

CURRICULUM VITAE

Name: TRAN Duc Quynh

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EDUCATION

2008-2011: PhD in Computer Science at the University of Lorraine, France

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

2004-2006: Master of Mathematics at Hanoi Education University, Vietnam, GPA: 8.3/10.

1999-2003: Bachelor of Mathematics at Education University of Hanoi, Vietnam, GPA: 7.75/10.

1996-1999: Studied at a talent class specializing in Mathematics in HaTay province, Vietnam.

1999: Won the third prize at the provincial mathematics examination in Hatay province.

RESEARCH INTERESTS

- Optimization in Portfolio Selection: Model and Method.
- Optimization in Production Management.
- Optimization in Bioinformatics.
- 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

- 11/2009-09/2011: Research fellowship of the University Paul Verlaine of Metz for my research project.
- 09/2008-09/2011: Scholarship of Vietnamese Government for my PhD project at the University Paul Verlaine of Metz, France.
- 09/1999-6/2003: Scholarship of AUF and Scholarship of Education University of Hanoi for good students, Vietnam.

WORKING EXPERIENCES

From 3/2012: Head of the Applied Mathematics Department, Hanoi University of Agriculture.

From 1/2012: Invited Lecturer in Statistics and Probability at Centre for International Education, University of Languages and International Studies.

1/2012-6/2012: Invited Lecturer in Discrete Mathematics at FPT University.

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

2009-2010 : Participant to “Projet émergent CPE Lorrain 2009-2010 *Classification et choix de fonds des fonds*”, projet inter-laboratoire LITA – CEREFIGE (Centre européen de recherche en Economie financière et en gestion des entreprises).

2004-2008: Lecturer in Mathematics at Agriculture University of Hanoi, Vietnam

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.

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. 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.

4. 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.

5. 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.

6. Le Thi Hoai An, Tran Duc Quynh, Kondo Hloindo Adjallah, *Minimization of preventive maintenance cost with unequal release dates and tardiness penalties, under realtime and resource constraints, using DCA*, to appear in Journal of Industry and Management Optimization (JIMO).

7. 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).

8. Le Thi Hoai An, Tran Duc Quynh, *A DC Programming approach for multi-period problem of fair transfer prices and inventory holding policies in two-enterprise supply chains*, accepted to appear in Journal of Global Optimization (JOGO)

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.

Recommenders

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- 2) Professor Le Thi Hoai An
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- 3) Professor Van Dat Cung
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