INTERNSHIP TOPIC PROPOSAL FOR MASTER 2 STUDENTS
(4 months, March-June 2023)

SUPERVISOR INFORMATION
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Topic: **Optimization methods for joint inventory replenishment**
Context: Inventory replenishment planning is an important task in supply chain management. Mathematical models for the problem of inventory replenishment are evolving over time to be more realistic but also more complex and difficult. Traditionally, problems for joint replenishment are solved by heuristics optimization methods.
Objective: The objective of this Master project is to study optimization techniques (models and methods) for the joint replenishment problem (JRP).   The project includes the following main tasks: • Studying a review on JRP: models, resolution approaches.   • Studying DCA based techniques for solving mixed integer programming.   • Building models and studying DCA based optimization methods for some selected problems in JRP.   • Doing numerical experiments, evaluating and comparing the performance of these methods with some existing optimization algorithms.
Used Methods and Techniques: The two approaches to be studied are   • Heuristics ([1], [2])   • DCA [3]
Some references: [1] L. Peng, L. Wang, and S. Wang (2022) A review of the joint replenishment problem from 2006 to 2022. Management System Engineering, https://doi.org/10.1007/s44176-022-00010-3   [2] M. Khouja and S. Goyal (2008) A review of the joint replenishment problem literature: 1989–2005. European Journal of Operational Research 186, pp. 1–16

[3] H.A. Le Thi, T. Pham Dinh (2018) DC programming and DCA: thirty years of developments. Mathematical Programming, Special issue on DC programming: Theory, Algorithm & Applications, Volume 169, Issue 1, pp. 5-68.

STUDENT SUPPORT

Is it possible for your home institution to help student with transport and/or living costs? Yes
Student will work at CT Group in Ho Chi Minh City, Vietnam.