GDRI ALGODEC
01/01/2011 – 31/12/2014
Coordonnateur : Denis Bouyssou, LAMSADE UMR7243, INS2I

RAPPORT D'ACTIVITÉ 2014

A. ACTIVITÉS DE COORDINATION

Pour mémoire, le GDRI regroupe les laboratoires suivants :

DIMACS, Rutgers University
Université Paris Dauphine (LAMSADE)
Université Pierre et Marie Curie (LIP6)
Université d'Artois (CRIL)
Université de Mons (MATHRO)
Université Libre de Bruxelles (SMG)
Université du Luxembourg (ILIAS)
Universidad Rey Juan Carlos (DEIO)

A.1- Organisation de réunions de travail sur la thématique du GDRI

ADT 2015

La conférence ADT 2015 se déroulera, selon un format similaire à la conférence ADT 2013 à Lexington, KY, USA. Elle sera organisée par Judy Goldsmith. Le GDRI ALGODEC est comme cela a été le cas pour les précédentes conférences ADT étroitement impliqué dans cette manifestation.

Autres manifestations

Le GDRI a été impliqué dans diverses autres manifestations scientifiques :

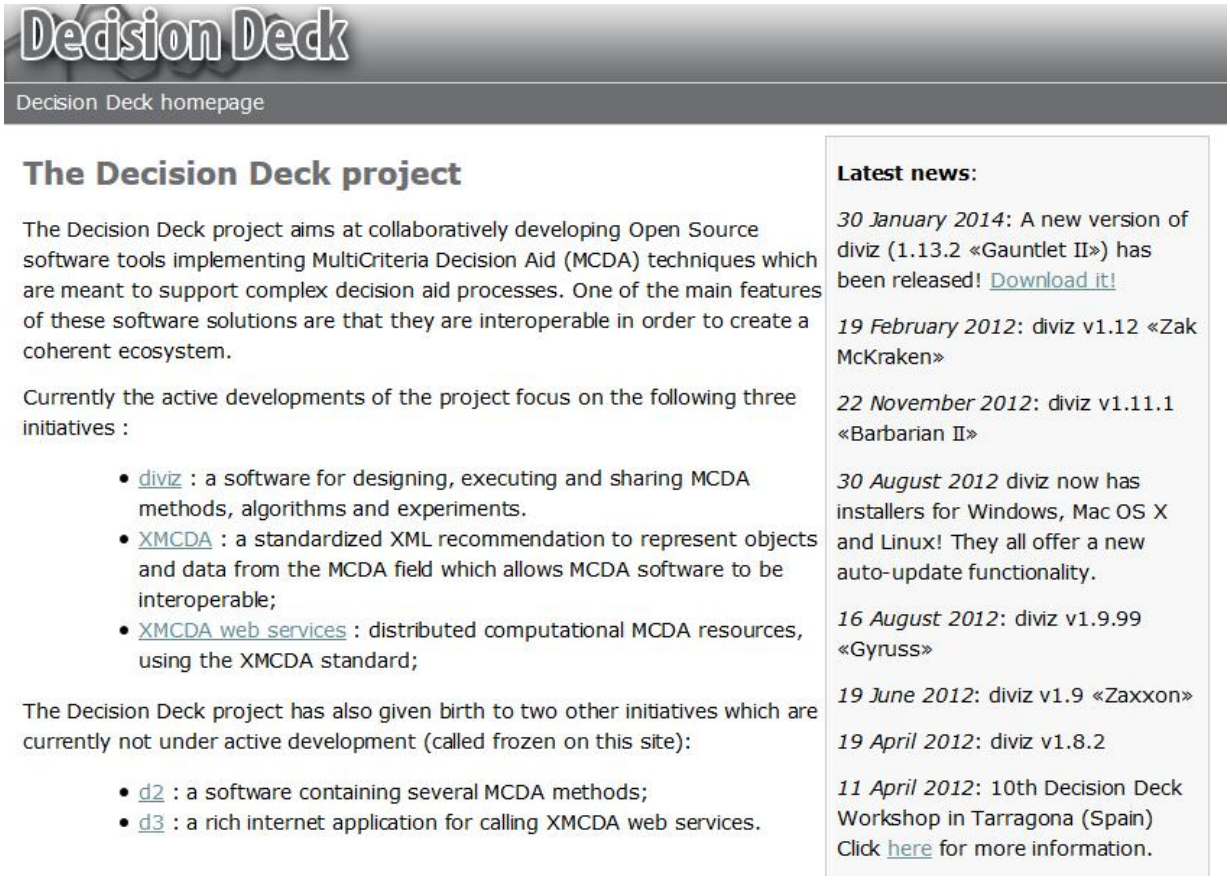
- la conférence Graphs and Decisions organisé par l'Université du Luxembourg (27--29 Octobre 2014) avec le soutien du GDRI ALGODEC (Programme en Annexe)
- L'école d'été pluridisciplinaire sur la théorie des jeux (Aussois, 7--13 septembre 2014). Le GDRI ALGODEC soutient cette manifestation et subventionne la participation de trois étudiants doctoraux du LAMSADE (Programme en Annexe). Trois doctorants appartenant aux institutions membres du GDRI ont particpé à cet école, avec le soutien du GDRI.
- La conférence DA2PL (Ecole Centrale, 20--21 Novembre 2014). Le GDRI ALGODEC soutient cette mùanifestaion et financera plusieurs missions de ses membres (Programme en Annexe)
- Le GDRI ALGODEC a, par ailleurs, financé deux missions de deux membres du LAMSADE (Alexis Tsoukiàs et Miguel Couceiro) au DIMACS pour poursuivre et intensifier la coopération entre le LAMSADE et le DIMACS. Alexis Tsoukiàs et Miguel Couceiro ont participé au Workshop DIMACS MPE 2013 (Workshop on Sustainable Human Environments) (Programme en Annexe)
- Le séminaire Dagstuhl Seminar 14202 « Judgment Aggregation for Artificial Intelligence » (May 12th – May 15th 2014, Dagstuhl Seminar 14202) dont Gabriella Pigozzi du LAMSADE a été l'une des organisatrices (avec Franz Dietrich, CNRS, France & University of East Anglia, Ulle Endriss, University of Amsterdam, et Davide Grossi (University of Liverpool). Le rapport est donné en annexe.

A.2 – Organisation de conférences, écoles d'été, ateliers etc. par les partenaires du GDRI

Le GDRI ALGODEC n'a pas organisé d'école d'été en 2014 mais il a soutenu l'organisation de l'école d'été pluridisciplinaire sur la théorie des jeux (Aussois, 7--13 septembre 2014). Voir plus haut.

A.3 – Autres activités de coordination

Le GDRI reste impliqué dans le projet Decision Deck (www.decision-deck.org). Voir http://www.decision-deck.org/project/



A.4 – Bilan 2014 des activités du GDRI

Le GDRI ALGODEC aborde le domaine de la Théorie Algorithmique de la Décision (Algorithmic Decision Theory). L'émergence de ce thème de recherche est le résultat d'une coopération entre le LAMSADE et le DIMACS, commencée déjà en 2004, et qui a été formalisée par des accords entre le CNRS et la NSF puis par l'Action COST IC0602. Le GDRI ALGODEC se propose de poursuivre ces développements. Plus précisément, les objectifs du GDRI consistent en :

- la construction et le renforcement de la communauté ALGODEC au niveau international, notamment parmi les jeunes chercheurs ;
- l'identification des domaines d'application pertinents ;
- l'aide au développement de recherches dans ce domaine à travers la mise en réseau et la création de synergies entre les laboratoires participants et au-delà.

En ce qui concerne le premier objectif les instruments choisis sont :

- l'organisation d'écoles d'été et de formation doctorale spécialisées destinées aux jeunes chercheurs. Une école d'été en « Algorithmic Game Theory » sera proposée pour le 2012.
- l'organisation de conférences spécialisées qui permettent l'établissement des forums internationaux d'échange entre les chercheurs du domaine : conférence ADT 2011 (www.adt2011.org), colloques proposés dans le cadre du DIMACS Special Focus. Une conférence « Computational Social Choice » est prévue en septembre 2012.
- Les domaines d'applications privilégiés sont :
- Smart Cities. Les grandes villes au niveau mondial continuent à progresser et constituent un défi majeur pour les Sciences et Technologies de la Décision dans la perspective de concevoir des

villes durables, intelligents, ouverts à l'inclusion et la création des nouveaux modèles de citoyenneté.

- Sûreté et Sécurité. Le risque est un élément présent dans tous les problèmes de décision du monde réel et a été un sujet de réflexion en Théorie de la Décision depuis son origine. Aujourd'hui cette thématique est présente d'une part dans la conduite sécurisée des systèmes complexes (industriels ou autres) et d'autre part dans la conception des politiques publiques à la fois sous la forme du hasard (risques naturelles ou technologiques) et de la menace (crime, terrorisme etc.).
- Policy Analytics. Le sujet a été identifié pendant le dernier colloque LAMSADE/DIMACS en Décembre 2010 (www.lamsade.dauphine.fr/dimacs) comme un défi scientifique et technologique : élaborer des méthodologies originales pour l'aide à la décision dans la conception, mise en ouvre et évaluation des politiques publiques, notamment en exploitant l'énorme masse des données aujourd'hui disponibles.

Le GDRI ALGODEC soutient les activités de recherche de base dans les laboratoires participants à travers la mise en place d'un programme d'échange, notamment des jeunes chercheurs ainsi que le déploiement de cotutelles de thèses. Il apporte un soutien au projet Decision Deck (www.decision-deck.org) qui a pour objectif la conception d'une plateforme de développement des logiciels d'aide à la décision open source et l'expérimentation de la mise en place de services web d'aide à la décision.

L'année 2014 était une année sans conférence ADT. Nous avons donc centré nos activités sur des conférences plus spécialisées (Graphs and Decision, DA2PL 2014, JA4AI) et l'école d'été pluridisciplinaire sur la théorie des jeux.

Les conférences ADT sont maintenant bien établies. Le GDRI a permis de faire émerger une communauté internationale autonome et visible. Cette communauté, portée par les conférences ADT a maintenant une vie autonome. Parallèlement les conférence DA2PL dont la deuxième édition aura lieu cete année ont fait émerger des préoccupations communes entre la communaté « décision » et la communauté « machine learning » spécialisée en apprentissage des préférences. Ce sont ces liens que le projet de renouvellement du GDRI vise à conforter et à développer.

B. RELATIONS ENTRE laboratoires partenaires du GDRI

B.1 - Accueil, dans les laboratoires français, de chercheurs des laboratoires partenaires étrangers

Marc Pirlot de l'Université de Mons a effectué plusieurs séjours de courte durée (une dizaine de fois) à l'Université Paris Dauphine et à l'Université Pierre et Marie Curie dans le cadre de son travail de recherche avec Denis Bouyssou (LAMSADE) et Patrice Perny (LIP6).

B.2 - Séjours, dans les laboratoires partenaires étrangers, de chercheurs des laboratoires français

Alexis Tsoukiàs a visité le DIMACS a diverses reprises en liaison avec les colloques qui y ont été organisés.

Denis Bouyssou a effectué divers séjours à Bruxelles et à Mons pour y travailler avec Marc Pirlot et Thierry Marchant.

B.3 - Co-encadrement de doctorants et/ou participation à des jurys

a) Thèses co-encadrées ou en co-tutelle transnationale
Titre de la thèse, nom du doctorant, laboratoire principal de rattachement, nom des co-encadrants dans chaque laboratoire.

b) Participation à des jurys de soutenance de thèse ou d'habilitation dans un des laboratoires partenaires étrangers

Titre de la thèse/habilitation, nom du candidat, laboratoire principal de rattachement, date, lieu de la soutenance, nom du (des) membre(s) du GDRI participant au jury

Denis Bouyssou est membre du Comité de thèse de Valérie Brison (MATHRO, Faculté Polytechnique de Mons)

C. PRODUCTION SCIENTIFIQUE COMMUNE

a) Publications collectives du GDRI (actes des conférences organisées dans le cadre du GDRI, ouvrages thématiques…)

Bisdorff R., Dias L.C., Meyer P., Mousseau V. and Pirlot M. (2014) (eds). Evaluation and decision models with multiple criteria: Case studies (Springer ISOR forthcoming) 708 pages

b) Liste des publications parues, acceptées ou soumises (préciser) dans des revues avec comité de lecture ou ouvrages, co-signées avec des chercheurs des laboratoires partenaires étrangers

Bouyssou Denis , Marchant Thierry, Pirlot Marc, Tsoukiàs Alexis , Philippe Vincke. Aiding to decide: concepts and issues, Book chapter, pages 17 - 35, 2014. Evaluation and Decision Models: real case studies, Springer Verlag. R. Bisdorff, L. Dias, P. Meyer, V. Mousseau, M. Pirlot, editor(s)

Bouyssou Denis , Marchant Thierry, Pirlot Marc, Tsoukiàs Alexis , Philippe Vincke. Modelling preferences, Book chapter, pages 37 - 87, 2014. Evaluation and Decision models: real case studies, Springer Verlag, Berlin. R. Bisdorff, L. Dias, P. Meyer, V. Mousseau, M. Pirlot, editor(s)

Bouyssou Denis , Marchant Thierry, Pirlot Marc, Tsoukiàs Alexis , Philippe Vincke. Building recommendations, Book chapter, pages 89 - 115, 2014. Evaluation and Decision models: real case studies, Springer Verlag, Berlin. R. Bisdorff, L. Dias, P. Meyer, V. Mousseau, M. Pirlot, editor(s)

Bouyssou Denis, Marchant Thierry, “An axiomatic approach to bibliometric rankings and indices”, Journal of Informetrics, 8 (3), 449–477, 2014.

Bouyssou Denis, Marchant Thierry, “Multiattribute preference models with reference points”, European Journal of Operational Research, 229 (2), 470–481, 2013.

Bouyssou Denis, Marchant Thierry, “On the relations between ELECTRE TRI-B and ELECTRE TRI-C and on a new variant of ELECTRE TRI-B, European Journal of Operational Research, forthcoming, 2014.

Bouyssou Denis, Pirlot Marc, “A note on the asymmetric part of an outranking relation”, International Transactions in Operational Research, forthcoming, 2014.

Couceiro Miguel, Marichal, Jean-Luc, Quasi-Lovász Extensions on Bounded Chains. IPMU (1) 2014: 199-205

D. OBSERVATIONS EVENTUELLES

Une demande de prolongation du GDRI ALGODEC a été déposée. Suite au bilan de ces 4 années, il a été décidé de procéder à une modification mineure de la thématique du GDRI. Le texte de ce projet suit.

PROJECT DESCRIPTION

In this proposal we outline the description of a research effort on "Preference Analytics", to be submitted for recognition as a *Groupements de recherche internationaux (GDRI)* by the CNRS. This initiative is based on the activities of the previous GRDI on Algorithmic Decision Theory (ALGODEC), of which our proposal constitutes an evolution. We are aiming at establishing a network of research labs interested in automatic methods for learning preferences, and reasoning with them, in order to produce recommendations for complex decision problems. Algorithmic aspects are important, but the new GDRI will place more attention to the task of preference learning emphasizing the problem of learning from data.
Indeed, recently researchers from different communities (operation research, artificial intelligence, statistics, data mining, machine learning,…) have identified the need of assessing preferences in large decision contexts, designing scalable algorithms that can build a profile of the preferences of one or more decision makers. In this context, ideas from the tradition of decision theory come to a new light, as applications need efficient and scalable solutions.

The ALGODEC project has been successful into bringing together researchers from several labs working on algorithmic aspects of decision theory. One prominent success of the previous GDRI was the establishment of the *Algorithmic Decision Theory (ADT)* conference that will be held in 2015 for the
4-th time. Another initiative was the establishment of the DA2PL workshop "*From Multi-criteria Decision Analysis to Preference Learning"* held at the University of Mons for the first time in 2012 and whose second edition will be held in Paris in the fall of 2014.

The Preference Analytics network will build on the successes of the GDRI ALGODEC. Its financing will ensure that the established collaboration will be nurtured. A different composition of the network will be proposed, accordingly to the thematic shift of the initiative. In particular, we include labs that were not part of the previous ALGODEC GDRI, notably the group of Eyke Hullermeier, a renowned expert in the field of preference learning.

Within the Preference Analytics network established by the present Memorandum, a number of partners *(LAMSADE-U. Paris Dauphine; LIP6- UPMC; CRIL-U. Artois; HEUDIASYC-UTC; SMG-ULB; MATHRO-UMONS; LGI-ECP; DIMACS-U. Rutgers; ILIAS-U. Luxembourg; Computational Intelligence Group-U. of Paderborn; IDSE-U. Bozen-Bolzano)* have extensively collaborated before; they have more than 20 years of joint research activities resulting in joint PhDs, papers, books and research projects (both client and knowledge driven). Today they represent a leading force worldwide in the area of Decision Sciences and Technologies.
The partner at DIMACS in the US is a long time collaborator and provides important expertise in discrete mathematics and decision theory.
Other partners of the network are more recent collaborators (each node in the network has collaborated with at least another node) have a more distinct research profile in machine learning, data mining and recommendation systems. They bring crucial competences given the thematic evolution of the GDRI.

