

CURRICULUM VITAE

Name: TRAN Duc Quynh

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EDUCATION

9/2008-10/2011: PhD in Computer Science at Laboratory of theoretical and applied Informatics, Metz University (University of Lorraine), France

Title: “*Optimization non convex in Financial Management and Production Management*”.

2004-2006: Master of Mathematics at Hanoi National University of Education, Vietnam.

1999-2003: Bachelor of Mathematics at Hanoi National University of Education, Vietnam.

RESEARCH INTERESTS

- Optimization in Portfolio Selection: Model and Method.
- Optimization in Production Management.
- Optimization in Data mining.
- Non-convex Optimization: DC optimization (Difference of convex functions), Combinatorial Optimization, mixed 0-1 linear/quadratic programming.
- Multi-objective optimization, bi-level optimization.
- Graph algorithm.

GRANTS

•09/2008-10/2011: Scholarship of Vietnamese Government for my PhD project at the Metz University, France.

WORKING EXPERIENCES

From 10/2011: Lecturer in Mathematics at Vietnam National University of Agriculture.

2008-2011: Researcher in Operation Research at LITA, Metz University (University of Loraine), France.

2005-2008: Lecturer in Mathematics at Agriculture University of Hanoi, Vietnam (Vietnam National University of Agriculture).

FUNDED PROJECT

2014-2015: Investigating models for land pricing (Principal Investigator), Vietnam National University of Agriculture , ~7000USD

2014-2016: Equilibrium problem: theory and applications in transports (Key member), NAFOSTED, 20000 USD.

LANGUAGES

French, English, Vietnamese

INFORMATICS SKILLS

Programming : C/C++, Cplex, MatLab, CVX, AMPL.

Office : Latex, Word, Excel...

Abstract of my thesis

My thesis focuses on some optimization problems in Portfolio Selection and in Production Management. They are large scale non convex optimization problems due to integer variables and/or the non convexity of the objective function. Our approach is based on DC programming and DCA, an efficient local method in non convex programming. DC relaxation techniques and the combined algorithm Branch and Bound-DCA are also investigated for globally solving the considered problems. The proposed algorithms are coded in C/C++/MatLab. The numerical results are compared with the ones provided by different software: Cplex, Couenne,

Concerning optimization problem in portfolio selection, we have studied different criteria to measure the risk: the variance-covariance, the semi-variance, the value at risk, the beta bull, the beta bear, the maximum drawdown, the negative period ... Moreover, we also studied the transaction cost constraints, the cardinality constraints,...

Two following problems have been investigated:

1. Continuous Min Max Problem for Single Period Portfolio Selection with Discrete

Constraints: This is an extension of the classical model Markowitz, we consider the continuous min-max model with cardinality constraints to worst-case portfolio selection with multiple scenarios of risk, where the return forecast of each asset belongs to an interval. The presence of cardinality constraints makes the problem more difficult. We have developed a new method DCA for solving it. The proposed algorithm is coded in Visual C 2005. On the other hand, we reformulate the problem as a mixed integer quadratic program and then use Cplex to solve. The results of DCA are compared with the one provided of Cplex.

2. A class of bilevel programming problems and application in portfolio selection: Bilevel programming problem is a well known class of mathematical program. It has many applications in economic, finance, game theory, ... Here, we consider a class of bilevel programming problems where the upper objective function is convex quadratic while the lower objective function and the constraints are linear. We then present an application in Portfolio Selection.

Concerning production management, we have investigated three problems:

1. *Minimization of preventive maintenance cost with unequal release dates and tardiness penalties, under real-time and resource constraints*: we have presented the first deterministic model as a mixed integer linear program. The algorithm DCA for this problem was also developed. The numerical results are compared with the ones of FRT, a recent heuristic method.

2. *Optimizing a multi-stage production/inventory system with bottleneck*: This is a mixed integer non convex optimization problem. We have investigated algorithm DCA, Branch and Bound and the one combined BB-DCA for solving it. The proposed algorithms are compared with Couenne – a software for mixed integer non convex programming.

3. *Multi-period problem of fair transfer prices and inventory holding policies in two enterprise supply chains*: This problem consists of maximizing the Nash function which is non convex, under linear constraints and mixed integer variables. We have reformulated it and developed a continuous approach. The numerical experiments show that the proposed approach is promising.

JOURNAL PUBLICATIONS/ REFEREED PROCEEDINGS

1. Le Thi Hoai An, Tran Duc Quynh, *Solving continuous min max problem for single period portfolio selection with discrete constraints by DCA*, Optimization, Vol 61, pp. 1025-1038, 2012 (SCI).

2. Le Thi Hoai An, Pham Dinh Tao, Tran Duc Quynh, *A DC programming approach for a class of bilevel programming problems and application in portfolio selection*, Numerical Algebra, Control and Optimization (NACO), Vol 2, pp. 167-185, 2012.

3. Le Thi Hoai An, Tran Duc Quynh, Kondo Hloindo Adjallah, *A difference of convex functions algorithm for optimal scheduling and real-time assignment of preventive maintenance jobs on parallel processors*, to appear in Journal of Industry and Management Optimization (JIMO), pp. 243 - 258, Volume 10, Issue 1, January 2014 (SCI).

<https://www.aims sciences.org/journals/displayArticlesnew.jsp?paperID=9082>

4. Le Thi Hoai An, Tran Duc Quynh, *Optimizing a multi-stage production/inventory system with bottleneck by DC programming based approaches*, to appear in Computational Optimization and Applications (COAP) (SCI).

<http://link.springer.com/content/pdf/10.1007/s10589-013-9600-5.pdf>

5. Le Thi Hoai An, Tran Duc Quynh, *New and efficient algorithms for transfer prices and inventory holding policies in two-enterprise supply chains*, to appear in Journal of Global Optimization (JOGO) (SCI)

<http://link.springer.com/content/pdf/10.1007/s10898-013-0081-y.pdf>

6. Tran Duc Quynh, Le Thi Hoai An, Kondo Hloindo Adjallah, "*DCA for minimizing the cost and tardiness of preventive maintenance tasks under real-time allocation constraint*", LNCS, Volume 5991, pp 410-419.
7. Tran Duc Quynh, Le Thi Hoai An, *A fast and scalable algorithm for a multi-stage manufacturing problem*, appeared in the proceeding of the conference IESM 2011.
8. Le Thi Hoai An, Tran Duc Quynh, *Transfer prices for two-enterprise supply chain optimization by DCA*, appeared in the proceeding of the internet conference IPROMS 2010, 15-26 November 2010.

CONFERENCE PRESENTATION

- Duc Quynh Tran, Hoai An Le Thi, *DCA for solving continuous min max problem for single period portfolio selection*, invited session on Novel opportunities of DC programming and DCA for Industry and Finance, 23rd European Conference on Operational Research, Bonn, July 5 - 8, 2009.
- Tran Duc Quynh, Le Thi Hoai An, *DCA for solving the problem of fair transfer price and inventory holding policies in two-enterprise supply chains*, International Conference on Computational Management Science. Vienna, Austria. July 28-30, 2010."
- Tran Duc Quynh, Le Thi Hoai An, Pham Dinh Tao *DC programming approach for a class of bilevel programming problems and application in portfolio selection*, The 8th International Conference on Optimization : Techniques and Applications (ICOTA8), December 10-13, 2010 Shanghai, China.