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Fatemeh Aarabi

Career Objectives

An Operations Research Analyst experienced in mathematical modeling, machine learning modeling and statistical analysis tools to target large scale business problems and realize business solutions.

Education

Summer 2020 **Ph.D. in Operations Research**, *University at Buffalo (UB)*, Buffalo, NY.
Thesis: Scheduling Spatially Distributed Jobs with Degradation

Fall 2009 **M.sc. in Industrial Engineering**, *K. N. Toosi University fo Technology*, Tehran, Iran.

Summer 2007 **B.Sc. in Industrial Engineering**, *Yazd University*, Yazd, Iran.

Experience

2020 **OR Scientist Data Scientist** , *Deccan International Co.*, San Diego, CA.
Achievements:
- Developed a real time data analytic application for relocating EMS/ Fire vehicles currently used in FDNY call center reaching more than 99% satisfaction rate by New York dispatchers
- Performed data analytics on 911 incidents data utilizing techniques such as clustering, KNN, and decision trees, for improved accuracy.
- Implemented advanced Operations Research and algorithms such as mixed integer programming, queuing models, dynamic programming and meta-heuristics which boosted performance from 0.5 hour to up to 20 seconds.
- Supported the optimization engine which has 100K+ lines of legacy C# code. Meantime added new features for an application which is 20% of the company's annual revenue.
- Owner throughout the life cycle: requirement analysis, algorithm research and investigation, lead developer and people, project management, release deployment, data analysis.
- Aggregating and cleaning the data of travel time using SQL.
- Developed a machine learning framework for call-volume prediction.
- Used AWS to run the big data of Queensland (Australia) for UAT(user acceptance testing).
- Played a key role in UAT approval, (one month period non-stop working including weekends).

2015-2020 **Research Assistant**, *University at Buffalo*, Buffalo, NY.
Achievements:
- Developed an MIP programming framework to scheduling spatially distributed jobs with degradation rate using Python and Gurobi.
- Designed and implemented heuristic algorithms to efficiently solve the model.
- Implemented statistical analysis to find the main factors affecting objective function.
- Used real world data of Buffalo city to demonstrate applicability of the model
- Developed a hyper-cube queuing framework to study server cooperation optimization.
- An optimization model for finding the priority for servers assigned to each region.
- Run the models on UB CCR (academic compute cluster) to get the solution.

2010-2015 **Project Control Engineer**, *Mahab Ghodss Consulting Engineering Co.*, Tehran, Iran.
Achievements:
- Cooperated in gathering and analyzing financial data
- Controlled and monitored the performance of every project in terms of cost, time and resource allocation.
- Tracked the development of projects and reported the cost and time deviations to the senior manager and project executives to take corrective actions.
- Prepared project to-do lists containing the tasks which were not directly involved in the execution of the project, defined tasks descriptions, technical requirements, and assignments.

Peer-Reviewed Publications

- **Aarabi, Fatemeh**, Rajan Batta. "A mixed integer programming approach for scheduling spatially distributed jobs with degradation rate: application to pothole repair" *Socio-Economic Planning Sciences* 2020
- **Aarabi, Fatemeh**, Rajan Batta. "Server Positioning and Response Strategies for Spatially Arriving Jobs with Degradation: Light and Medium Traffic Cases" submitted to the *International Transactions in Operational Research.*

Certifications, Awards and Professional Affiliations

- Data Scientist Track certificate (DataCamp)
- Machine learning certificate (DataCamp)
- Society for Industrial and Applied Mathematics (SIAM)
- The American Association of University Women
- The Institute for Operations Research and the Management Sciences (INFORMS)
- Women in Operations Research and Management Sciences(WORMS)
- The Institute of Industrial and Systems Engineers
- OMEGA RHO - International Honor Society for Operations Research

Technical Skills

- Programming Languages Python, C#, Matlab
- Optimization Solvers: Gurobi, ILOG CPLEX, AMPL, GAMS
- Statitical: R, SAS, Minitab
- Data Analysis: Numpy, Scipy, Pandas, Mathematica, Minitab
- Machine Learning: Scikit-learn, TensorFlow, Keras, NLP
- Simulation: ARENA, AnyLogic
- Other: SQL, SAP, PowerBI, LaTex, Tableau, JIRA