Beyond these eleven partners exist different "layers" of academic and industrial partners resulting in an European (and beyond) network with a solid tradition and high potential (see for example the EURO Working Group on MCDA established in 1975, the COST Action IC0602 on Algorithmic Decision Theory, started in 2007, both leaded by the LAMSADE, the Special Focus on Algorithmic Decision Theory (2010-2013) leaded by the DIMACS, the ALGODEC GDRI, and the Special focus on Analytics of Preferences, Comparisons, Judgements and Recommendations, also leaded by DIMACS, to be started in 2015).

The members of Preference Analytics will network research on exploratory projects, long term fundamental research, client driven action research and special focus activities. Typical subjects on which the network partners already work include:

- Algorithmic Decision Theory (on the edge between Decision Analysis and Artificial Intelligence);
- Recommender Systems (collaborative filtering, interactive recommender systems,…)
- Development of software for preference assessment and decision support
- Learning to Rank (machine learning approaches to learn rankings)
- Learning preferences from data
- Eliciting/learning complex preference models (Generalized additive models, models based on the Choquet integral)
  systems: the Decision Deck project, others.
- Adversarial Risk Analysis
- Game-theoretic aspects of preference-handling (negotiations)
- …

The founding members of the Preference Analytics network are all world-class leaders in the area of artificial intelligence machine learning and decision theory; they have complementary skills and specialisations in this area.

Motivation

Preferences are at the basis of any efforts to provide decision support, as there are no decisions without preferences. Critical to decision support is to develop tools for analyzing preferences, or more specifically for "learning preferences." But how do we elicit them from stakeholders? From Individuals? How do we infer them from data? The tools for doing this start from model building and involve preference modeling, subjective probability, and inferences from partial information, among other things.

In today's large decision making contexts, automatically learning preferences is a crucial task, and a modern trend is to use techniques from machine learning. Preferences can be represented as binary relations, and the machine learning challenge is to predict complex binary relations such as rankings or partial orders, rather than single values. In general, a preference learning system is provided with a set of items (e.g., products or alternative strategies) for which preferences are known and the task is to learn a function that predicts preferences for a new set of items (e.g., new products not seen so far) or for the same set of items in a different context (e.g., the same products but for a different individual). In many settings, preferences need to be learned from implicit data (as opposed to specific comparisons of alternatives), for example by inference from a person's actions. A classic example is estimating user preferences based on "click-through" data, where we assume that a click on a page indicates a user's preference for that page over another.

Notice that the analytics of preferences also involves a person's values, objectives, desires, utilities, beliefs, etc. For example, a value function assigns an abstract degree of utility to each alternative under consideration. The problem of learning a value function from given training data can be cast as one of regression or ordinal classification, which are both well-known machine learning problems. However, the problems become complex when they include special requirements (such as monotonicity) or when the training data is not given in the form of input/output pairs together with their utilities, but may also consist of pairwise comparisons stating that one alternative is preferred to another.

Related issues include how to use preferences in making recommendations; how to design "rational" machine learning algorithms that go beyond the usual "accuracy" criterion to consider

such factors as simplicity or cost; learning preferences in dynamic or changing environments, e.g., from data streams; and preference learning in adversarial situations. Modern decision theory has become very algorithmic, and the same is true of preference analytics. There is overlap with artificial intelligence, algorithmic decision theory, recommender systems, collaborative filtering, game theory, social choice theory, and dimension of partial orders. More generally, we can "learn" any kind of binary relation, such as "riskier than" or "more likely than," which in turn brings in theories of risk assessment, risk analysis, foundations of probability, etc.

Topics

The special focus is a natural follow on to our recently ended SF on Algorithmic Decision Theory. As with ALGODEC GDRI, it would have an American counterpart in the form of a special focus at DIMACS.

Topics of interests include:

- Preference Learning of Rankings, Partial Orders, Lattices
- Preference Learning from Implicit Data (such as click through data)
- Value Function Learning
- Preference-based Reinforcement Learning
- Learning for and from Sequential Decision Processes (such as Partially Observable Markov Decision Processes)
- Preference Analytics in Dynamic or Changing Environments (e.g., Streaming)
- Preference Analytics in Adversarial Situations
- Preference Analytics in Group Decision Making Contexts
- Preference Analytics from Big Data
- Preference Learning about Portfolios, Composite Objects, Extended Sets The Preference Analytics network will serve to bring together a variety of new themes and directions of research, with a multidisciplinary emphasis. In particular, it will serve to bridge the gap between the communities of machine learning/AI and decision analysis/operations.

Prospected Activities for the 4 years of the GDRI

The GDRI is expected to be involved in the following activities:

- Contribute to the organization *International Conference on Algorithmic Decision Theory (ADT),* to be held in 2015 in Lexington, Kentucky (US) and in 2017 (venue not yet assigned). The ADT conference series was created with the support of the ALGODEC GDRI.
- Contribute to the workshop series *From Multicriteria Decision Aid to Preference Learning (DA2PL)*, to be organized on even years (2016 and 2018). The themes of preference analytics and learning are central in DA2PL.
- Organize one or two summer doctoral schools during the span of the four years addressing the whole of the PhD students enrolled with the partners and beyond.
- Contribute to the organization of workshops on the themes of the GDRI co-located in highly rated international conferences such as AAAI, IJCAI, ICML, ECML. A number of workshops on topics related to preferences and preference learning has been organized in the past by the participants of the proposed GDRI on Preference Analytics (such as the NIPS workshop on

Choice models and Preference Learning in 2011, and the series of workshops on Preference Learning organized by Eyke Hullermeier). We will consider the possibility of establishing a new workshop venue, but perhaps given the number of already established venues, we will focus on continuing these series, with possibly a larger thematic scope. We also plan to keep contributing to the successful series of *Multi-disciplinary Workshop on Advances in Preference Handling (MPREF)*, held annually since 2004, that allows possibility of interaction with researchers interested in preferences from other fields (databases processing, algorithmic, theoretical computer science).

- Organize joint seminars among theparticipating (research centres) laboratories/institutes as well as further dissemination activities.
- Promote mobility of early stage and experienced researchers as well as for the permanent academic staff. In particular, we will support research visits of members of the GDRI in the lab of another partner, with the goal of undertaking collaborative research leading to joint publications.
- Establish a website for the GDRI where activities will be described. A person, among the researchers implicated in the project, will be responsible for the website so that it will be updated regularly. A blog-like interfaces will allow to keep tracks of project meetings, but also to present abstracts of seminars given at the universities involved, announce recent publications on the subject, advertise call for papers. We will consider the possibility of a forum or a dedicated page on social networks, so that young PhD students can discuss with practitioners and other senior (or junior) researchers with whom develop new research ideas or practical support activities, not necessarily within the principal axis of the PhD.
- Promote the co-tutoring of each PhD student by at least two senior researchers from two different partner laboratories.

We will also identify possible long-term activities, such as

- The establishment of an European Doctoral School in Preference Analytics; considering also to ask the support from Horizon 2020 (International Training Network). Similar activities at the Master level are also possible.
- Identify possible industrial contacts and industrial research applications; jointly engage in client-driven research contracts.

Funding and Management

Besides funds provided to each partner by its/their respective supervisory body(ies) (Parent Institutions), the members of the Preference Analytics network will seek for additional external funding in participating in European, International and National calls in relevant fields.

List of partners

1. **LAMSADE** - *University Paris Dauphine (France);*
2. **LIP6**- *University Pierre Marie Curie (France);*
3. **CRIL**-*University Artois (France);*
4. **HEUDIASYC**-*University Technology Compiègne (France);*
5. **LGI**- *Ecole Centrale Paris (France);*
6. **DIMACS** – *Rutgers University (USA);*
7. **ILIAS**-*University of Luxembourg (Luxembourg);*
8. **SMG**- *Université Libre de Bruxelles (Belgium);*
9. **MATHRO**- *University of Mons (Belgium);*

10. Computational Intelligence Group -*University of Paderborn (Germany);*

11. Centre for Information and Database Systems Engineering (IDSE)- *Free university of Bozen-Bolzano (Italy).*

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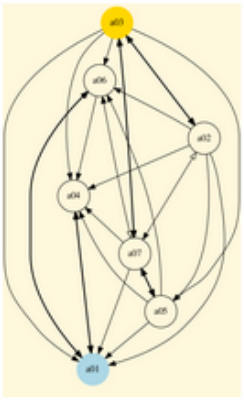
Conference GRAPHS & DECISIONS

27-29 October 2014, Luxembourg

The goal of this conference is to gather several researchers working on different topics related to **Graph and Decision Theory**, and to explore synergies between them. Such topics include (but are not restricted to):

- **Algorithmic decision theory**,
- **Artificial intelligence**,
- **Combinatorial optimization**,
- **Computational social choice**,
- **Discrete mathematics**,
- **Forensic science**,
- **Multiple criteria decision aid**,
- **Operations research**,
- **Theoretical computer science**.



This conference is co-organized by:

- the **Interdisciplinary Laboratory of Intelligent and Adaptive Systems** **ILIAS** (FSTC/CSC, University of Luxembourg),

- the **Laboratoire d'Analyse et Modélisation de Systèmes pour l'Aide à la DEcision** **LAMSADE** (University Paris-Dauphine), and

- the **Mathematics Research Unit** (FSTC, University of Luxembourg),

in the framework of the **GDRI Algodec** « **Algorithmic Decision Theory** »
recognized and supported by the **CNRS** (France), the **FNRS** (Belgium) and the **FNR** (Luxemburg).

Program

Monday, 27 October
8h30 - 9h00 : *Reception and Welcome*
9h00 - 10h00 :Graph Models for Cellular Channel Allocation
by Alain Hertz (Ecole Polytechnique, Montréal, Canada)
10h00- 10h30 : *Coffee Break*
10h30- 11h15 :Scheduling through coloring
by Marc Demange (RMIT University, Melbourne, Australia)
11h15- 12h00 :Analyzing network robustness via interdiction problems
by Rico Zenklusen (ETH Zürich, Switzerland)
12h00- 13h30 : *Lunch break*
13h30- 14h30 :Transform to simplify
by Dominique de Werra (EPF Lausanne, Switzerland)
14h30- 15h00 : *Coffee Break*

15h00- 15h45 :Route choice models: bringing behavioral aspects into shortest path
by Michel Bierlaire (EPF Lausanne, Switzerland)
15h45- 16h30 :On ranking-by-choosing with bipolar outranking digraphs of large orders
by Raymond Bisdorff (University of Luxembourg)
16h30- 16h45 : *Short break*
16h45- 17h30 :Preference-based optimization in graphs using rank-dependent aggregation functions
by Patrice Perny (Université Pierre et Marie Curie, Paris)
17h30- 18h15 :Group argumentation
by Gabriella Pigozzi (Université Paris-Dauphine)

Tuesday, 28 October

8h30 - 9h00 : *Welcome coffee*
9h00 - 10h00 :Should we use bibliometric indices to evaluate research?
by Denis Bouyssou (CNRS, Université Paris-Dauphine)
10h00- 10h30 : *Coffee Break*
10h30- 11h15 :Revealed preference tests of collectively rational consumption behavior
by Yves Crama (University of Liege, Belgium)
11h15- 12h00 :Strategic Candidacy
by Jérôme Lang (Université Paris-Dauphine)
12h00- 13h30 : *Lunch break*
13h30- 14h30 :A characterization of the Choquet integral when interactions are specified by a graph
by Marc Pirlot (Université de Mons, Belgium)
14h30- 15h00 : **Surprise event**
by Alexis Tsoukiàs (Université Paris-Dauphine)
15h00- 15h30 : *Coffee Break*
16h30- 18h00 :On the traces of Sébastien Le Prestre de Vauban (1633-1707), the famous French military engineer
Guided visit of historical city centre
19h30- 22h00 : **Conference dinner (Essenza Restaurant, 12 Fleschiirgaas)**

Wednesday, 29 October

8h30 - 9h00 : *Welcome coffee*
9h00 - 10h00 :Tournament Solutions: recents developments
by François Laslier (École d'économie de Paris)
10h00- 10h30 : *Coffee Break*
10h30- 11h15 :Fixing a Balanced Knockout Tournament
by Serge Gaspers (UNSW Australia and NICTA, Sydney, Australia)
11h15- 12h00 :Bases and transforms of set functions
by Michel Grabisch (Université Paris I Panthéon-Sorbonne)
12h00- 13h30 : *Lunch break*
13h30- 14h15 :Structures of oppositions in formal concept analysis, rough set theory, possibility theory and qualitative fuzzy integrals
by Henri Prade (CNRS, IRIT, Toulouse)
14h15- 15h00 :Graded modal logic to reason about the power of attributes in multicriteria decision making
by Bruno Teheux (University of Luxembourg)

École d'été pluridisciplinaire sur la théorie des jeux

Ecole d'été pluridisciplinaire de Théorie des Jeux

Description | Inscription | Intervenants | Programme | Infos pratiques

ussois, 7-13 Sept. 2014

Description

Objectifs

L' « école d'été pluridisciplinaire de théorie des jeux » réunira de futurs chercheurs (doctorants et post-doctorants) pour assister à des cours portant sur les diverses composantes de la théorie des jeux moderne. Ceux-ci seront donnés par de jeunes chercheurs. Un large panorama des problématiques actuelles, des applications possibles, ainsi que des techniques et outils développés pour les résoudre sera présenté.

Déroulement

L'école d'été dure une semaine, avec une arrivée le dimanche 7 septembre 2014 au soir et un retour le vendredi 13 après midi. Elle est composée de cinq cours de 5 heures environ, portant sur les liens entre théorie des jeux et

- la biologie,
- l'économie,
- l'informatique,
- la physique
- les statistiques.

L'audience aura également l'occasion de présenter des travaux lors de courtes interventions.

Coût de l'école

Les frais d'hébergement des jeunes participants seront pris en charge, après demande formulée et dans la limite des places disponibles. Voir la page inscription pour plus de renseignements sur la manière de postuler. Les frais de transports seront à la charge des participants.

Financement

Nous remercions les groupements de recherches, fondations, laboratoires et projets qui nous ont soutenus:

GDR 2932 THÉORIE DES JEUX : MODÉLISATION MATHÉMATIQUE ET APPLICATIONS — GdR MOA — gdr iM — Fondation mathématique Jacques Hadamard FMJH — ANR — EDF — CEREMADE UMR CNRS 7534 — LAMSADE UMR CNRS 7243 — IMA

Aussois, 7-13 Sept. 2014

Intervenants

Aurélien Garivier (Institut mathématique de Toulouse – Université Paul Sabatier) : **Machine learning**

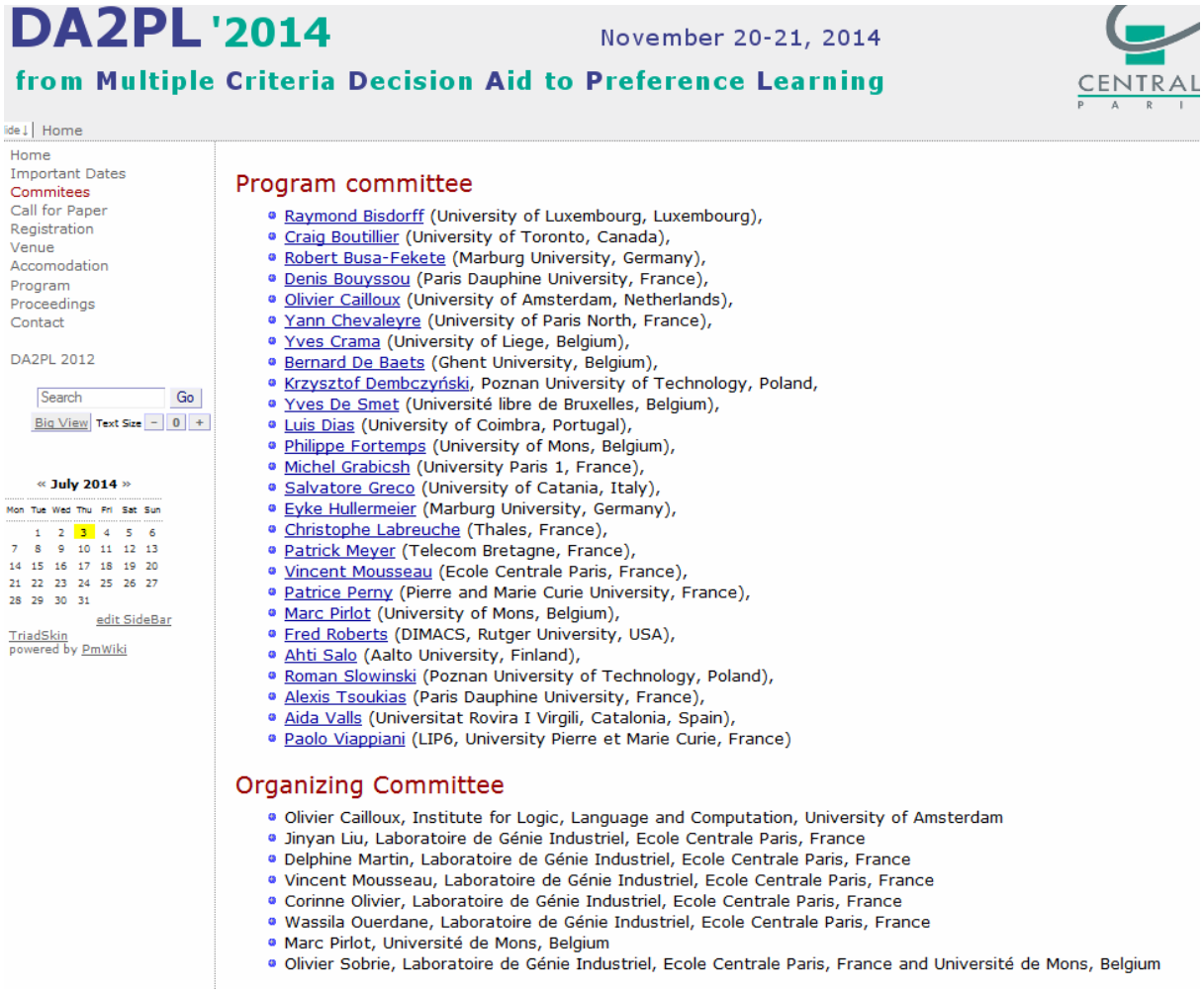
Hugo Gimbert (LABRI – Université de Bordeaux) : **Algorithmes pour les jeux stochastiques**

