

Ravina Gelda

Curriculum Vitae

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EDUCATION

Master of Science, Electrical Engineering

2014-2017

Indian Institute of Technology, Madras

Thesis: Supply forecasting in the context of taxi hailing services

CGPA: 8.36

Advisor: Dr. Krishna Jagannathan

Bachelors of Technology

2009-2013

S.G.G.S.I.E.T

Course: Electronics and Telecommunications Engineering

CGPA: 9.55

WORK EXPERIENCE

Modem Software Engineer

08/17-present

Mediatek Inc., Full-time

The job responsibilities include:

- implementing 3gpp specification for PHY layer in C/C++
- debug code, Performance tuning, improvement
- Support, maintain and document software functionality
- Analyzing the data collected from mobile phones, to understand the network behaviour and provide solution to improve the modem performance and user experience

Data Science Intern

03/16 - 05/16

ANI Technologies Ltd. (OLA Cabs), internship

responsibilities include:

- To predict demand and supply in a 2km radius around the city of Bengaluru using real GPS data collected from the trajectories of taxis.
- Develop algorithm to mitigate supply-demand imbalance problem

PUBLICATIONS

1. R. Gelda, K. Jagannathan and G. Raina, "Taxi Dispatches Using Supply Forecasting: A Time-Series Based Approach", "IEEE International conference on SmartCity", 2016, Sydney, Australia.
<https://ieeexplore.ieee.org/document/7828530>
2. R. Gelda, K. Jagannathan and G. Raina, "Forecasting Supply in Voronoi Regions for App-Based Taxi Hailing Services", "IEEE International conference on advanced logistics and Transportation", ICALT 2017, Bali, Indonesia.
<https://itra.medialabasia.in/data/Documents/Decongesting/publications/201801221048FA1P2I-ravina2017.pdf>

COURSEWORK

Introduction to computer and programming, Data structure and algorithms, Probability Theory, Machine learning, Linear Algebra

AWARDS AND ACHIEVEMENTS

- Received scholarship from (ITRA) information Technology Research Academy (ITRA), Media Lab Asia, project entitled “De-congesting India’s transportation networks using mobile devices
- Runner up for Pratibha Awards (the EATON excellence award for aspiring woman engineers.
- IIT Travel Award for research presentation at the 14 th IEEE International Conference on SmartCity, Sydney, Australia, Dec 2016.
- In Top 1% among 5lacks students in National Level Graduate Aptitude Test in Engineering, 2014
- Second topper in the Bachelor of Technology Electronics and Telecommunication Engineering, 2013 batch.
- In Top 0.5% among 2lacks students in State Level Common Entrance Test , 2009

RESEARCH INTERESTS

Computer Science, Machine learning, Data science

RESEARCH EXPERIENCE

- **Forecasting Supply in Voronoi Regions for App-Based Taxi Hailing Services:**
 - Obtained supply and demand data for the city of Bengaluru from real GPS data collected from Taxi cabs
 - Divided the city into Voronoi regions with generating points as the demand density clustering
 - Analysis of the time series reveals the presence of strong seasonal periodicities in the supply data. Compared the timeseries models existing in the literature suited to model this type of data like TBATS, DSHW, STL decomposition, seasonal Naive method, etc. Chose the model with accurate results.
 - Identify the optimal temporal resolution to forecast supply in heavily used Voronoi region in which 80% of the demand data lies by comparing the forecast accuracy obtained with simple forecasting model like Snaive
 - Proposed multilevel clustering algorithm to further improve the forecast accuracy. With the proposed alorithm, heavily used Voronoi regions in which 80% of the demand comes from could be forecast with an accuracy of about 90%. Error metric used is SMAPE(symmetric mean absolute percentage error)

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- **Forecasting Supply in Voronoi Regions for App-Based Taxi Hailing Services:**

- Obtained supply and demand data for the city of Bengaluru from real GPS data collected from Taxi cabs
- Forecast Supply in 6-level geohashes ($1km^2$ rectangular area), in the city of Benagluru
- Analysis of time series reveals the presence of strong seasonal periodicities in the supply data. Compared the models already existing in the literature suited for these type of behaviour like TBATS, DSHW, STL decomposition, Snaive etc.,
- Proposed multilevel clustering algorithm to forecast supply time series for each of the 6-level geohashes
- Using the proposed algorithm, heavily used 6-level geohashes in which 80% of the demand comes from could be forecast with an accuracy of about 80%. Error metric used is SMAPE(symmetric mean percentage absolute error)
- Compared the Voronoi partition of the city to forecast supply with the 6-level geohash portioning of the city to forecast supply. Empirical results obtained show that, Voronoi partition performs better in busy areas of the city as compared to the 6-level geohash partitioning method.

SKILLS

<i>Programming</i>	C, C++, Python, R, SQL, VHDL
<i>Languages</i>	
<i>Software</i>	MATLAB, L ^A T _E X, XILINX, NS2, XILINX

MISCELLANEOUS

- Reviewed articles for National Conference on Communications (NCC-2017)
- Volunteered for "Wiopt" 2015, The International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks WiOpt.
- Member of the RnD-KC team (Research and Development-Knowledge Centre) at S.G.G.S, Nanded

REFERENCES

- Dr. Krishna Jagannathan,
Assistant Professor, Department of Electrical Engineering, Phone: +91 44 2257-4469 IIT Madras, E-mail: krishnaj@ee.iitm.ac.in Chennai 600036, India.
- Dr.Gaurav Raina,
Assistant Professor, Department of Electrical Engineering, Phone:(+91)-44-22574350 IIT Madras, E-mail: Gaurav@ee.iitm.ac.in Chennai 600036, India.