SARTHAK CHATURVEDI

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SUMMARY

Sarthak is a recent graduate with a Bachelor in Civil Engineering from the National Institute of Technology Karnataka in India. His research interests are in the field of Connected Vehicle Theory and understanding how vehicle to vehicle (V2V) and vehicle to infrastructure (V2I) communication technologies can be leveraged to coordinate mobility or traffic flow. Currently, he is working as Research Fellow at the Robert Bosch Centre for Data Science and Artificial Intelligence at the Indian Institute of Technology (IIT) Madras under the guidance of Dr. Bhargava Rama Chilukuri and Prof. Lelitha Devi Vanajakshi to use synchronized multi-scale and multi-sensor traffic data from urban arterial roads in Chennai, India and use it to make departure time planner to assist commuters in avoiding congestion during travel.

EXPERIENCE

Research Fellow, Robert Bosch Centre for Data Science and Artificial Intelligence, Chennai, India *Jun 2020 - Present*
Advisor: Dr. Bhargava Rama Chilukuri and Prof. Lelitha Devi Vanajakshi
- Estimating traffic state using DSRC based WiFi sensors.
- Using synchronized multi-scale and multi-sensor traffic data from urban arterial roads in Chennai, India and use it to make departure time planner to assist commuters in avoiding congestion during travel.

Visiting Research Associate, Delft University of Technology (TU Delft), the Netherlands *May 2019 - Aug 2019*
Advisor: Prof. Dr. Ir. Merle de Kreuk and Dr. Ir. Ralph Lindeboom
- Worked on optimization of the Dissolved Air Floatation process, a pre-treatment process in water treatment.
- Used CNN based machine learning models to study bubble-particle interaction to optimize air pressure.
- Achieved total suspended solids (TSS) removal efficiency of 91% in the effluent.

Business Analyst*, Wells Fargo, India *Apr 2019 - May 2019*
- Selected for undergraduate business analyst program in the Credit Risk division of Wells Fargo.
- *Post receiving research fellowship from TU Delft - I left Wells without completing the full term as an intern.

Visiting Research Associate, Lab for Spatial Informatics, IIIT Hyderabad, India *May 2018 - Jul 2018*
Advisor: Dr. Rehana Sheikh
- Study aimed to model the daily river water temperature using data of air temperature and discharge from the meteorological station.
- Developed and compared various multiple regression and machine learning models to predict river water temperature.
- Proposed model had an R squared statistic of 0.989 and the NashSutcliffe efficiency of 0.96.

Short Term Visiting Student, Kumamoto University, Japan *Feb 2018 - Mar 2018*
Advisor: Prof. Gangadharan K V
- Proposed a novel design of solar cells to optimize the conversion efficiency of solar energy to electrical energy.
- Developed design had a conversion efficiency of 45%, which was much higher than commercially available solar cells.

Field Internship, Prime Minister Rural Road Development Mission(PMGSY), India *Nov 2017 - Dec 2017*
- Worked under the General Manager's mentorship to survey and lay plans for road construction in rural India.

EDUCATION

Bachelor of Technology (Honours), Civil Engineering *Jul 2016 - Jun 2020*
National Institute of Technology Karnataka, Surathkal, India GPA: 8.24/10

PROJECTS

Bachelor Thesis: Development of Flood frequency model for flood estimation in ungauged river basins
- Analyzed probability distribution functions, namely extreme-type 1, log-normal, gamma, exponential function, and determined their goodness of fit in predicting the maximum peak flow.
- Studied and implemented concepts of kriging for spatial interpolation.
- Prepared prediction models using discharge data of over 30 years.

Minor Project: Analysis of streamflow response to land cover using LANDSAT data
- Investigated the possible causes of flooding in Mangalore's urban area.
- Used remote sensing platforms like Earth explorer and ERDAS Imagine for the purpose.
- Successfully identified blockages in the river and correlated it to urban land cover and forest change.

Texas Innovation Challenge (Conducted by Department Of Science & Technology)
- Proposed idea of passive cooling walls as an alternative to the air conditioners.
- Utilized water's high specific heat to cool the room without any CFC or carbon emissions, at 1/4 cost of the air conditioners.
- Among the top 100 teams of 5196 teams and competed for the semi-finals.

SKILLS

Computer: Data Science, Machine Learning, Tensorflow, SPSS, Tableau, ERDAS Imagine, ArcGIS, Earth explorer
Code: Python, MATLAB, R, C, Java, LaTeX

Scholastic Achievements

- Post Baccalaureate Fellowship awarded by Robert Bosch Centre for Data Science and AI. (*9/1300 selected*)
- Awarded Young India Fellowship, a multidisciplinary program in economics and policy in collaboration with UPenn School of Engineering and Applied Sciences. (*200/10000 selected*)
- Summer Research Fellowship at TU Delft offered by Indo-Dutch research consortium.
- Recipient of JASSO scholarship by the Embassy of Japan for presenting my research at Kumamoto University, Japan.
- Awardee of 1983 Batch-Alumni Excellence scholarship. (*5/2230 selected*)
- Awardee of institute merit-cum-means scholarship for three consecutive years (2016-2019).
- Indian Delegate to the Harvard Project for Asian & International Relations Conference.
- APAC Finalist in the Maybank Go Ahead Challenge in Kuala Lumpur, Malaysia.
- Secured 99.63 percentile in Joint Entrance Exam of 1.3 million students, for admission in technical institutions in India.

Publications

- **Chaturvedi, S.** , Krishna , A. , Rama Chilukuri, B. (2021). Traffic State Estimation using DSRC-Enabled Probe Vehicle. 13th International Conference on COMmunication Systems & NETworkS (COMSNET), Bengaluru, India, January 5 - 9, 2021. [Under Review]
- Krishna , A. , **Chaturvedi, S.** , Rama Chilukuri, B. (2020). Traffic State Estimation using DSRC-based Mobile Sensors. TPMDC-2020: 13th International (Online) Conference on Transportation Planning and Implementation Methodologies for Developing Countries, Mumbai, India, December 10-11, 2020.
- **Chaturvedi, S.**, Anjani Kumar, A.N.V., Rehana, S. Prediction of River Water Temperature as a function of Air Temperature and Discharge: A comparison of various statistical, hybrid and deep learning models. [In Preparation]
- **Chaturvedi, S.**, Gangadharan, K.V.(2018).' Increased efficiency of the solar cells by temperature regulation of an advanced nexus-Floating Solar Plankton'. 7th International Engineering Symposium.Kumamoto University, Japan, March 7-9, 2018.

References

- Dr. Bhargava Rama Chilukuri, Faculty of Civil Engineering, Indian Institute of Technology (IIT) Madras, Tamil Nadu, India. +91-44-22574270, bhargava@iitm.ac.in .
- Prof. Merle De Kreuk, Faculty of Civil Engineering and Geosciences, Technische Universiti(TU) Delft, the Netherlands. Building 23, Stevinweg 1, 2626 CN, Delft, Netherlands +31 15 2785274, M.K.deKreuk@tudelft.nl .
- Prof. Lakshman Nandagiri, Faculty of Water Resources & Ocean Engineering, National Institute of Technology Karnataka, Surathkal, India. +91-824-2474000, lnand@nitk.edu.in .