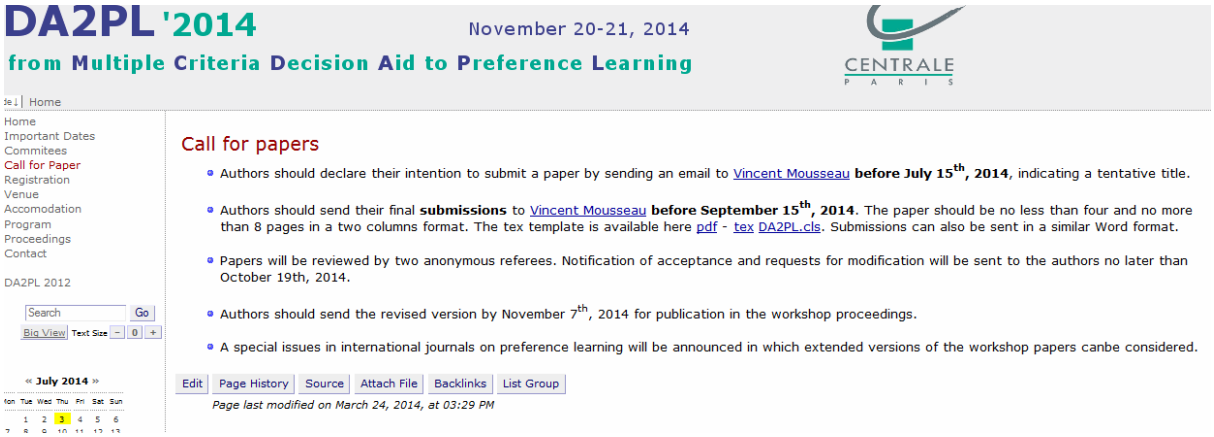
Francisco Silva (MOD – Université de Limoges) : **Jeux de champs moyen**

Ludovic Renou (Department of Economics – University of Essex) : **Mechanism design : A First Look**

Yannick Viossat (CEREMADE – Université Paris-Dauphine) : **Dynamiques de population**

Conférence DA2PL (Ecole Centrale, 20--21 Novembre 2014)





Program

Thursday November 20th, 2014

9h00 Registration

9h15 Welcomming address

9h30 Session 1
Invited speaker:
"Preference Learning: Machine Learning meets MCDA",
Eyke Hüllermeier,
Department of Mathematics and Computer Science, Universität Paderborn, Germany

10h30 Session 2
"On the use of copulas to simulate multicriteria data",
Jairo Cugliari1, Antoine Rolland1, Thi-Min-Tuy Tran1
1 ERIC, Université Lyon 2,

"Data Generation Techniques for Label Ranking",
Massimo Gurrieri1, Philippe Fortemps1, Xavier Siebert1, Marc Pirlot1, Nabil Aït-Taleb1
1 MATHRO, UMONS

11h30 Coffee Break

12h00 Session 3
Invited speaker:
"Boolean functions for classification: logical analysis of data",
Yves Crama,
University of Liège, Belgium

13h00 Lunch

14h20 Group photo

14h30 Session 4

Invited speaker:
"Learning and indentifying monotone boolean functions",
Endre Boros,
Rutgers University, NJ, USA

15h30 Coffee break
16h00 Session 5
"Learning the parameters of a majority rule sorting model taking attribute interactions into account",
Olivier Sobrie1,2, Vincent Mousseau1 and Marc Pirlot2,
1 LGI, Ecole Centrale Paris, 2 MATHRO, UMONS

"Conjoint axiomatization of the Choquet integral for two-dimensional heterogeneous product sets",
Mikhail Timonin1,
1 Queen Mary University of London

"Utilitaristic Choquistic Regression",
Ali Fallah Tehrani1, Christophe Labreuche2, Eyke Hullermeier1
1Department of Mathematics and Computer Science, University of Marburg, 2 Thales Research & Technology

"About the french hospitals rankings: a MCDA point of view",
Brice Mayag1,
1 LAMSADE, Université Paris Dauphine

19h00 Workshop Banquet
at Restaurant "Le Berny", 127 Avenue Aristide Briand, 92160 Antony, tel.: 01 42 37 72 40, how to go there

Friday November 21, 2014
9h Session 6
Invited speaker:
"Scaling Optimization Methods for Data-driven Marketing ",
Craig Boutillier,
University Toronto, Canada

10h00 Session 7
"Factorization of large tournaments for the median linear order problem",
Alain Guénoche1
1 Institut de Mathématiques de Marseille (I2M - CNRS)

"'Listing the families of Sufficient Coalitions of criteria involved in Sorting procedures'",
Eda Ersek Uyanık1, Olivier Sobrie1,2,Vincent Mousseau2 and Marc Pirlot1
1 MATHRO, UMONS, 2 LGI, Ecole Centrale Paris

11h00 Coffee break

11h30 Session 8

Invited speaker:
"Surrogate loss functions for preference learning",
Krzysztof Dembczynski,
Poznan University of Technology, Poland

12h30 Lunch

13h20 Poster Session
Posters:
"A Metaheuristic Approach for Preference Learning in Multi-Criteria Ranking based on Reference Points", Jinyan Liu, Wassila Ouerdane, Vincent Mousseau
"Inferring the parameters of a majority rule sorting model with vetoes on large datasets", Alexandru-Liviu Olteanu, Patrick Meyer
"A Dataset Repository for Benchmark in MCDA", Antoine Rolland and Thi-Minh-Thuy Tran
"An Arrow-like theorem over median algebras", Miguel Couceiro and Bruno Teheux

14h00 Session 9
Invited speaker:
"Preference modeling with Choquet integral",
Michel Grabisch,
University Paris 1, France

15h00 Coffee break

15h30 Session 10
"Principled Techniques for Distance-based Clustering of Rankings",
Paolo Viappiani2,
1 LIP6, Université Pierre et Marie Curie

"An interactive approach for multiple criteria selection problem",
Anıl Kaya1, Özgür Özpeynirci1, Selin Özpeynirci2,
1 Izmir University of Economics, Department of Logistics Management, 2 Izmir University of Economics, Industrial Engineering Department

"FlowSort parameters elicitation: the case of partial sorting",
Dimitri Van Assche1, Yves De Smet1,
1 CoDE, Université libre de Bruxelles

"On confident outrankings with multiple criteria of uncertain significance",
Raymond Bisdorff1,
1 Université du Luxembourg

17h30 Closing session

MPE 2013+ Workshop on Sustainable Human Environments

April 23 - 25, 2014
DIMACS Center, CoRE Building, Rutgers University

Organizers:

Midge Cozzens, DIMACS, Rutgers University, midgec at dimacs.rutgers.edu
Lou Gross, University of Tennessee, gross at tiem.utk.edu
Fred S. Roberts, DIMACS, Rutgers University, froberts at dimacs.rutgers.edu
Alexis Tsoukias, LAMSADE, Universite Paris Dauphine, tsoukias at lamsade.dauphine.fr
Laura Wynter, IBM Research Collaboratory, Singapore, lwynter at us.ibm.com

Presented under the auspices of the DIMACS Special Program: Mathematics of Planet Earth 2013+.

MPE 2013+ Workshop on Sustainable Human Environments
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Alexis Tsoukias, LAMSADE, Universite Paris Dauphine, tsoukias at lamsade.dauphine.fr
Laura Wynter, IBM Research Collaboratory, Singapore, lwynter at us.ibm.com

Presented under the auspices of the DIMACS Special Program: Mathematics of Planet Earth 2013+.
Workshop Program:

Tuesday, April 22, 2014

7:00 PM Optional dinner for early arrivals
Ruby Tuesday located at the Holiday Inn
4701 Stelton road
South Plainfiled, NJ 07080

Wednesday, April 23, 2014

8:30 - 9:00 Registration

9:00 - 9:45 Mathematical Sciences and Sustainable Human Environments Slides
Fred Roberts, DIMACS, Rutgers University

9:45 - 10:30 Anthropogenic Biomes: Global Ecology for the Anthropocene
Erle Ellis, UMBC

10:30 - 11:00 Break

11:00 - 11:30 "Brainstorming" Session Identifying Key Themes of the
workshop and of followup activities:
Moderator Lou Gross. Will define topics for the afternoon breakout sessions.
Key speaker: Alexis Tsoukias

11:30 - 12:15 Participatory Modelling for Water Planning and Risk Management at the Urban Fringe
Katherine A. Daniell, The Australian National University

12:15 - 1:15 Lunch

1:15 - 2:00 Big Data Analytics for Urban Traffic Management: State of the Art and Future Directions
Satish Ukkusuri, Purdue University

2:00 - 2:45 Educating to Use Evidence
Education Speaker: Nora Newcombe, Temple University

2:45 - 3:30 Education Session: Discussion of Newcombe talk
Midge Cozzens, Rutgers
Lou Gross, U. Tennessee
The audience

3:30 - 3:50 Break

3:50 - 4:50 Breakout session I

4:50 - 5:15 Report out from Breakout session I

5:20 Reception and banquet

Thursday, April 24, 2014

8:30 - 9:00 Registration

9:00 - 9:45 Big Data for Urban Sustainability
Stanislav Sobilevsky, MIT

9:45 - 10:30 Modeling Patron Screening at Large Gathering Venues
Brian Nakamura, Rutgers University

10:30 - 11:00 Break

11:00 - 11:45 Sustainability at its Worst: Crime and Chronic Illegal Behavior Settings
Joel Caplan, Rutgers University

11:45 - 12:10 Multi-Metric Environmental Costs of Animal-Based Categories of the United States' Diet
Gidon Eshel, Bard College

12:10 - 1:30 Lunch

1:20 - 1:50 Fuel from Waste
Viral Sagar, University of Mumbai

1:50 - 2:10 Decision-Aiding For Participatory Management Of Common Environmental Resource With Multi-Agent Approach
Irene Pluchinotta, Technical University of Bari - Italy and LAMSADE - Paris Dauphine University - France

2:20 - 2:40 Study of Information Sharing for Natural Resources Management

Nicolas Paget, The Australian National University

2:40 - 3:00 The Interface between Security and Commerce in Urban Areas
Jonathan Bullinger, Rutgers

3:00 - 3:20 Urban Link Travel Time Estimation using Large-scale Taxi Data with Partial Information
Xianyuan Zhan, Purdue University

3:20 - 3:40 Break

3:40 - 4:40 Breakout session II

4:40 - 5:10 Report out from Breakout session II

Dinner on your own

Friday, April 25, 2014

8:30 - 9:00 Registration

9:00 - 9:45 New Techniques for Modeling Environmental Systems with a View Towards Sustainability
Laura Wynter, Director, IBM Research Collaboratory - Singapore

9:45 - 10:30 Panel Discussion: Topic TBD

10:30 - 11:00 Break

11:00 - 12:00 Discussion of follow-up activities

12:00 - 1:00 Lunch

Séminaire Dagstuhl Seminar 14202, JA4AI
Judgment Aggregation for Artificial Intelligence

JA4AI – Judgment Aggregation for Artificial Intelligence

Franz Dietrich, Ulle Endriss, Davide Grossi, Gabriella Pigozzi, and Marija Slavkovik

Abstract

This report documents the programme and the outcomes of Dagstuhl Seminar 14202 on "Judgment Aggregation for Artificial Intelligence". Judgment aggregation is a new group decision- making theory that lies in the intersection of logic and social choice; it studies how to reach group decisions on several logically interconnected issues by aggregation of individual judgments. Until recently research in judgment aggregation was dominated by its originating context of philosophy, political science and law. Presently, however we are witnessing increasing work in judgment aggregation from researchers in computer science. Since researchers from such diverse disciplinary backgrounds working on judgment aggregation each publish within their own discip- line with virtually no cross-discipline cooperation on concrete projects, it is essential that they are given an opportunity to connect to each other and become aware of the workings of the other side. This seminar has provided such an opportunity.

Seminar May 12–15, 2014 – http://www.dagstuhl.de/14202
1998 ACM Subject Classification I.2.11 Distributed Artificial Intelligence
Keywords and phrases Judgment Aggregation, Artificial Intelligence, Computational Social Choice, Collective Decision-making
Digital Object Identifier 10.4230/DagRep.4.5.27

Executive Summary

Franz Dietrich Ulle Endriss Davide Grossi Gabriella Pigozzi Marija Slavkovik

Judgment aggregation is a group decision-making theory, developed in the last decade, that studies how to reach group decisions on logically interconnected issues by aggregation of individual decisions on those issues. The interest of computer science in group reasoning and decision-making theories is driven by the increase of distribution of information and computation as features of various Internet-based services that dominate the information technology market.

Judgment aggregation studies collective decision-making as a process whereby individual opinions concerning the acceptance or rejection of a set of issues are aggregated into one collective judgment. The problem is for the aggregation process to preserve, in a non-trivial way, some 'rational' aspects of the individual to-be-aggregated stances like, in particular, logical consistency. A wealth of results have highlighted how the rationality of a collective decision may clash with other desirable properties of a process of aggregation one may wish to require (*e.g.*, anonymity of the voters, independence of the aggregated issues, to mention a few).
Judgment aggregation research, originally studied in law, was propelled into other disciplines with its establishment as a separate discipline from preference aggregation in the early 2000's. The first half of the decade was marked by studies of aggregation properties that cannot be jointly satisfied by one aggregation function, usually referred to as 'impossibility results'. These studies were mostly conducted by researchers from political science, law, economics, mathematics, and philosophy. The second half of the decade witnessed an increase of interest in judgment aggregation of researchers from

artificial intelligence (AI), specifically knowledge representation and reasoning (KR), and multi-agent systems (MAS).

Research on judgment aggregation, from the computer scientific perspective, has splintered in many directions, with scholars pursuing very different lines of research: judgment ag- gregation and logic, judgment aggregation and complexity theory, judgment aggregation and relations to preference aggregation, judgment aggregation and belief merging, judgment aggregation and argumentation, to mention a few. At the same time work in judgment aggregation has diversified in non-computer science disciplines: judgment aggregation and deliberation, judgment aggregation and strategic voting, judgment aggregation and probab- ilistic opinion pooling, to mention a few. Despite the common research thread, having so many disciplines involved make it difficult to keep track of the research advancements across all domains.

The goal of this Dagstuhl seminar was to give researchers across the contributing disciplines an integrated overview of the current research and interests in judgment aggregation and of its emerging trends, and by doing this, to kick-start a lasting interdisciplinary network bridging the computer science/humanities divide in the field. To accomplish this goal, we structured the seminar around four types of events:

Invited tutorials – three invited overview talks aimed to introduce the interdisciplinary audience to the origins and advancements of judgment aggregation in law, political science and computer science.

Contributed talks – fourteen contributed talks of thirty minutes each. Networking sessions – two free networking sessions.

Rump session – open to all participants to present new ideas.

The topics of the invited talks were chosen so as to give a foundation of the disciplines in which judgment aggregation originated and was formalised, as well as to motivate the interest of judgment aggregation for computer science. Although we expected that all of the participants would be familiar with at least one of these foundational topics, we also expected them to be unfamiliar with at least one as well. The tutorial lectures aimed to homogenise the background knowledge in judgment aggregation among the participants.

The contributed talks aimed to introduce the community with the recent work of the speakers. We accommodated fourteen talks, possibly compromising on the length of the talk itself in the interest of allowing space for questions. We are happy to observe that there was a lively debate after each of the talks, which we expect shall contribute towards advancement of each of the presented works.

Given the short period of three days and prior Dagstuhl experience of the organisers, we decided to not structure the networking session and simply allow for a time for the participants to talk to each other and get to know about each other's work and interests. The enthusiastic discussions following the contributed talks typically continued into the networking sessions.

