities

PG Admin: Four CS department servers.
UG Rhythm guitarist in the institute rock band.

References

Advisor Prof. Srikanta Bedathur
Indian Institute of Technology Delhi

Collab. Prof. Abir De
Indian Institute of Technology Bombay