SWARM OPTIMIZATION IN MARKETING

THESIS PROJECT

ABOUT POINTLOGIC

Pointlogic, A Nielsen Company helps customers with decision making in the area of media and marketing. Our main assets are Nielsen data and advanced analytics capabilities. Pointlogic's head office from Rotterdam has a data science team of about 20 people with backgrounds in econometrics, computer science and mathematics. We offer econometrics / operations research / mathematics students the possibility to either to work solely on internal projects, or as a thesis project (as part of their MSc curriculum).

YOUR PROFILE

- Currently enrolled in a Master in Computer science, Econometrics, Mathematics;
- Good social and communication skills;
- Good command in spoken and written English;
- Available for at least 20 hours per week;
- Available for a period of at least 6 months.

CONTACT INFORMATION

If you are interested in this project or other projects, feel free to contact us at careers@pointlogic.com. We would like to find out if you are up for this challenge, so please include your CV and motivation letter, explaining why did you choose this assignment, what related courses you've been enrolled in and what similar work you've done around this specific topic during your education.

ABOUT THE PROJECT

The goal of this project is to apply particle swarm optimization to a large optimization problem. The optimization problem has 10,000's decision variables (real-valued), linear restrictions and a non-linear objective function, that is very computational demanding to evaluate. The application is about planning an advertising campaign. The decision variables correspondent to budgets allocated to a large set of media and the objective function represents the ROI of the campaign.

The main reason why we are interested in particle swarm optimization is that it can take advantage of a parallel computing environment. Working on this project, you will be implementing and tuning a number of variations of the algorithm, and evaluating these on a benchmark set of optimization problems.

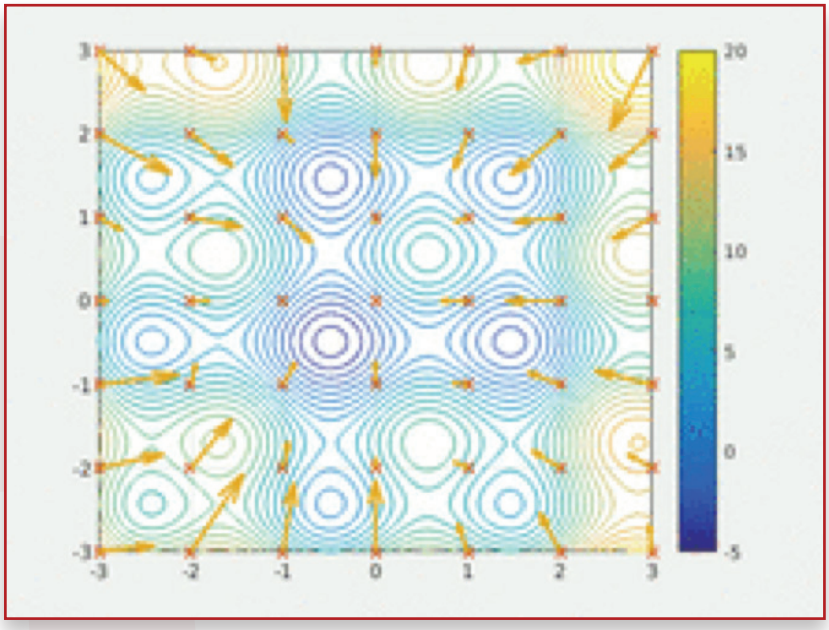

Figure 1. Swarm particles exploring different parts of the feasible region and moving in a direction based on their own velocity as well as findings from other particles

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