The rump session was free for a last-minute sign up to all participants. Each interested person was given a five-minute time slot to present an idea that emerged during the seminar or a work in progress. A third of the participants took this opportunity to present. This was a very lively and well received part of the seminar. In retrospect, a similar session would have been well received also at the beginning of the seminar, giving the participants more time to discuss the presented ideas.

Table of Contents

3 Invited Tutorials

3.1 Judgment Aggregation on Common Law Courts

Lewis A. Kornhauser (New York University, US)

Common law courts develop legal rules through the adjudication of specific controversies by collegial courts. These courts decide the case before them but, also, develop over time a complex of legal rules, structured around doctrine. The process of rule emergence differs across common law legal systems. In the majoritarian process of the United States, the court aggregates judgments across both doctrinal issues and case outcomes. As is well-known, these two aggregations may, and sometimes do, conflict. How should a court resolve this conflict? A common law process naturally suggests itself to a common law court; that process proceeds incrementally. It considers the context, the dispute in which the conflict arises, and balances the reasons that weigh in favour of each procedure.

3.2 Judgment Aggregation and Social Choice Theory

Christian List (London School of Economics, UK)

This talk provided an introductory review of the theory of judgment aggregation in relation to three classic impossibility findings from social choice theory: Arrow's impossibility theorem about pairwise independent aggregation, the Gibbard-Satterthwaite theorem about non- manipulable aggregation, and Sen's theorem about respecting rights. The talk introduced the paradoxes of majority voting that originally motivated the field, and proceeded to show how some of the well-known problems of social choice theory re-emerge in the context of judgment aggregation. The aim was to familiarise participants whose background is in computer science with the theory of judgment aggregation and its broader social-choice-theoretic context.

3.3 Judgment Aggregation and Artificial Intelligence

Jérôme Lang (University Paris Dauphine, FR)

This talk provided an overview of the possible interest of Artificial Intelligence in judgment aggregation and vice versa, as well as an overview of work in judgment aggregation done from the computer science perspective. Judgment aggregation can be seen as having in its crux the problem of resolving inconsistencies: between individual majorities, as well as between the judgment set supported by the majority and the logic relation among the issues on which the judgments are cast. A significant part of the research in Artificial Intelligence and logic is about resolving inconsistencies (of various kinds): nonmonotonic reasoning, belief revision and belief merging, reasoning about action and change, paraconsistency, inconsistency debugging, etc. Applying judgment aggregation to various fields of AI (and beyond) makes sense to problems where aggregating information may lead to conflicts that we have to resolve, such as argumentation, situation assessment in multiagent systems, crowdsourcing and collective annotation of linguistic resources, merging ontologies etc. While the interest in judgment aggregation from the perspective of law, economics, political science and mathematics is focused on identifying inconsistencies among properties of judgement aggregation functions and characterisation of functions, from a computer science perspective, the focus is more on the engineering aspects of judgment aggregation, namely how can judgments be aggregated, how computationally efficient and scalable are the methods used for this purpose.

4 Overview of Talks

4.1 Judgment Aggregation in Multi-Agent Argumentation

Edmond Awad (Masdar Institute – Abu Dhabi, AE)

Given a set of conflicting arguments, there can exist multiple plausible opinions about which arguments should be accepted, rejected, or deemed undecided. We study the problem of how multiple such judgments can be aggregated. We define the problem by adapting various classical social- choice-

theoretic properties for the argumentation domain. We show that while argument-wise plurality voting satisfies many properties, it fails to guarantee the collective rationality of the outcome, and struggles with ties. We then show more general results, proving multiple impossibility results on the existence of any good aggregation operator. Moreover, we study whether restricting the domain of argument-wise plurality voting to classical semantics allows us to escape the impossibility result. Finally, we list graph- theoretic restrictions under which argument-wise plurality rule does produce collectively rational outcomes. In addition to identifying fundamental barriers to collective argument evaluation, our results open up the door for a new research agenda for the argumentation and computational social choice communities.

4.2 Complexity of Manipulation, Bribery, and Control in Judgment Aggregation for Premise-Based Quota Rules

Dorothea Baumeister (Heinrich-Heine-Universit at D usseldorf, DE)

Endriss et al. [1] initiated the complexity-theoretic study of problems related to judgment aggregation. We extend their results for manipulating two specific judgment aggregation procedures to a whole class of such procedures, namely to uniform premise-based quota rules. In addition, we consider incomplete judgment sets and the notions of top-respecting and closeness-respecting preferences introduced by Dietrich and List [2]. This complements previous work on the complexity of manipulation in judgment aggregation that focused on Hamming-distance-induced preferences only, which we also study here. Furthermore, inspired by work on bribery and control in voting [3] we introduce and study the closely related issues of bribery and control in judgment aggregation.

4.3 Binary Aggregation by Selection of the Most Representative Voter

Umberto Grandi (University of Padova, IT)

In binary aggregation, each member of a group expresses yes/no choices regarding several correlated issues and we need to decide on a collective choice that accurately reflects the views of the group. A good collective choice will minimise the distance to each of the individual choices, but using such a distance-based aggregation rule is computationally intractable. Instead, we explore a class of low complexity aggregation rules that select the most representative voter in any given situation and return that voter's choice as the outcome.

4.4 Model-Theoretic and Universal-Algebraic Accounts of Aggregation

Frederik S. Herzberg (Universität Bielefeld, DE)

This paper explores the recent use of model theory and universal algebra in the theories of judgement aggregation and probabilistic opinion pooling. We review the model-theoretic approach to judgement aggregation and its potential for applications. Aggregators satisfy- ing Arrovian responsiveness axioms on sufficiently rich agendas turn out to be restricted ultraproduct constructions, generalising an earlier result by Lauwers and van Liedekerke [1]. Ultraproduct constructions are also useful in the extension of McConway's theory of prob- abilistic opinion pooling [2] to the case of infinite profiles of probability measures. Dietrich and List [3] have proposed a theory of propositional-attitude aggregation, which unifies both judgement aggregation and probabilistic opinion pooling. We prove a one-to-one corres- pondence between aggregators satisfying Arrovian responsiveness axioms (on sufficiently rich agendas) and MV-algebra homomorphisms.

4.5 Two Theories of Logical Aggregation: On the Links between Belief Merging and Judgment Aggregation

Sébastien Konieczny (Artois University – Lens, FR)

There are two theories of aggregation of logical formulas. The first one, merging, has been developed in AI as an extension of belief revision. The second one, judgment aggregation, has been introduced by works in political philosophy and social choice theory. In this work we investigate the links between these two theories both in the general case and in the fully informed case (where the agenda contains all the possible interpretations). This allows us to illustrate the correspondences or incompatibilities between the rationality properties proposed in these two theories.

4.6 A Collective Argument Dilemma as Judgement Aggregation

Yixi Li (Sun Yat-sen University – Guangzhou, CN)

The legal provisions always show various degrees of acceptability. Despite the difficulty of describing the acceptability of a legal provision, it is commonly agreed that a legal provision is unacceptable if it is against some rules. We have described a Legislative Dilemma where neither of two contradictory behaviours leads to a breach of a legal provision. In other words, if one behaviour is the purpose of a legal provision, the justification of the other contradictory behaviour means the unacceptability of this legal provision.

4.7 The max-min Method for Judgment Aggregation

Xavier Mora (Autonomus University of Barcelona, ES)

We discussed the general method of judgment aggregation that we introduced in [1]. This method can be seen as a maximin procedure for revising a system of (collective) degrees of belief in accordance with the existing logical constraints and for arriving at a decision that complies with these constraints. We looked at the main idea of this method, its advantages and limitations, and its application to a variety of examples (some of which are dealt with in [2]).

The main idea of the revision procedure is using the logical constraints in all possible ways to derive belief on every issue. This is done in accordance with the so-called peiorem principle. Belief is derived separately in favour and against each issue. Decisions are taken by the balance of belief.

The advantages of this method include: a quite general character, ability to deal with incomplete information, respect for consistent majority decisions, respect for unanimity on an issue, a property of monotonicity, decisions are robust under small perturbations, decisions have a quantified degree of confidence.

Its limitations are concerned with: complexity depending on the constraints, constraints must be checked for a certain condition to guarantee that decisions are unquestionable.

Its applications include: preferential voting, preferential-approval voting, other social- choice procedures, aggregation of equivalence relations (cluster analysis).

4.8 Complexity of Optimal Lobbying in Threshold Aggregation

Ilan Nehama (The Hebrew University of Jerusalem, IL)

Optimal Lobbying is the problem a lobbyist or a campaign manager faces in a full-information voting scenario of a multi-issue referendum when trying to influence the result. The Lobby is faced with a profile that specifies for each voter and each issue whether the voter approves or rejects the issue, and seeks to find the smallest set of voters it must influence to change their vote, for a desired outcome to be obtained. This computational problem also describes problems arising in other scenarios of

aggregating complex opinions, such as principal- agents incentives scheme in a complex combinatorial problem, and bribery and manipulation

in Truth-Functional Judgement Aggregation. We study the computational complexity of Optimal Lobbying when the issues are aggregated using an anonymous monotone function and the family of desired outcomes is an upward-closed family. We analyse this problem with regard to two parameters: the minimal number of supporters needed to pass an issue, and the size of the maximal minterm of the desired set. We show that for the extreme values of the parameters, the problem is tractable, and provide algorithms. On the other hand, we prove intractability of the problem for the non-extremal values, which are common values for the parameters.

4.9 Weighing Experts, Weighing Sources: The Diversity Value

Klaus Nehring (University of California – Davis, US)

A decision maker has to come up with an aggregate judgment based on the individual opinions submitted by a set of information sources. Provided that the decision maker is committed to an aggregation rule expressed as a weighted average, how should he determine the weight assigned to each source? We consider this problem, when the decision maker has an assessment of the reliability of each subset of sources given by a reliability function. Reliability functions are assumed to have the properties of diversity functions in the sense of Nehring and Puppe (2002). In particular, non-additive reliability functions capture perceptions of similarity between sources We propose a rule called the Diversity value, which associates with each reliability function a (set of) weight vector(s). The Diversity value selects those weights which best approximate the relative reliability of sources in the sense of a generalised Kullback-Leibler distance. Notably, the Diversity value obeys the Similarity Principle which requires that larger weights should be assigned to sources which are viewed as more distinct. We provide an axiomatisation of the Diversity value. We discuss its aggregation properties and show that a version of the No-Show Paradox and violations of Reinforcement are typical features of the model.

4.10 The Median Rule in Judgement Aggregation

Marcus Pivato (Trent University, CA)

Let K be a set of logically interconnected propositions or "issues". A "view" is an assignment of a truth-value to each issue in K. However, not all views are admissible; some may violate the logical relationships between the different issues in K. A "judgement aggregation rule" is a function which takes a collection of admissible views as input, and produces an admissible view as output.

As is well-known, the "majority" rule (which simply agrees with the majority on each issue) often yields logically inconsistent views. This raises the question: which (consistent) judgement aggregation rule is the "best approximation" of the majority view? We propose

that the "median rule" fits this description. The median rule chooses the admissible view which minimizes the average Hamming distance to the views of the voters. In the special case of preference aggregation, it becomes the Kemeny rule.

We axiomatically characterise the median rule as the only judgement aggregation rule satisfying three axioms: Extended Supermajority Efficiency, Reinforcement, and Upper Hemicontinuity. "Supermajority efficiency" means (roughly) that the rule tries to agree with the majority view in as many issues as possible; furthermore, if it can only agree with a majority in one out of two issues, it will choose the larger majority. "Extended supermajority efficiency" extends this principle to the case where the rule is applied to solve many aggregation problems simultaneously. "Reinforcement" means that, if two subpopulations independently choose the same view using the rule, then the combined population should also choose this view using this rule. "Upper hemicontinuity" means that the outcome

is invariant under small perturbations; equivalently, it means that an outcome reflecting the will of an "overwhelming majority" of voters cannot be changed by a small minority.
After precisely stating the above result, we discussed some other axiomatic characterisa- tions of the median rule, and other judgement aggregation rules which generalise it.

4.11 Modelling Collective Rationality in Non-Classical Logics. A Possibility Result

Daniele Porello (Italian National Research Council – Trento, IT)

The notion of collective rationality in judgment aggregation is mainly modelled by means of classical propositional logic. In this work, we adapt the model of judgment aggregation in order to account for a number of definitions of collective rationality grounded on a number of non-classical logics. We extend therefore the map of possibility and impossibility results in judgement aggregation to non-classical logics. In particular, we show that there are logics for which the majority rule always returns rational outcomes. Finally, we discuss how the choice of a logic determines the epistemic commitments that we expect from collective agents and we argue in favour of a weaker non-classical view of collective rationality.

4.12 Unanimity Overruled: Majority Voting and the Burden of History

Clemens Puppe (KIT – Karlsruher Institut für Technologie, DE)

Sequential majority voting over interconnected binary propositions can lead to the overruling of unanimous consensus. We characterise, within the general framework of judgement aggregation, under what circumstances this happens for some sequence of the voting process. It turns out that the class of aggregation spaces for which this difficulty arises is very large, including the aggregation of preference orderings over at least four alternatives, the
aggregation of equivalence relations over at least four objects, resource allocation problems, and most committee selection problems.
We also ask whether it is possible to design respect for unanimity by choosing appropriate decision sequences. Remarkably, while this is not possible in general, it can be accomplished in interesting special cases. Adapting and generalising a classic result by Shepsle and Weingast, we show that respect for unanimity can indeed be thus guaranteed in case of the aggregation of weak orderings, strict orderings and equivalence relations.

4.13 Pre-Vote Negotiations

Paolo Turrini (Imperial College London, GB)

This talk was about voting games on possibly interconnected issues, where voters might hold a principled opinion about a subset of the issues at stake while willing to strike deals on the remaining ones, and can influence one another before casting their ballots in order to obtain an individually more favourable outcome. The authors analyse voters' rational behaviour in a two-phase game, allowing players to undergo a negotiation phase before their vote, and showing under what conditions undesirable equilibria can be removed as an effect of the pre-vote phase.

4.14 Universal and Symmetric Scoring Rules for Binary Relations

William S. Zwicker (Union College – Schenectady, US)

Are Plurality voting, the Kemeny rule, Approval voting, and the Borda Mean Dichotomy rule actually all versions of the same voting rule? Yes, in a sense. We consider functions F that assign real number scoring weights $F(R_1, R_2)$ to pairs of binary relations on a finite set A of alternatives, serving as symmetric measures of similarity between R_1 and R_2Any such F induces a symmetric binary relational scoring rule F – a highly abstract form of aggregation rule that allows arbitrary binary relations as ballots R_1 and as aggregated outcomes R_2The resulting level of generality is surprisingly effective. By restricting the classes of relations allowed as ballots and elections outcomes, F yields scoring rules of a more familiar and concrete kind. The symmetric assignment FH, for example, arises from an inner product in a simple and natural way, and restrictions of the induced scoring rule script-FH yield all the aforementioned familiar voting rules. Moreover, the inner product formulation yields a Euclidean form of distance rationalisation for script-FH, resulting in a universal distance rationalisation for all concrete scoring rules obtained as restrictions.

GDRI *ALGODEC*
01/01/2011 – 31/12/2014
Coordonnateur : *Alexis Tsoukiàs, LAMSADE UMR7243, INS2I*

RAPPORT D'ACTIVITÉ 2011

A. ACTIVITÉS DE COORDINATION

A.1- Organisation de réunions de travail sur la thématique du GDRI

Colloque « Smart Cities » (www.cost.eu/events/smartcities). Le colloque a été une initiative commune avec le Programme COST (www.cost.eu) dans la série « COST Strategic Workshops » en partenariat avec le DIMACS (membre du GDRI) et son sujet été la contribution des Sciences et Technologies de la Décision dans la conception et gestion des « Smart Cities ». Le colloque a eu lieu le 26 et 27 Septembre 2011 à l'Université Paris Dauphine. La liste des participants ainsi qu'un rapport succinct du colloque sont ci-joints comme annexes A et B. Les présentations sont disponibles au site du colloque.

Réunion du groupe de travail Decision Deck (www.decision-deck.org). Il s'agit de la 9eme réunion de ce groupe qui est en train d'établir les standards pour la programmation des méthodes d'aide à la décision à critères multiples. La réunion a lieu à l'Université du Luxembourg le 17 et 18 Octobre (www.decision-deck.org/ddw9) avec le support du FNR et des autres partenaires du GDRI. La liste définitive des participants sera disponible à la fin de la réunion. Nous attendons environ 30 participants.

Colloques « Collaborative Decision Making » Mercredi 30/11/2011 et « Policy Analytics », Jeudi 01/12/2011, Université Paris Dauphine (www.lamsade.dauphine.fr/dssdasig2011). Les deux colloques sont organisés en coopération avec le EURO DSS Working Group et le Group DASIG et font suite au colloque organisé en Décembre 2010 autour de « Evidence Based Policy Making » (www.lamsade.dauphine.fr/dimacs). La liste des participants ainsi que le rapport sur ces deux événements seront fournies après que les colloques auront lieu. Nous estimons une participation à l'auteur de 50 personnes environ.

