DEVOSMITA CHATTERJEE

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Skills

- Statistical Analysis
- Data Science
  - Big Data Handling
  - Supervised & Unsupervised Learning
  - Predictive Modeling
  - Time Series Data Analytics
- Machine Learning
  - Tensorflow, Keras, Pandas, Pytorch, NLTK, spacy, Scikit-Learn, OpenCV, PillowWeb, Django
- Artificial Intelligence
  - Deep Learning
  - Artificial Neural Networks
- Image Analysis
  - Scientific Visualization with Blender, Paraview, and Python
  - Computer Vision
- Programming
- Data Cleaning
- Cloud Database
- Application Development, Debugging and Deployment
- Advanced Git Skills
- Docker, LINUX Environment, Google Cloud Platforms

Summary

- Engineer with M.Sc in Engineering Mathematics and Computational Science from Chalmers University of Technology, Sweden. Areas of specialization are Statistics, Data Science and Artificial Intelligence.
- Computational proficiency in Python, Matlab, R, SQL, C and C++.
- Executed projects with Volvo Group and AstraZeneca.
- Developed an open-source data cleaning standalone application as master thesis project sponsored by Volvo power train department.
- Extremely sociable personality and great enthusiasm in team building

Projects

Jan 2020 - Oct 2020 — **Master Thesis Intern** — Volvo Group Trucks Technology, Sweden

Context: Presently, large amount of data generated by organizations drives their business decisions. Poor data quality leads to incorrect decisions for the organizations. Data cleaning is a method to solve the data quality issues. But, it is a time consuming task. This demands efficient data cleaning tools for systematically examining data for errors and automatically cleaning them and thus, helps organizations save time and increase their efficiency.

Project: The project is about developing a cooperative data cleaning tool. The application can illustrate and address the potential data problems such as inconsistent data, noisy data, outliers, and missing data. It also suggests actions so that users can make informed decisions to clean data effectively.

Responsibilities:

- Coding and developing the open source standalone application 'DataCleaningTool'.
- Application design, debugging and deployment.
- Employ the MissForest imputation method for imputing both missing numerical and categorical values.
- Create Github repo with proper licensing and a detailed readme file: https://github.com/devosmitachatterjee2018/DataCleaningTool.
- Publish Masters thesis report in Chalmers Open Digital Repository: https://odr.chalmers.se/handle/20.500.12380/302324.
- Work independently.

Environment: Windows, Matlab App Designer.

Nov 2019 - Jan 2020 — **Masters Project Intern** — Volvo Cars, Sweden

Context: Ensuring safety of operation is one of biggest challenges for market introduction of autonomous driving vehicles. Autonomous vehicle must manage with any kind of traffic scenario that can possibly occur. Therefore, to verify autonomous driving, the comprehensive set of traffic scenarios needs to be identified. There is need for a mathematical model to determine what should be interpreted as similar scenarios, and what should not be.

Project: The project aims to find a model and investigate its capability to identify all possible kinds of complex traffic scenarios around autonomous vehicles.

Responsibilities:

- Propose a state transition model for describing the traffic scenarios.
- Describe the surrounding traffic objects in the model by occupation grids. The grids are translated into binary matrices where 1 denotes the occupation of nearby traffic object. Also attributes such as the vehicle's speed and angular movement are used.

Programming

Python

R

MATLAB

LaTeX

Mathematica

SQL

Bash shell scripting

C

C++

JAVA

Languages

English

Swedish

References

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- Evaluate the model by analysing sequences of states computed from real traffic data provided by Viscando.
- Use clustering method to distinguish different scenarios represented by the model.
- Collaborate with two other team members.

Environment: Windows, Python.

Mar 2019 - Jun 2019 **Masters Project Intern** AstraZeneca, Sweden

Context: For the production of medical tablets, it is important to know how the manufacturing process affects the composition. To do this, one first needs to be able to identify the different components in the tablet based on micro-CT images. Image segmentation is used to determine the location and spread of various components in the tablets.
Project: The project is to design a method for distinguishing tablet components in micro-CT images using image segmentation.
Responsibilities:

- Account for image preprocessing, segmentation and analysis.
- Calculate the share of each component and compare to the theoretical values provided by AstraZeneca.
- Collaborate with two other team members.

Environment: Windows, Matlab.

Feb 2016 - Aug 2018 **Project Fellow** Indian Institute of Engineering, Science and Technology, India

Context: Accelerating phase of expansion of the current Universe.
Project: The project is to perform mathematical analysis which leads to the fact that acceleration of the Universe is sustained in the long run.
Resonsibilities:

- Study dynamical system of various cosmological models explaining cosmic acceleration.
- Made several successful research collaboration to accomplish project objectives.
- Contribute two high-quality scientific publications.
  `https://doi.org/10.1140/epjp/i2019-12578-1`
  `https://doi.org/10.1007/s12043-018-1544-y`

Environment: Windows, Matlab, Mathematica.

Education

Sep 2018 - Aug 2021 **M.Sc.** Chalmers University of Technology, Sweden
Engineering Mathematics and Computational Science
Advanced Differential Calculus [MMA210], Nonlinear Optimization [TMA947], High Performance Computing [TMA881], Scientific Visualization [MVE080], Linear Statistical Models [MVE190], Statistical Inference [MVE155], Experimental Design and Sampling [TMS032], Financial Time Series [TMS088], Spatial Statistics and Image Analysis [TMS016], Artificial Neural Networks [FFR135], Computer Vision [EEN020], Project Course in Mathematical and Statistical Modelling [MVE385], Master's Thesis in Mathematics [MVEX03]

Sep 2012 - Nov 2014 **M.Sc.** Calcutta University, India
Applied Mathematics

Jul 2009- Jul 2012 **B.Sc.** St. Xavier's College, India
Mathematics