Description

Amazon’s Capacity Planning team is looking for a passionate, talented combinatorial optimization or data science expert to join the team. The Capacity Planning team is responsible for optimizing the transportation network, fulfilment network, inventory placement and topology decision making for Amazon.in and making sure that the company is able to deliver our customers’ products to them as quickly, accurately, and cost effectively as possible. The Transportation group manages the package flows from vendors into the fulfillment centers (FCs) and from the FCs to the both carrier hubs and Logistics’ sort centers and delivery stations. Optimizing these package flows requires managing, scheduling, and routing line haul trucks and last mile delivery vehicles. The FC group manages FC inventory placements, cube requirements etc. We are seeking an expert in vehicle routing and combinatorial optimization problems to lead our algorithm development as we continue to expand our transportation business across India. Alternatively support demand forecasting, predictive analytics projects.

The Research Scientist will be part of our solution strategies for a wide range of problems including capacity constrained vehicle routing problems with time windows for deliveries and pickups, dynamic rerouting to cope with disruptions, and scheduling and routing of line haul trucks across the transportation network, topology decision making for network expansion, optimal allocation of volumes between multiple carrier channels, customer demand forecasting, prediction of number of units in a package, forecasting of unit volume requirements etc.

We are looking for a motivated individual with a recognized background in mathematical optimization, including numerical solution of continuous and discrete problems using exact, approximation algorithms, and heuristic methods. The person should have current or prior academic experience with a heavy practical consultative component, or industry experience conducting research in the area of mathematical/statistical modeling and analysis.

The incumbent analyses and models produced by the team will guide business decisions by highlighting opportunities, identifying correlations, defining experiments, and determining cause and effect relationships. You will partner closely with many groups such as operations, IT, retail, and finance teams to support various business initiatives.

The candidate will work closely with India leadership and the rest of the operations research and data science teams to leverage the expertise of each individual to construct models, perform analyses, and derive relevant metrics. The candidate must have relevant domain knowledge to critique models and approaches taken by the group in terms of business relevance, technical validity, software architecture, and computational performance. The candidate must have the skills to write documents that

influence important decisions by clearly articulating the strategy, business impact, and technical challenges.

1. Basic Qualifications

- M.S. in Operations Research, Statistics, Applied Mathematics, Computer Science or a related field with publications in refereed academic journals.
- At least 2 to 5 years of experience in solving complicated optimization and machine learning problems for transportation networks or analogous disciplines developing a strategy for large-scale networks.
- Experience designing and implementing transportation optimization models with focus on volume and route planning and re-planning; labor and facilities planning. Excellent communication skills, both written and oral with both technical and business people. Ability to speak at a level appropriate for the audience. Experience applying these skills in both academic teaching environment and a business setting is a plus.
- Excellent writing skills for presenting business cases and to document the models and analysis and present the results/conclusions in order to influence important decisions.
- A working knowledge of smooth and non-smooth optimization methods accompanied by associated expertise in the use of tools and the latest technology (e.g. CPLEX, Gurobi, XPRESS).
- A working knowledge of exact, approximation algorithms, and heuristic methods for solving difficult optimization problems like vehicle routing and network design problems.
- The ability to implement models and tools through the use of high-level modeling languages (e.g. AMPL, Mosel, R, Matlab).
- Experience prototyping and developing software in traditional programming languages (C++, Java, Clojure, Python).
- Familiarity with SQL and experience with very large-scale data. The ability to manipulate data by writing scripts (Perl, Ruby, Groovy) a plus.
- Statistical analysis, machine learning and data-modeling in a database environment a plus
- Exhibits excellent judgment
- Has relentlessly high standards
- Thinks strategically, but stays on top of tactical execution
- Expects and requires innovation of her/his team
- Thinks big and has convictions
- Results oriented
- Has the innate ability to inspire passion in others

2. Preferred Qualifications

- Ph.D. in Operations Research, Statistics, Applied Mathematics, Computer Science or a related field with publications in refereed academic journals.

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