DIMACS Special Focus on Algorithmic Decision Theory. Il s'agit d'une série des colloques et des réunions de groupes de travail (http://dimacs.rutgers.edu/SpecialYears/2010_ADT/) financés en partie par la NSF (www.nsf.org). La liste des colloques est ci-jointe comme annexe C.

A.2 – Organisation de conférences, écoles d'été, ateliers etc. par les partenaires du GDRI

L'Université de Mons et l'Université Libre de Bruxelles ont organisé une École thématique adressée aux étudiant(e)s en thèse (voir l'annonce ci-jointe). L'École a été structurée en 6 rencontres de 3 heures chacune sur des thèmes liés à l'aide à la décision multicritère et la programmation multi-objective. La première rencontre a eu lieu le 20 Janvier 2011 et la dernière le 15 Juin 2011. Le programme complète se trouve en Annexe D.

Le GDRI (contribution du CNRS) a financé la participation de la communauté française à l'École d'été EASSS (European Agent Systems Summer School) 2011 à Girona, Espagne. Notamment nous avons contribué à la participation de 8 étudiant(e)s en thèse ainsi que d'un des organisateurs. La liste des participants soutenus par le GDRI est disponible dans l'annexe financière ci-jointe.

L'activité phare du GDRI est l'organisation de la 2nd International Conference on Algorithmic Decision Theory, DIMACS, Rutgers University, NJ, USA, 26-28 Octobre 2011 (www.adt2011.org). Il s'agit de la deuxième conférence de la communauté ALGODEC (suivante la première conférence qui a eu lieu à Venice, Italie en Octobre 2009, www.adt2009.org), un événement qui commence à s'insérer de manière stable dans l'agenda des chercheurs du domaine (la troisième conférence est prévue pour Octobre 2013 à Bruxelles). Nous attendons une participation de plus de 70 personnes de provenance de tout le monde. La contribution du CNRS a été utilisée pour financer la participation de la communauté française plus un des orateurs invités (10 participants, voir la liste dans l'annexe financière ci-jointe) ainsi que pour la publication des actes de la conférence (Volume LNAI 6992 de Springer-Verlag).

A.3 – Autres activités de coordination

Nous venons de déposer une demande pour la constitution d'une Action COST autour de la thématique : « Decision Sciences and Technologies for Smart Cities ». La première étape de l'évaluation est attendue pour fin Novembre 2011.

Trois partenaires du GDRI (Université Paris Dauphine, Université de Mons, Universidad Rey Juan Carlos (coordinateur)) en coopération avec l'Université de Coimbra et la University of Stockholm sont en train de préparer un Master International en Sciences et Technologies de la Décision (prévu pour l'année académique 2013/14). Le projet sera aussi présenté pour être financé dans le cadre des actions Erasmus Mundus. Dans cette perspective nous avons organisé deux réunions, une à Bruxelles le 25 Juin et l'autre à Paris le 27 Septembre 2011.

Dans le cadre du projet Decision Deck nous sommes en train de préparer une demande pour financer un projet STREP dans le cadre des financements FET-OPEN du FP7 autour du sujet « Decision Deck on the Cloud ».

A.4 – Bilan des activités du GDRI

Bref Historique

Le domaine de la Théorie Algorithmique de la Décision (Algorithmic Decision Theory) est un résultat de la coopération entre le LAMSADE et le DIMACS commencée déjà en 2004 autour de la thématique générale du rapprochement entre Théorie de la Décision et Informatique. Cette coopération, financée entre autre par le CNRS et la NSF, a permis l'organisation des colloques LAMSADE/DIMACS (2004, 2006, 2008, 2010, voir www.lamsade.dauphine.fr/dimacs) la publication des deux numéros spéciaux dans les revues Annals of Operations Research et Mathematical Social Sciences et l'échange d'une douzaine des chercheurs entre les deux Institutions. Surtout a donné l'impulsion à l'établissement de l'Action COST IC0602, qui a démarrer ses travaux en Mai 2007 (voir www.algodec.org), coordonnée par le LAMSADE.
Fred Roberts et Alexis Tsoukiàs, les deux chercheurs à l'origine de cette coopération, vue le succès de l'Action COST, de la première conférence Internationale : www.adt2009.org et de tout le projet ALGODEC en général, ont voulu continuer dans la construction de cette communauté des chercheurs au croisement entre Décision et Informatique et ont proposé l'établissement du DIMACS Special Focus on Algorithmic Decision Theory qui a commencé ses activités en 2010 grâce à un financement spécifique de la NSF.
Le GDRI ALGODEC a été conçue comme idée dans le cadre de l'Action COST IC0602 (terminée en Mai 2011) pour créer une contrepartie Européenne aux activités du DIMACS Special Focus adressé en priorité aux chercheurs en Amérique du Nord.
Nous avons appris l'acceptation et le financement du GDRI ALGODEC fin Avril 2011 (par ailleurs l'accord d'établissement du GDRI est encore en train d'être signé). Cette année a été donc caractérisée par la continuité des activités déjà programmées dans le cadre d'une part de l'Action COST IC0602

« Algorithmic Decision Theory » et d'autre part du DIMACS Special Focus on Algorithmic Decision Theory qui fait partie maintenant en plein titre des activités du GDRI.

Objectifs et Bilan

Les objectifs du GDRI ALGODEC sont multiples et peuvent être synthétisés ainsi :

- Progresser dans la construction et le renforcement de la communauté ALGODEC au niveau international, notamment parmi les jeunes chercheurs ;
- Identifier des domaines d'application qui permettent de montrer l'intérêt d'investir en termes de recherche scientifique dans la Théorie Algorithmique de la Décision ;
- Aider le développement des recherches dans ce domaine à travers la mise en réseau et la création de synergies entre les laboratoires participants et au-delà.

En ce qui concerne le premier objectif les instruments choisis sont :

- D'une part la continuité dans l'établissement d'écoles d'été et de formations doctorales spécialisées adressées notamment aux jeunes chercheurs. Rentre dans ce cadre la formation doctorale proposée par l'Université de Mons et l'Université Libre de Bruxelles ainsi que l'école d'été EASSS 2011. Une école d'été en « Algorithmic Game Theory » sera proposée pour le 2012.
- D'autre part l'organisation de conférences spécialisées qui permettent l'établissement des forums internationaux d'échange entre les chercheurs du domaine. Rentre dans ce cadre la deuxième conférence ADT 2011 (www.adt2011.org) ainsi que les colloques proposés dans le cadre du DIMACS Special Focus. La conférence « Computational Social Choice » (Septembre 2012) fait partie des initiatives prévues pour l'année prochaine.

En ce qui concerne le deuxième objectif, les domaines d'application choisis sont :

- Smart Cities. Les grandes villes au niveau mondial continuent à progresser et constituent un défi majeur pour les Sciences et Technologies de la Décision dans la perspective de concevoir des villes durables, intelligents, ouverts à l'inclusion et la création des nouveaux modèles de citoyenneté. Le colloque « Smart Cities » qui nous avons organisé en Septembre 2011 a permis de rassembler un grand nombre d'acteurs (scientifiques, industriels et villes) et a établi une première agenda de travail pour le futur.
- Sûreté et Sécurité. Le risque est un élément présent dans tous les problèmes de décision du monde réel et a été un sujet de réflexion en Théorie de la Décision depuis son origine. Aujourd'hui cette thématique est présente d'une part dans la conduite sécurisée des systèmes complexes (industriels ou autres) et d'autre part dans la conception des politiques publiques à la fois sous la forme du hasard (risques naturelles ou technologiques) et de la menace (crime, terrorisme etc.). Nous allons continuer développer la discussion entamée avec le premier colloque sur « Adversarial Risk Analysis » et démarrer une réflexion avec des agences Nationales et Internationales autour de la « gouvernance du risque ».
- Policy Analytics. Le sujet a été identifié pendant le dernier colloque LAMSADE/DIMACS en Décembre 2010 (www.lamsade.dauphine.fr/dimacs) comme un défi scientifique et technologique : élaborer des méthodologies originales pour l'aide à la décision dans la conception, mise en ouvre et évaluation des politiques publiques, notamment en exploitant l'énorme masse des données aujourd'hui disponibles. Le prochain colloque, programmé pour le 1 Décembre 2011, veut faire le point sur la discussion commencé il y a une année, lancer un numéro spécial d'un journal du domaine et programmer les initiatives futures.

En ce qui concerne le troisième objectif nous sommes en train de développer deux axes :

- Le premier concerne le soutien aux activités de recherche de base dans les laboratoires participants à travers la mise en place d'un programme d'échange, notamment des jeunes chercheurs ainsi que le déploiement de cotutelles de thèses. Il s'agit d'un programme, expérimenté avec grand succès dans l'Action COST, qui sera mis en place à partir de l'année prochaine.
- Le deuxième concerne le soutien au projet Decision Deck (www.decision-deck.org) qui a pour objectif la conception d'une plateforme de développement des logiciels d'aide à la décision open

source et l'expérimentation de la mise en place de services web d'aide à la décision en connexion à des grandes bases de données en exploitant les potentialités offertes par le cloud computing. C'est le sujet de discussion de la 9eme réunion du group Decision Deck à l'Université du Luxembourg le 17 et 18 Octobre 2011.

B. RELATIONS ENTRE LABORATOIRES PARTENAIRES DU GDRI

B.1 - Accueil, dans les laboratoires français, de chercheurs des laboratoires partenaires étrangers

Marc Pirlot de l'Université de Mons a effectué plusieurs séjours de court durée (une dizaine de fois) à l'Université Paris Dauphine et à l'Université Pierre et Marie Curie dans le cadre de son travail de recherche avec Denis Bouyssou (LAMSADE) et Patrice Perny (LIP6).
David Rios Insua de l'Universidad Rey Juan Carlos de Madrid a visité à deux reprises l'Université Paris Dauphine dans le cadre des discussions sur la mise en place du futur Master International en Sciences et Technologies de la Décision.

B.2 - Séjours, dans les laboratoires partenaires étrangers, de chercheurs des laboratoires français

Patrice Perny de l'Université Pierre et Marie Curie à effectué un séjour d'un mois au DIMACS, Rutgers University le mois d'Avril 2011.

B.3 - Co-encadrement de doctorants et/ou participation à des jurys

a) Thèses co-encadrées ou en co-tutelle transnationale
Titre de la thèse, nom du doctorant, laboratoire principal de rattachement, nom des co-encadrants dans chaque laboratoire.

b) Participation à des jurys de soutenance de thèse ou d'habilitation dans un des laboratoires partenaires étrangers
Titre de la thèse/habilitation, nom du candidat, laboratoire principal de rattachement, date, lieu de la soutenance, nom du (des) membre(s) du GDRI participant au jury

C. PRODUCTION SCIENTIFIQUE COMMUNE

a) Publications collectives du GDRI (actes des conférences organisées dans le cadre du GDRI, ouvrages thématiques…)

- R. Brafman, F. Roberts, A. Tsoukiàs, *Proceedings of the 2nd International Conference on Algorithmic Decision Theory*, LNAI 6992, Springer Verlag, Berlin.

b) Productions collectives du GDRI (bases de données, plateformes, sites web, portails thématiques…)

- www.algodec.org: portail thématique de la communauté ALGODEC ;
- www.gdri-algodec.org: site web du GDRI (en construction);
- www.decision-deck.org: site web du projet Decision Deck.

c) Liste des publications parues, acceptées ou soumises (préciser) dans des revues avec comité de lecture, co-signées avec des chercheurs des laboratoires partenaires étrangers

d) Liste des publications dans des ouvrages (livres, proceedings,…) co-signées avec des chercheurs des laboratoires partenaires étrangers

e) Liste des présentations à des colloques co-signées avec les partenaires étrangers du GDRI
(indiquer si exposés oraux ou affiches)

f) Liste des brevets en co-propriété

D. OBSERVATIONS EVENTUELLES

Nous rappelons le fait que la notification de l'acceptation et du budget n'a pas eu lieu qu'en fin Avril 2011. Ce rapport reflet le peu de temps disponible pour bien organiser les travaux du GDRI. Nous espérons de pouvoir organiser pour début Janvier une discussion stratégique pour l'établissement d'un programme pluriannuelle d'activités.

Annexe A

Liste des participants au colloque Smart Cities, 26-27/09/2011

	title	firstname	lastname	category	position	organisation	department	town	country	email_address	day1	day2
1	Dr	Lisa	Amini	Speaker	Research Director	IBM Research	IBM Technolo	Mulhuddart	Ireland	lisa.amini@ie.ibm.com	0	1
2	Sir	Philippe	Baptiste	Speaker	Scientific Director	CNRS	INS2I	Paris	France	philippe.baptiste@cnrs-dir.fr	0	1
3	Ms	Amal	Benhamiche	Participant	PhD student	Orange Labs/	Combinatorial	Issy les Mouli	France	amal.benhamiche@dauphine.fr	1	1
4	Mr	Assaf	Biderman	Speaker	Associate Director	MIT SENSEal	Urban Studies	Cambridge, M	USA	abider@mit.edu	1	1
5	Mr	Francesco	Calabrese	Speaker	Advisory Research Staf	IBM Research	Dublin Resea	Mulhuddart	Ireland	fcalabre@ie.ibm.com	1	1
6	Dr	Iacopo	Carreras	Participant	Technical Group Leade	CREATE-NET	INSPIRE	Trento	Italy	iacopo.carreras@create-net.org	1	1
7	Mr	Morgan	Chopin	Participant	PhD Student	Université Pa	LAMSADE	Paris	France	chopin@lamsade.dauphine.fr	1	1
8	Prof	Alberto	Colorni	Speaker	Full Professor	Politecnico di	Design	Milan	Italy	alberto.colorni@polimi.it	1	1
9	Dr	Debora	De Freitas	Participant	Postdoctoral Research I	University of W	Australian Nat	Wollongong	Australia	debora@uow.edu.au	1	1
10	Mr	Henri	Delahaie	Participant	President	coda strategie		Paris	France	henri.delahaie@codastrategies.com	1	0
11	Ms	Lea	Deleris	Participant	Research Staff Member	IBM Research	Risk Collabor	Mulhuddart	Ireland	lea.deleris@ie.ibm.com	1	1
12	Dr	Giusy	Di Lorenzo	Participant	Researcher	IBM		Dublin	Ireland	giusydil@ie.ibm.com	1	1
13	Prof	Anne	Doucet	Participant	Professor	Université Pie	LIP6	Paris	France	Anne.Doucet@lip6.fr	1	0
14	Prof	Love	Ekenberg	Speaker	Head of department	Stockholm Un	Dept of Comp	Kista	Sweden	lovek@dsv.su.se	0	1
15	Mr	Sebastien	Felix	Participant		Orange Labs			France	sebastien.felix@orange.com	1	1
16	Dr	Jerome	Galtier	Speaker		Orange Labs		Sophia Antipo	France	jerome.galtier@orange-ftgroup.com	1	1
17	Dr	Thierry	Goger	Speaker	Science Officer Transpo	COST Office		Brussels	Belgium	thierry.goger@cost.eu	1	1
18	Mr	Arturo	Gomez Garcia	Participant	Ph.D. Candidate	University of F	Institut Galilée	Villetaneuse	France	arturo.gomez@univ-paris13.fr	1	1
19	Prof	Carlos	Henggeler Antunes	Speaker	Professor	University of C	Dept. Electrici	Coimbra	Portugal	ch@deec.uc.pt	1	1
20	Prof	Giuseppe	Iannaccone	Participant	Professor of Electronics	University of F	Dipartimento	Pisa	Italy	giuseppe.iannaccone@unipi.it	1	1
21	Mr	Vivien	Kana Zeumo	Participant	PhD Student	Université Pa	LAMSADE	PARIS Cedex	France	vivien.kana-zeumo@dauphine.fr	1	1
22	Mrs	Katerina	Kinta	Participant	Fund manager	Univeristy of F	Lamsade	Paris Cedex 1	France	katerina.kinta@dauphine.fr	1	1
23	Mr	Amidou	Kpoumié	Participant	Junior Researcher	LAMSADE	Computer	France		akpoumie@yahoo.fr	1	1
24	Prof	Leo	Liberti	Participant		Ecole Polytec	LIX	Palaiseau	France	leoliberti@gmail.com	1	1
25	Dr	Soulla	Louca	Speaker	Associate Professor	University of M	Management	Nicosia	Cyprus	louca.s@unic.ac.cy	1	1
26	Mr	Roberto	Minerva	Speaker	Manager	Telecom Italia	Future Centre	Torino	Italy	roberto.minerva@telecomitalia.it	0	1
27	Prof	Pavlos	Moraitis	Participant	Professor	Paris Descart	Laboratory of	Paris	France	pavlos@mi.parisdescartes.fr	1	1
28	Dr	Monica	Mori	Speaker	Strategic Planning & Pr	City of Milan	Department o	Milan	Italy	monica.mori@comune.milano.it	1	1
29	Mr	Dany	Nguyen-Luong	Speaker	Engineer	IAU île-de-Fra	Mobility and T	PARIS	FRANCE	dany.nguyen-luong@iau-idf.fr	1	1
30	Mr	Brendan	O'Brien	Speaker	Head of Technical Servi	Dublin City Cc	Roads & Traff	Dublin	Ireland	brendan.obrien@dublincity.ie	1	1
31	Dr	Christophe	Papin	Participant	Innovation and Busines	SIRADEL		Rennes	France	cpapin@siradel.com	1	1
32	Prof	Pascal	Perez	Participant	Professor of Infrastructu	University of W	SMART Infras	Wollongong	Australia	pascal_perez@uow.edu.au	1	1
33	Dr	Eleni	Pratsini	Speaker	Manager	IBM Research	Mathematical	Rueschlikon	Switzerland	pra@zurich.ibm.com	1	1
34	Prof	Alain	Quilliot	Speaker	Director LIMOS	LIMOS, CNRS		Clermont-Ferr	France	alain.quilliot@isima.fr	1	1
35	Prof	David	Rios Insua	Speaker	Professor	Royal Acaden	---	Madrid	Spain	david.rios@urjc.es	1	1
36	Dr	Herve	Rivano	Participant	Charge de Recherche	INRIA	CITI lab, Urba	Villeurbanne	France	Herve.Rivano@inria.fr	1	1
37	Prof	Fred	Roberts	Speaker	Director	Rutgers Unive	DIMACS	Piscataway, N	USA	froberts@dimacs.rutgers.edu	1	1
38	Mr	Erik	Rodenbach	Participant	Senior consultant	InterInnov		Antony	France	erodenbach@interinnov.eu	1	1
39	Dr	Stefano	Secci	Participant	Associate Professor	UPMC	LIP6	Paris	France	stefano.secci@lip6.fr	1	0
40	Prof	Dina	Simunic	Participant	University professor	University of Z	Electrical Eng	Zagreb	Croatia	dina.simunic@fer.hr	1	1
41	Mr	Peter	Skosey	Speaker	Vice President	Metropolitan F		Chicago	USA	PSkosey@metroplanning.org	1	1
42	Ms	Raouia	Taktak	Participant	ESR	Université Pa	Lamsade	Paris	France	taktak@lamsade.dauphine.fr	1	1
43	Dr	Sonia	Toubaline	Participant	ATER	Université Pa	LAMSADE	PARIS cedex	France	toubaline@lamsade.dauphine.fr	1	1
44	Prof	Alexis	Tsoukias	Speaker	Research Director	CNRS	LAMSADE	Paris Cedex 1	France	alexis.tsoukias@dauphine.fr	1	1
45	Ms	Zuzana	Vercinska	Participant	Conference Officer	COST Office		Brussels	Belgium	zuzana.vercinska@cost.eu	1	1
46	Mr	Nils	Walravens	Participant	Researcher	IBBT-SMIT, V		Brussels	Belgium	nils.walravens@vub.ac.be	1	1
47	Mr	Roberto	Wolfler Calvo	Participant	Professor	Université Pa	LIPN - UMR 7	Villetaneuse	France	wolfler@lipn.fr	1	1
48	Dr	Laura	Wynter	Speaker	Senior Research Scient	IBM Watson F	Mathematical	New York	USA	lwynter@us.ibm.com	1	1
49	Prof	Daqing	Zhang	Participant	Professor	Institut Telecc	RST Dept	Evry Cedex	France	daqing.zhang@it-sudparis.eu	1	1

Annexe B
Smart Cities Workshop Report

The 26 and 27 of September 2011 the COST Strategic Workshop on Smart Cities has been organised at Université Paris Dauphine. The Workshop has been a joint effort of the COST Office, of the GDRI ALGODEC funded by the CNRS and many other European Research Institutions and Universities and of the DIMACS (Rutgers University) Special Focus project on Algorithmic Decision Theory funded by the NSF (USA).

The workshop gathered speakers from Academia (MIT, University of Coimbra, University of Stockholm, University Rey Juan Carlos of Madrid, Technical University of Milan), industrial laboratories (the IBM research centres at Dublin, New York and Zürich, Telecom Italia and Orange) as well as urban and regional authorities (the cities of Chicago, Dublin and Milano as well as the Regional Planning Institute of Isle de France). More than 50 participants attended of which 10 Early Stage Researchers.

The workshop focused on the contribution and challenges for Decision Sciences and Technologies the Smart Cities perspective represents. Several projects concerning smart mobility, smart energy grids, urban security, the collection and use of information (including privacy issues) have been presented as well as some general perspectives about the future of the cities under a Smart Cities perspective.

Besides emphasising the importance of improving services, utilities management and sustainability within Smart Cities, the issue of creating and designing new services has been raised inventing new ways through which the city is used. The issue of inclusion and of new forms of citizenship Smart Cities may offer has been addressed within the discussion.

As emphasised during the final round table, animated by Lisa Amini, director of the IBM research laboratory in Dublin, Philippe Baptiste, director of the National Computer Science Institute of the CNRS and Fred Roberts, director of DIMACS, the Smart Cities perspective represents a great challenge for developing interdisciplinary research (at the edge of Computer Science, Decision Sciences, Social Sciences, Urban Planning etc.) as well as for the development of synergies between university and industrial laboratories on applied research subjects impacting strongly everyday life of everybody.

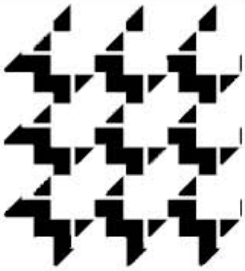
The workshop has been a great success underlining the necessity of further networking the different stakeholders implied in various smart cities projects in Europe, the USA and worldwide. The perspective of establishing a COST Action in this sense has been discussed and will be actively pursued in the next months.

Annexe C

Programme du DIMACS Special Focus on Algorithmic Decision Theory

DIMACS

Center for Discrete Mathematics & Theoretical Computer Science
Founded as a National Science Foundation Science and Technology Center



DIMACS 2010 - 2013 Special Focus on Algorithmic Decision Theory: Calendar

- **The Second International Conference on Algorithmic Decision Theory**
  Dates: October 26 - 28, 2011
  Location: DIMACS Center, CoRE Building, Rutgers University
  Organizers: Ronen Brafman, Ben Gurion University; Fred Roberts, DIMACS/Rutgers University; and Alexis Tsoukiàs, LAMSADE
  Email: brafman@cs.bgu.ac.il, froberts at dimacs.rutgers.edu, tsoukias at lamsade.dauphine.fr

- **Foundational Workshops and Working Groups for ADT**

  - **DIMACS/CCICADA Workshop on Adversarial Decision Making**
    Dates: September 30 - October 1, 2010
    Location: DIMACS Center, CoRE Building, Rutgers University
    Organizers: David Banks, Duke University; Janusz Marecki, IBM T.J. Watson Research; Bonnie Ray, IBM T.J. Watson Research; and Milind Tambe, University of Southern California
    Email: banks at stat.duke.edu, marecki at us.ibm.com, bonnier at us.ibm.com, tambe at usc.edu

  - **DIMACS Workshop on Evidence-based Policy Making**
    Dates: December 2 - 3, 2010
    Location: Lamsade, University Paris Dauphine, France
    Organizers: Fred Roberts, Rutgers; and Alexis Tsoukiàs, LAMSADE
    Email: froberts at dimacs.rutgers.edu, tsoukias at lamsade.dauphine.fr

  - **DIMACS/CCICADA Workshop on Risk-Averse Algorithmic Decision Making**
    Dates: May 9 - 11, 2011
    Location: DIMACS Center, CoRE Building, Rutgers University
    Organizers: Melike Baykal-Gursoy, Rutgers University; David Brown, Duke; Aleksandar Pekec, Duke; Andrzej Ruszczynski, Rutgers; and Dharmashankar Subramanian, IBM Watson Labs
    Email: gursoy at rci.rutgers.edu dbbrown at duke.edu, pekec at duke.edu, rusz at business.rutgers.edu, dharmash at us.ibm.com

  - **DIMACS Workshop on The Science of Expert Opinion**
    Dates: October 24 - 25, 2011
    Location: DIMACS Center, CoRE Building, Rutgers University
    Organizer: Cliff Behrens, Telcordia
    Email: cliff at research.telcordia.com

  - **DIMACS Workshop on Recommender System Tools for Decision Makers**

Dates: TBA
Location: DIMACS Center, CoRE Building, Rutgers University
Organizers: Bob Bell, AT&T Labs; and Vikas Sindhwani, IBM
Email: rbell at research.att.com, vsindhw at us.ibm.com

- **Workshops and Working Groups in Applied Topics for ADT**
  - **DIMACS Workshop on Algorithmic Decision Theory for the Smart Grid**
    Dates: October 25 - 27, 2010
    Location: DIMACS Center, CoRE Building, Rutgers University
    Organizers: K. R. Krishnan, Telcordia; Linda Ness, Telcordia; and Tom Reddington, Bell Labs
    Email: krk at research.telcordia.com, lness at telcordia.com, treddington at research.bell-labs.com
  - **DIMACS Workshop on Algorithmic Medical Decision Making: Bridging data sources for drug safety monitoring**
    Dates: May 5, 2011
    Location: The Cancer Institute of New Jersey (CINJ), 195 Little Albany Street, New Brunswick, NJ
    Organizers: Ching-Hua Chen-Ritzo, IBM; Jianying Hu, IBM Research; David Madigan, Columbia; and Guna Rajagopal, Cancer Inst. of NJ
    Email: chenritzo at us.ibm.com, davidbmadigan at gmail.com, jyhu at us.ibm.com, rajagogu at umdnj.edu
  - **DIMACS Workshop on Smart Cities**
    Dates: September 26 - 27, 2011
    Location: LAMSADE, University Paris-Dauphine
    Organizers: Arun Hampapur, IBM; Jayant Kalagna-nam, IBM; Fred Roberts, Rutgers; Alexis Tsoukiàs, LAMSADE; and Laura Wynter, IBM
    Email: arunh at us.ibm.com, jayant at us.ibm.com, froberts at dimacs.rutgers.edu, tsoukias at lamsade.dauphine.fr, lwynter at us.ibm.com
  - **DIMACS/CCICADA/CAIT/USCG 2nd Annual Maritime Risk Symposium - Developing Public-Private Partnerships in Homeland Security:**
    How Risk Impacts Government Policy and Business Requirements
    Dates: November 7 - 9, 2011
    Location: Fiber Optics Auditorium, Busch Campus, Rutgers University
    Organizers: Tayfur Altiok, Rutgers; Joe DiRenzo, Ops. Analysis & Performance, USCG
    Email: altiok at rci.rutgers.edu
  - **DIMACS Working Group on Using Humans as Sensors for Monitoring Public Health**
    Dates: TBA
    Location: DIMACS Center, CoRE Building, Rutgers University
    Organizer: Cliff Behrens, Telcordia
    Email: cliff at research.telcordia.com
  - **DIMACS Workshop on Algorithmic Decision Theory and Economic Epidemiology**
    Dates: TBA
    Location: DIMACS Center, CoRE Building, Rutgers University
    Organizers: Nina Fefferman, Rutgers; Alison Galvani, Yale; Ramanan Laxminararayan; Resources for the Future; and Jan Medlock, Clemson
    Email: fefferman at aesop.rutgers.edu, alison.galvani at gmail.com, Ramanan at rff.org, medlock at clemson.edu
  - **DIMACS Workshop on Algorithmic Decision Making in Protecting Ecosystems**
    Dates: TBA

Location: DIMACS Center, CoRE Building, Rutgers University
Organizers: Nina Fefferman, Rutgers; Simon Levin, Princeton; and Alexis Tsoukiàs, LAMSADE
Email: fefferman at aesop.rutgers.edu, slevin at princeton.edu, tsoukias at lamsade.dauphine.fr

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 Index of Special Focus on Algorithmic Decision Theory

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 DIMACS Homepage

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Contacting the Center
Document last modified on August 20, 2011.

Annexe D:

Announcement: Doctoral course
6 lectures in multicriteria decision aid and multi-objective optimization.

Organizers: Y. De Smet (ULB), Th. Marchant (UGent), M. Pirlot (UMONS)
Target audience: doctoral students in decision, optimization, operational research, preferences in data base search
Goal: offer an introduction (at doctoral level) to a few fundamental mathematical models in the field of multiple criteria decision analysis and multi-objective optimization and to algorithmic problems raised by the use of such models.

Organization: six lectures of about 3 hours in English (once a month from January to June). Each lecture focuses on a specific topic. All lectures will take place in Brussels (ULB, Campus Plaine) or Mons (UMONS, Faculté Polytechnique) as indicated in the programme below.
Venue for the first lecture in Mons: UMONS, Faculté Polytechnique, rue de Houdain 9, 7000 Mons, Seminar room of MathRO (Mathematics and Operational Research department), third floor.
All lectures in Mons will take place in the same room.
The location of the lectures in Brussels will be announced later.
Further information: contact Prof. Marc Pirlot: marc.pirlot@umons.ac.be
Inscription is free; for organizational purposes it is asked that people intending to attend the lectures let it know to one of the organizers.

Programme

1. January 20, 2011 (Thursday), 14.00-17.00 in **Mons**. M. Pirlot (UMONS): Additive value functions and conjoint measurement
2. February 23, 2011 (Wednesday), 14.00-17.00 in **Brussels**. D. Bouyssou (CNRS Paris Dauphine) : Models for deciding under risk and uncertainty
3. March 23, 2011 (Wednesday), 14.00-17.00 in **Brussels**. J. Figueira (Université de Nancy) : Outranking methods
4. April 27, 2011 (Wednesday), 14.00-17.00 in **Mons**. P. Meyer (Telecom Bretagne): Algorithms and software for aiding decision : the Decision Deck project
5. May 18, 2011 (Wednesday), 14.00-17.00 in **Brussels**. To be confirmed : M. Geiger (Universität Hamburg) : Interactive methods in multiple objective optimization
6. June 15, 2011 (Wednesday), 14h-17h in **Mons**. P. Perny (Paris VI) : Multiobjective combinatorial optimization

This programme could be modified. The persons who would like to be informed of possible changes in the programme are invited to contact the organizers.

This course is organized with the support of the thematic doctoral school in Mathematics and is part of the activities of the forthcoming GDRI ALGODEC.

GDRI ALGODEC
01/01/2011 – 31/12/2014
Coordonnateur : Denis Bouyssou, LAMSADE UMR7243, INS2I

RAPPORT D'ACTIVITÉ 2012

A. ACTIVITÉS DE COORDINATION

A.1- Organisation de réunions de travail sur la thématique du GDRI

En 2012, le GDRI a été impliqué dans l'organisation de deux manifestations :

- Le Workshop on Algorithmic Aspects of Information Fusion,
- DA2PL 2012 : From Multiple Criteria Decision Making to Preference Learning.

On présente ces deux manifestations plus en détail ci-après.

Signalons également que de nombreux participants du GDRI ont été impliqués dans l'organisation de Fourth International Workshop on Computational Social Choice (Cracovie, 11-13 septembre 2012, http://home.agh.edu.pl/~faliszew/COMSOC-2012/)

Le GDRI reste impliqué dans le projet Decision Deck (www.decision-deck.org). Le projet a organisé deux événements en 2012 :

- 8-11 July 2012: Stream at the EURO XXV conference in Vilnius : Innovative Software Tools for MCDA, http://www.euro-2012.lt/welcome
- 11 April 2012: 10th Decision Deck Workshop in Tarragona, Spain, http://deim.urv.cat/~itaka/CMS4/index.php?option=com_content&view=article&id=10&Itemid=14

La 11e réunion Decision Deck est prévue en 2013 à l'université Paris Dauphine.

Mentionnons également que la prochaine conférence Algorithmic Decision Theory sera organisée en 2013 par Marc Pirlot et Yves De Smet (tous deux participants au GDRI) à l'Université Libre de Bruxelles. Le GDRI sera pilote et soutien dans l'organisation de cette conférence.

Alexis Tsoukiàs a participé aux enseignements du Master Ingénierie de la Décision à l'université Rey Juan Carlos (voir www.deio.urjc.es et mms://marx.urjc.es/Libre/MasterIngenieriaDecision2011-2012/SeminarioIngDecision06062012E.wmv

Enfin, le GDRI a activement contribué à la 1st International Workshop on Teaching Decision Sciences and Technologies, February 9-10, 2012, Budapest, Hungary, colloque organisé dans le cadre du projet Virtuosi « Virtual mobility in decision sciences » (www.vrtuosi.com).

Workshop: Algorithmic Aspects of Information Fusion (WAIF)
Location: DIMACS Center, CoRE Building, Rutgers University
Dates: November 8 - 9, 2012
Related to: Special Focus on Algorithmic Decision Theory
Website: http://dimacs.rutgers.edu/Workshops/Fusion
Co-organisé par Fred Roberts et Sébastien Konieczny

Voir programme en Annexe.

Workshop From Multiple Criteria Decision Making to Preference Learning DA2PL 2012, Mons, 15-16 November 2012.

Aim of the workshop
Bring together researchers involved in Preference Modeling and Preference Learning and identify research challenges at the crossroad of both research fields
The need for search engines able to select and rank order the pages most relevant to a user's query has emphasized the issue of learning the user's preferences and interests in an adequate way. That is to say, on the basis of little information on the person who queries the Web, and, in almost no time. Recommender systems also rely on efficient preference learning.
On the other hand, preference modeling has been an auxiliary discipline related to Multicriteria decision aiding for a long time. Methods for eliciting preference models, including learning by examples, are a crucial issue in this field.
It is quite natural to think and to observe in practice that preference modeling and learning are two fields that have things to say to one another. It is the main goal of the present workshop to bring together researchers involved in those disciplines, in order to identify research issues in which cross-fertilization is already at work or can be expected. Communications related to successful usage of explicit preference models in preference learning are especially welcome as well as communications devoted to innovative preference learning methods in MCDA. The programme of the workshop will consist of three or four invited lectures and about 15 selected research communications.

Voir programme en Annexe.

A.2 – Organisation de conférences, écoles d'été, ateliers etc. par les partenaires du GDRI

Le GDRI a soutenu l'organisation de l'Ecole de printemps sur la théorie des jeux algorithmique.

Ecole de printemps : Théorie des jeux algorithmique
18-20 juin 2012, Paris, France
(organisée avec le soutien du GDRI ALGODEC)

Cette école de printemps vise à fournir aux participants un panorama de la théorie des jeux algorithmique, discipline à l'intersection de l'optimisation combinatoire et de la théorie des jeux. La théorie des jeux algorithmique a des applications dans de multiples domaines, en particulier les réseaux et l'intelligence artificielle. Il y a aujourd'hui encore peu d'enseignements dédiés à cette nouvelle discipline. Le but de cette école est d'une part d'offrir l'occasion à toute personne intéressée de se familiariser avec les principaux concepts de la discipline, d'autre part de favoriser la rencontre et les discussions entre chercheurs intéressés par ce sujet. Les cours sont accessibles à toute personne disposant d'une formation de base en algorithmique. Aucun prérequis en théorie des jeux n'est nécessaire. Les doctorants sont particulièrement encouragés à participer à cette école.

Orateurs et comités
Orateurs : Jose Rafaël Correa (Universidad de Chile), Christoph Dürr (CNRS - Université Paris 6), Laurent Gourvès (CNRS - Université Paris Dauphine), Olivier Serre (CNRS - Université Paris Diderot), Krzysztof Rządca (University of Warsaw), Denis Trystram (Université de Grenoble), Michael Wooldridge (University of Oxford).

Comité scientifique : Evripidis Bampis, Christoph Dürr, Bruno Escoffier, Laurent Gourvès, Jérôme Monnot, Stefano Moretti, Kim Thang Nguyen, Fanny Pascual, Olivier Spanjaard, Denis Trystram.

Comité d'organisation : Christoph Dürr, Bruno Escoffier, Laurent Gourvès, Jérôme Monnot, Stefano Moretti, Thang Nguyen Kim, Fanny Pascual, Olivier Spanjaard.

Voir programme en Annexe.

On prévoit d'organiser une nouvelle école doctorale en 2013.

A.3 – Autres activités de coordination

Le DIMACS et le LAMSADE sont impliqués dans le programme Mathematics of Planet Earth. A partir de 2013, ce programme donnera lieu à diverses manifestations scientifiques.

Mathematics of Planet Earth 2013 (MPE 2013) is an initiative of mathematical sciences organizations around the world designed to showcase the ways in which the mathematical sciences can be useful in tackling our world's problems. This initiative has led to plans for many events to take place in 2013, including more than 10 long term programs at institutes around the world, more than 50 workshops, many invited speakers and special sessions at societal meetings, numerous public lectures, the development of educational materials, art exhibits, and an international prize competition to create innovative modules for display and use and which can be widely disseminated and exhibited.
As MPE has gained members, it has become clear that there is momentum to propel it beyond 2013. The problems facing our planet will persist, and so we have initiated a new project Mathematics of Planet Earth 2013+ (MPE 2013+), which aims to involve mathematical scientists in laying the groundwork for a long-term effort to surmount them and to sustain MPE activities beyond 2013.

Signalons également que le GDRI ALGODEC est impliqué dans le programme du DIMACS Special Focus on Algorithmic Decision Theory. Il s'agit d'une série des colloques et des réunions de groupes de travail (http://dimacs.rutgers.edu/SpecialYears/2010_ADT/) financés en partie par la NSF (www.nsf.org). On présente ce projet en Annexe.

A.4 – Bilan des activités du GDRI
5 pages maximum pour l'année en cours ou 15 pages maximum pour les GDRI arrivant au terme des 4 ans.

Le domaine de la Théorie Algorithmique de la Décision (Algorithmic Decision Theory) est un résultat de la coopération entre le LAMSADE et le DIMACS commencée déjà en 2004 autour de la thématique générale du rapprochement entre Théorie de la Décision et Informatique. Cette coopération, financée entre autre par le CNRS et la NSF, a permis l'organisation des colloques LAMSADE/DIMACS (2004, 2006, 2008, 2010, voir www.lamsade.dauphine.fr/dimacs) la publication des deux numéros spéciaux dans les revues Annals of Operations Research et Mathematical Social Sciences et l'échange d'une douzaine des chercheurs entre les deux Institutions. Surtout a donné l'impulsion à l'établissement de l'Action COST IC0602, qui a démarrer ses travaux en Mai 2007 (voir www.algodec.org), coordonnée par le LAMSADE.

Fred Roberts et Alexis Tsoukiàs, les deux chercheurs à l'origine de cette coopération, vue le succès de l'Action COST, de la première conférence Internationale : www.adt2009.org et de tout le projet ALGODEC en général, ont voulu continuer dans la construction de cette communauté des chercheurs au croisement entre Décision et Informatique et ont proposé l'établissement du DIMACS Special Focus on Algorithmic Decision Theory qui a commencé ses activités en 2010 grâce à un financement spécifique de la NSF.

Le GDRI ALGODEC a été conçu comme idée dans le cadre de l'Action COST IC0602 (terminée en Mai 2011) pour créer une contrepartie Européenne aux activités du DIMACS Special Focus adressé en priorité aux chercheurs en Amérique du Nord.

L'année 2011 a été caractérisée par la continuité des activités déjà programmées dans le cadre d'une part de l'Action COST IC0602 « Algorithmic Decision Theory » et d'autre part du DIMACS Special Focus on Algorithmic Decision Theory qui fait partie maintenant en plein titre des activités du GDRI.

L'année 2012 a débuté par un changement de coordinateur du GDRI (Denis Bouyssou remplaçant Alexis Tsoukiàs, devenu directeur du LAMSADE). Au cours de l'année 2012, deux manifestations importantes ont été organisée dans le cadre du GDRI :
* le workshop DA2PL (Mons, novembre 2012)

* le Workshop on Algorithmic Aspects of Information Fusion (WAIF) (Rutgers, Novembre 2012).
De nombreux membres du GDRI participent à ces deux manifestations.

D'autre part, le GDRI a soutenu l'organisation de l'Ecole de printemps et théorie des jeux algorithmique (Paris, 18-20 juin 2012). Enfin, de nombreux participants du GDRI ont été impliqués dans l'organisation de Fourth International Workshop on Computational Social Choice (Cracovie, 11-13 septembre 2012). Enfin, le GDRI reste impliqué dans le projet Decision Deck qui a organisé deux manifestations importantes au cours de l'année 2012.

Les projets pour l'année 2013 consistent essentiellement en :
* l'organisation de la troisième édition de la conférence Algorithmic Decision Theory, prévue à Bruxelles en 2013 (dates encore à préciser)
* l'organisation d'une troisième école doctorale sur les thèmes relevant du GDRI (après celles de Han sur Lesse en 2007 et celle de Catane en 2009.

Objectifs et Bilan

Les objectifs du GDRI ALGODEC sont multiples et peuvent être synthétisés ainsi :
- Progresser dans la construction et le renforcement de la communauté ALGODEC au niveau international, notamment parmi les jeunes chercheurs ;
- Identifier des domaines d'application qui permettent de montrer l'intérêt d'investir en termes de recherche scientifique dans la Théorie Algorithmique de la Décision ;
- Aider le développement des recherches dans ce domaine à travers la mise en réseau et la création de synergies entre les laboratoires participants et au-delà.

En ce qui concerne le premier objectif on a :
* été impliqué dans l'organisation de l'Ecole de printemps sur la Théorie des jeux algorithmique,
* été impliqué dans la poursuite de l'organisation de la série de conférences Algorithmic Decision Theory qui représentent le « vaisseau amiral » de notre communauté,
* été impliqué dans l'organisation en 2012 de deux Workshops internationaux (DA2PL 2012, et Workshop on Algorithmic Aspects of Information Fusion.
* été impliqué dans la tenue de la Fourth International Workshop on Computational Social Choice (Cracovie, 11-13 septembre 2012).
* continué à participer aux activités du DIMACS Special Focus on Algorithmic Decision Theory,
* été impliqué dans le programme Mathematics of Planet Earth.

En ce qui concerne le deuxième objectif, les domaines d'application choisis sont :
- Smart Cities. Les grandes villes au niveau mondial continuent à progresser et constituent un défi majeur pour les Sciences et Technologies de la Décision dans la perspective de concevoir des villes durables, intelligents, ouverts à l'inclusion et la création des nouveaux modèles de citoyenneté. Le colloque « Smart Cities » qui nous avons organisé en Septembre 2011 a permis de rassembler un grand nombre d'acteurs (scientifiques, industriels et villes) et a établi un premier agenda de travail pour le futur. On compte poursuivre les travaux dans cette direction.
- Sûreté et Sécurité. Le risque est un élément présent dans tous les problèmes de décision du monde réel et a été un sujet de réflexion en Théorie de la Décision depuis son origine. Aujourd'hui cette thématique est présente d'une part dans la conduite sécurisée des systèmes complexes (industriels ou autres) et d'autre part dans la conception des politiques publiques à la fois sous la forme du hasard (risques naturelles ou technologiques) et de la menace (crime, terrorisme etc.). Nous allons continuer développer la discussion entamée avec le premier colloque sur « Adversarial Risk Analysis » et démarrer une réflexion avec des agences Nationales et Internationales autour de la « gouvernance du risque ».
- Policy Analytics. Le sujet a été identifié pendant le colloque LAMSADE/DIMACS en Décembre 2010 (www.lamsade.dauphine.fr/dimacs) comme un défi scientifique et technologique : élaborer des méthodologies originales pour l'aide à la décision dans la conception, mise en ouvre et évaluation des politiques publiques, notamment en exploitant l'énorme masse des données

aujourd'hui disponibles. Le colloque organisé le e 1 Décembre 2011 a fait le point sur la discussion commencée en 2010. On prévoit de lancer un numéro spécial d'un journal du domaine.

En ce qui concerne le troisième objectif nous sommes en train de développer deux axes :
Le premier concerne le soutien aux activités de recherche de base dans les laboratoires participants à travers la mise en place d'un programme d'échange, notamment des jeunes chercheurs ainsi que le déploiement de cotutelles de thèses. Il s'agit d'un programme, expérimenté avec grand succès dans l'Action COST. Son développement est sur notre agenda pour 2013.

Le deuxième concerne le soutien au projet Decision Deck (www.decision-deck.org) qui a pour objectif la conception d'une plateforme de développement des logiciels d'aide à la décision open source et l'expérimentation de la mise en place de services web d'aide à la décision en connexion à des grandes bases de données en exploitant les potentialités offertes par le cloud computing.

B. RELATIONS ENTRE laboratoires partenaires du GDRI

B.1 - Accueil, dans les laboratoires français, de chercheurs des laboratoires partenaires étrangers

Marc Pirlot de l'Université de Mons a effectué plusieurs séjours de courte durée (une dizaine de fois) à l'Université Paris Dauphine et à l'Université Pierre et Marie Curie dans le cadre de son travail de recherche avec Denis Bouyssou (LAMSADE) et Patrice Perny (LIP6).

David Rios Insua de l'Universidad Rey Juan Carlos de Madrid a visité l'Université Paris Dauphine dans le cadre des discussions sur la mise en place du futur Master International en Sciences et Technologies de la Décision.

B.2 - Séjours, dans les laboratoires partenaires étrangers, de chercheurs des laboratoires français

Alexis Tsoukiàs a visité l'Universidad Rey Juan Carlos pour y donner des cours dans le cadre du Master de David Rios Insua (voir www.deio.urjc.es et mms://marx.urjc.es/Libre/MasterIngenieriaDecision2011-2012/SeminarioIngDecision06062012E.wmv

Denis Bouyssou a effectué divers séjours à Bruxelles et à Mons pour y travailler avec Marc Pirlot.

B.3 - Co-encadrement de doctorants et/ou participation à des jurys

a) Thèses co-encadrées ou en co-tutelle transnationale
Titre de la thèse, nom du doctorant, laboratoire principal de rattachement, nom des co-encadrants dans chaque laboratoire.

b) Participation à des jurys de soutenance de thèse ou d'habilitation dans un des laboratoires partenaires étrangers
Titre de la thèse/habilitation, nom du candidat, laboratoire principal de rattachement, date, lieu de la soutenance, nom du (des) membre(s) du GDRI participant au jury

C. PRODUCTION SCIENTIFIQUE COMMUNE

a) Publications collectives du GDRI (actes des conférences organisées dans le cadre du GDRI, ouvrages thématiques…)

Ronen I. Brafman, Fred S. Roberts and Alexis Tsoukiàs
Lecture Notes in Computer Science
Volume 6992, 2011, DOI: 10.1007/978-3-642-24873-3
Algorithmic Decision Theory
Second International Conference, ADT 2011, Piscataway, NJ, USA, October 26-28, 2011. Proceedings

Des proceedings des deux conférences DAPL 2012 et Workshop on Algorithmic Aspects of Information Fusion sont en préparation.

b) Productions collectives du GDRI (bases de données, plateformes, sites web, portails thématiques…)

www.algodec.org: portail thématique de la communauté ALGODEC ;
www.gdri-algodec.org: site web du GDRI (en construction);
www.decision-deck.org: site web du projet Decision Deck.

c) Liste des publications parues, acceptées ou soumises (préciser) dans des revues avec comité de lecture, co-signées avec des chercheurs des laboratoires partenaires étrangers

Bouyssou, Denis & Marc Pirlot, “An axiomatic approach to TACTIC”, forthcoming in Studia Informatica Universalis, ISSN 1621-7545, 2011, 29 pages.

Öztürk M., Pirlot M., Tsoukiàs A., ``Representing Preferences with Intervals'', Artificial Intelligence, vol. 175, 1194-1222, 2011.

d) Liste des publications dans des ouvrages (livres, proceedings,…) co-signées avec des chercheurs des laboratoires partenaires étrangers

Denis Bouyssou, Thierry Marchant, Marc Pirlot, Diversity management: An axiomatic approach, Working paper, 2012, 41 pages.

Denis Bouyssou, Marc Pirlot, Strict and non-strict outranking relations, Working Paper, 2012, 60 pages.

e) Liste des présentations à des colloques co-signées avec les partenaires étrangers du GDRI (indiquer si exposés oraux ou affiches)

f) Liste des brevets en co-propriété

D. OBSERVATIONS EVENTUELLES

Un changement dans la coordination du GDRI est intervenu en janvier 2012, Denis Bouyssou remplaçant Alexis Tsoukiàs.

Publications des partenaires français du GDRI relevant de sa thématique :

Paul E. Dunne, Pierre Marquis, Michael Wooldridge: Argument Aggregation: Basic Axioms and Complexity Results. COMMA 2012: 129-140.

Sylvie Coste-Marquis, Sébastien Konieczny, Pierre Marquis, Mohand Akli Ouali: Selecting Extensions in Weighted Argumentation Frameworks. COMMA 2012: 342-349

Sylvie Coste-Marquis, Sébastien Konieczny, Pierre Marquis, Mohand Akli Ouali: Weighted Attacks in Argumentation Frameworks. KR 2012

Patricia Everaere, Sébastien Konieczny, Pierre Marquis: Compositional Belief Merging. KR 2012

Daniel Le Berre, Emmanuel Lonca, Pierre Marquis, Anne Parrain, « Calcul de solutions équilibrées Pareto optimales : application au problème de gestion des dépendances logicielles » in Journées Francophones de Programmation par Contraintes (JFPC'12)

Daniel Le Berre, Emmanuel Lonca, Pierre Marquis, Anne Parrain, «Optimisation multicritère pour la gestion de dépendances logicielles : utilisation de la norme de Tchebycheff » in Reconnaissance des Formes et Intelligence Artificielle (RFIA'12)

Lesca, Julien; Minoux, Michel; Perny, Patrice; Compact versus Noncompact LP Formulations for Minimizing Convex Choquet Integrals, Discrete Applied Mathematics

Lesca, Julien; Perny, Patrice, Almost-truthful Mechanisms for Fair Social Choice Functions ; 20th European Conference on Artificial Intelligence, 2012

Jeantet, Gildas; Perny, Patrice; Spanjaard, Olivier; Sequential Decision Making with Rank Dependent Utility: a Minimax Regret Approach, 26th AAAI conference on Artificial Intelligence (AAAI 2012) (2012) AAAI Press Toronto, Ontario, Canada AAAI12.pdf
2011

Gonzales, Christophe; Perny, Patrice; Dubus, Jean-Philippe, Decision Making with Multiple Objectives using GAI networks; Artificial Intelligence Journal (2011) Vol. 175 7 pp. 1153--1179

Ogryczak, Wlodzimierz; Perny, Patrice; Weng, Paul, A Compromise Programming Approach to Multiobjective Markov Decision Processes, International Conference on Multiple Criteria Decision Making (2011) pp. 167 Jyvaskyla, Finland, June 13-17, 2011.

Delort, Charles; Spanjaard, Olivier, A hybrid dynamic programming approach to the biobjective binary knapsack problem ; Journal of Experimental Algorithmics 2012

Galand, Lucie; Spanjaard, Olivier, Exact algorithms for OWA-optimization in multiobjective spanning tree problems ; Computers & Operations Research 2012 39 pp. 1540-1554

Cornaz, Denis; Galand, Lucie; Spanjaard, Olivier, Bounded Single-Peaked Width and Proportional Representation ; 20th European Conference on Artificial Intelligence 2012 pp. 270-275 IOS Press

Cornaz, Denis; Galand, Lucie; Spanjaard, Olivier, Bounded Single-Peaked Width and Proportional Representation (workshop version) ; 4th International Workshop on Computational Social Choice (COMSOC-2012) 2012

Jeantet, Gildas; Perny, Patrice; Spanjaard, Olivier, Sequential Decision Making with Rank Dependent Utility: a Minimax Regret Approach ; 26th AAAI Conference on Artificial Intelligence 2012-10-18.

Fouilhoux, Pierre; Spanjaard, Olivier, Une nouvelle linéarisation de la moyenne ordonnée pondérée pour l'optimisation équitable, 13ème Congrès de la Société Française de Recherche Opérationnelle et d'Aide à la Décision (ROADEF 2012) 2012

Jeantet, Gildas; Spanjaard, Olivier, Computing Rank Dependent Utility in Graphical Models; Artificial Intelligence Journal 2011 175 pp. 1366-1389 pdf

Lakiotaki K., Matsatsinis N., Tsoukiàs A., Multicriteria user profiling in recommender systems, IEEE Intelligent Systems, vol. 26, 64-76, 2011.

Bouyssou, Denis & Marchant Thierry “Subjective expected utility without preferences”, Journal of Mathematical Psychology, 55 (6), 457–468, 2011 (avec Thierry Marchant).

Working Papers

Bouyssou Denis & Thierry Marchant « “Multiattribute preference models with reference points”,Working paper, 2011, 41 pages.

Wassila Ouerdane, Alexis Tsoukiàs, Social choice inspired Multiple Criteria Decision Analysis.

Vivien Zeumo-Kana, Alexis Tsoukiàs, A survey on poverty measurement: a decision aiding perspective.

Alberto Colorni, Alexis Tsoukiàs, What is a Decision Problem?

Annexe 1
Workshop on Algorithmic Aspects of Information Fusion

DIMACS Workshop on Algorithmic Aspects of Information Fusion (WAIF)
November 8 - 9, 2012

DIMACS Center, CoRE Building, Rutgers University
Organizers:
D. Frank Hsu, Fordham University, hsu at cis.fordham.edu
Sebastien Konieczny, CRIL - University of Artois, France, konieczny at cril.fr
Fred Roberts, Rutgers University and DIMACS, froberts at dimacs.rutgers.edu
Alexis Tsoukias, University of Paris and LAMSADE(CNRS), tsoukias at lamsade.dauphine.fr
Presented under the auspices of the Special Focus on Algorithmic Decision Theory.

Workshop Program:
The organizers have not yet provided a preliminary program however this is a preliminary list of talks and speakers:
Information Fusion on Human Disease Network in Taiwan
Kuanchi Chen, Tzu Chi University, Hualien, Taiwan
Sensor Synergy
Paul Kantor, Rutgers University, New Brunswick, USA.
Robust recommendations and their explanation in multi-criteria decision aiding with interacting criteria
Christophe Labreuche, Thales Research & Technology, France
Incomplete knowledge and communication issues in voting
Jerome Lang, LAMSADE-CNRS, Universite Paris Dauphine, France
Ranking sets of objects using the Shapley value and other regular semivalues
Stefano Moretti and Alexis Tsoukias, LAMSADE-CNRS, Universite Paris Dauphine, France
Judgment Aggregation Rules Based on Minimization
Gabriella Pigozzi, Universite Paris-Dauphine, LAMSADE
Scoring Rules for Fisheries Rules Violations
Fred Roberts, DIMACS and Rutgers University, New Jersey, USA
Portfolio Management with Combinatorial Fusion
Christina Schweikert, St. John's University
Fusing database rankings in similarity-based virtual screening
Peter Willett, University of Sheffield, Great Britain
Evolving, Training and Designing Neural Network Ensembles
Xin Yao, University of Birmingham, Great Britain
This is a preliminary list of other speakers:
D. Frank Hsu, Fordham University, New York, USA
Sebastien Konieczny, CRIL-CNRS, Universite d'Artois, France
Bruce Kristal, Harvard University, Boston, USA
Christophe Labreuche, THALES, France
Yanjun Li, Fordham University, New York, USA
Pierre Marquis, CRIL-CNRS, Universite d'Artois, France
Piotr Mirowski, Bell Labs-Lucent Technologies, New Jersey, USA
Ganapati Patil, Penn State University, USA
Gabriella Pigozzi, LAMSADE-CNRS, Universite Paris Dauphine, France
This is a preliminary schedule:

Annexe 2

Workshop From Multiple Criteria Decision Making to Preference Learning DA2PL 2012

Aim of the workshop

Bring together researchers involved in Preference Modeling and Preference Learning and identify research challenges at the crossroad of both research fields

The need for search engines able to select and rank order the pages most relevant to a user's query has emphasized the issue of learning the user's preferences and interests in an adequate way. That is to say, on the basis of little information on the person who queries the Web, and, in almost no time. Recommender systems also rely on efficient preference learning.

On the other hand, preference modeling has been an auxiliary discipline related to Multicriteria decision aiding for a long time. Methods for eliciting preference models, including learning by examples, are a crucial issue in this field.

It is quite natural to think and to observe in practice that preference modeling and learning are two fields that have things to say to one another. It is the main goal of the present workshop to bring together researchers involved in those disciplines, in order to identify research issues in which cross-fertilization is already at work or can be expected. Communications related to successful usage of explicit preference models in preference learning are especially welcome as well as communications devoted to innovative preference learning methods in MCDA. The programme of the workshop will consist of three or four invited lectures and about 15 selected research communications.

This workshop is organized in the framework of the GDRI (Groupement de Recherche International) "Algorithmic Decision Theory", which is recognized and supported by CNRS (France), FNRS (Belgium), FNR (Luxemburg).

Programme committee

Raymond Bisdorff (University of Luxembourg, Luxembourg),
Craig Boutillier (University of Toronto, Canada),
Denis Bouyssou (Paris Dauphine University, France),
Ronen Brafman (Ben Gurion University, Israel),
Bernard De Baets (Ghent University, Belgium),
Yves De Smet (Université libre de Bruxelles, Belgium),
Luis Dias (University of Coimbra, Portugal),
Philippe Fortemps (University of Mons, Belgium),
Patrick Meyer (Telecom Bretagne, France),
Vincent Mousseau (Ecole Centrale, Paris),
Patrice Perny (Pierre and Marie Curie University, France),
Marc Pirlot (University of Mons, Belgium),
Ahti Salo (Aalto University, Finland),
Alexis Tsoukias (Paris Dauphine University, France),
Aida Valls (Universitat Rovira I Virgili, Catalonia, Spain),
Paolo Viappiani (Aalborg University, Denmark)

Program

Thursday November 15th, 2012

9h00 Registration

9h15 Welcomming reception

9h30 Session 1

Invited speaker: "Preference Learning : an Introduction", Eyke Hüllermeier, Department of Mathematics and Computer Science, Philipps-Universität Marburg, Germany

The topic of "preferences" has recently attracted considerable attention in artificial intelligence in general and machine learning in particular, where the topic of preference learning has emerged as a new, interdisciplinary research field with close connections to related areas such as operations research, social choice and decision theory. Roughly speaking, preference learning is about methods

for learning preference models from explicit or implicit preference information, typically used for predicting the preferences of an individual or a group of individuals. Approaches relevant to this area range from learning special types of preference models, such as lexicographic orders, over "learning to rank" for information retrieval to collaborative filtering techniques for recommender systems. The primary goal of this tutorial is to survey the field of preference learning in its current stage of development. The presentation will focus on a systematic overview of different types of preference learning problems, methods and algorithms to tackle these problems, and metrics for evaluating the performance of preference models induced from data.
10h30 Coffea break
11h00 Session 2
"A New Rule-based Label Ranking Method", Gurrieri, M., Siebert, X., Fortemps, Ph., Greco, S., Slowinski, R.
"Preference-based clustering of large datasets", Olteanu, A., Bisdorff, R.
"Learning the parameters of a multiple criteria sorting method from large sets of assignment examples", O. Sobrie and V. Mousseau and M. Pirlot
"A piecewise linear approximation of PROMETHEE II's net flow scores", Eppe, S., De Smet, Y.
13h00 Lunch
14h30 Session 3
Invited speaker: "Principled Techniques for Utility-based Preference Elicitation in Conversational Systems", Paolo Viappiani, CNRS-LIP6, Université Pierre et Marie Curie, Paris
15h30 Coffee break
16h00 Session 4
"Using Choquet integral in Machine Learning: what can MCDA bring?", Bouyssou, D., Couceiro, M., Labreuche, Chr., Marichal, J.-L., Mayag, B.
"On the expressiveness of the additive value function and the Choquet integral models", Meyer, P. Pirlot, M.
"Using set functions for multiple classifiers combination", Fabien Rico, Antoine Rolland, Laboratoire ERIC - Université Lumière Lyon 2
"Preference Learning using the Choquet Integral", Hüllermeier, E.

Friday November 16th, 2012
9h Session 5
Invited speaker: "Ranking Problems, Task Losses and their Surrogates", Krzysztof Dembczynski, Laboratory of Intelligent Decision Support Systems, Poznan University of Technology
From the learning perspective, the goal of the ranking problem is to train a model that is able to order a set of objects according to the preferences of a subject. Depending on the preference structure and training information, one can distinguish several types of ranking problems, like bipartite ranking, label ranking, or a general problem of conditional rankings, to mention a few. To measure the performance in the ranking problems one uses many different evaluation metrics, with the most popular being Pairwise Disagreement (also referred to as rank loss), Discounted Cumulative Gain, Average Precision, and Expected Reciprocal Rank. These measures are usually neither convex nor differentiable, so it is, in general, infeasible to optimize them directly. Therefore they are sometimes referred to as task losses, and in the learning algorithms one rather employs surrogate losses to facilitate the optimization problem. The question, however, arises whether we can design for a given ranking problem a surrogate loss that will provide a near-optimal solution with respect to a given task loss. For simple ranking problems and some task losses the answer is positive, but it seems that in general the answer is rather negative. During the talk we will discuss several results obtained so far, with the emphasis on the bipartite and multilabel ranking problem and the pairwise disagreement loss, in which case very simple surrogate losses lead to the optimal solution.
10h00 Coffee break + Poster session (Crevits, Fontes, Boras, Abbas, Chaabane)
11h00 Session 6
Roundtable
12h00 Lunch
13h30 Session 7
Invited speaker: "Learning GAI networks", Yann Chevaleyre, LIPN, Université Paris 13

Generalized Additive Independence (GAI) models have been widely used to represent utility functions. In this talk, we will address the problem of learning GAI networks from pairwise preferences. First, we will consider the case where the structure of the GAI network is known of bounded from above. We will see how this problem can be reduced to a kernel learning problem. Then, we will investigate the structure learning problem. After presenting the computational barriers of this structure learning problem, we will show which type of algorithms can be used to solve this problem.
14h30 Coffee break
15h00 Session 8
"An algorithm for active learning of lexicographic preferences", Delecroix, F., Morge, M., Routier, J.-Chr.
"On measuring and testing the ordinal correlation between valued outranking relations", Raymond Bisdorff, University of Luxembourg
"Elicitation of decision parameters for thermal comfort on the trains", Mammeri Lounes, Bouyssou Denis, Galais Cedric, Ozturk Meltem, Segretain Sandrine, Talotte Corine
"Dynamic managing and learning of user preferences in a content-based recommender system", Marín, L., Moreno, A., Isern, D., Valls, A.
17h00 Closing session

Annexe 3
Ecole de printemps et théorie des jeux algorithmique

Ecole de printemps et théorie des jeux algorithmique
18-20 juin 2012, Paris, France
(organisée avec le soutien du GDRI ALGODEC)

Cette école de printemps vise à fournir aux participants un panorama de la théorie des jeux algorithmique, discipline à l'intersection de l'optimisation combinatoire et de la théorie des jeux. La théorie des jeux algorithmique a des applications dans de multiples domaines, en particulier les réseaux et l'intelligence artificielle. Il y a aujourd'hui encore peu d'enseignements dédiés à cette nouvelle discipline. Le but de cette école est d'une part d'offrir l'occasion à toute personne intéressée de se familiariser avec les principaux concepts de la discipline, d'autre part de favoriser la rencontre et les discussions entre chercheurs intéressés par ce sujet. Les cours sont accessibles à toute personne disposant d'une formation de base en algorithmique. Aucun prérequis en théorie des jeux n'est nécessaire. Les doctorants sont particulièrement encouragés à participer à cette école.

Orateurs et comités
Orateurs : Jose Rafaël Correa (Universidad de Chile), Christoph Dürr (CNRS - Université Paris 6), Laurent Gourvès (CNRS - Université Paris Dauphine), Olivier Serre (CNRS - Université Paris Diderot), Krzysztof Rządca (University of Warsaw), Denis Trystram (Université de Grenoble), Michael Wooldridge (University of Oxford).

Comité scientifique : Evripidis Bampis, Christoph Dürr, Bruno Escoffier, Laurent Gourvès, Jérôme Monnot, Stefano Moretti, Kim Thang Nguyen, Fanny Pascual, Olivier Spanjaard, Denis Trystram.

Comité d'organisation : Christoph Dürr, Bruno Escoffier, Laurent Gourvès, Jérôme Monnot, Stefano Moretti, Thang Nguyen Kim, Fanny Pascual, Olivier Spanjaard.

Programme
Lundi 18 juin
9h30 - 10h00 : Accueil des participants
10h00 - 12h15 : Introduction à la théorie des jeux (Olivier Serre)
12h30 - 14h00 : Déjeuner
14h00 - 16h15 : Efficacité des équilibres (Laurent Gourvès)
16h15 - 16h30 : Pause café
16h30 - 18h00 : Exposés doctorants

Mardi 19 juin
9h00 - 10h30 : Computational Aspects of Cooperative Game Theory Part I (Michael Wooldridge)
10h30 - 10h45 : Pause café
10h45 - 12h15 : Computational Aspects of Cooperative Game Theory Part II (Michael Wooldridge)
12h30 - 14h00 : Déjeuner
14h00 - 16h15 : Cooperation in resource management of distributed systems (Krzysztof Rządca et Denis Trystram)
16h15 - 16h30 : Pause café

16h30 - 18h00 : Exposés doctorants
19h00 : Dîner de gala (salle de réception de la tour Zamansky)

Mercredi 20 juin
9h00 - 10h30 : Network congestion games Part I (Jose Rafaël Correa)
10h30 - 10h45 : Pause café
10h45 - 12h15 :Network congestion games Part II (Jose Rafaël Correa)
12h30 - 14h00 : Déjeuner
14h00 - 16h15 : Mécanismes d'incitation (Christoph Dürr)

Annexe 4
Programme du DIMACS Special Focus on Algorithmic Decision Theory

DIMACS 2010 - 2013 Special Focus on Algorithmic Decision Theory: Overview

Today's decision makers in fields ranging from engineering to medicine to homeland security have available to them remarkable new technologies, huge amounts of information, and the ability to share information at unprecedented speeds and quantities. These tools and resources will enable better decisions if we can surmount concomitant challenges:

- the massive amounts of data available are often incomplete or unreliable or distributed and there is great uncertainty in them;
- interoperating/distributed decision makers and decision-making devices need to be coordinated;
- many sources of data need to be fused into a good decision, often in a remarkably short time;
- decisions must be made in dynamic environments based on partial information;
- there is heightened risk due to extreme consequences of poor decisions;
- decision makers must understand complex, multi-disciplinary problems.

When faced with such issues, decision makers have few highly efficient algorithms available to support decisions. There is a long tradition of algorithmic methods in logistics and planning, but algorithms to automate, speed up and improve real-time decision making are much less common. Algorithms for decision support, especially algorithms that can approximate good analytic solutions, are needed. Our objective is to improve the performance of decision makers (human or automated) in the face of these new opportunities and challenges by exploiting algorithmic methods.

The goal of the Special Focus on Algorithmic Decision Theory and of the field of Algorithmic Decision Theory is to explore and develop algorithmic approaches to decision problems arising in a variety of application areas as motivated by the above issues.Resolving such issues requires new initiatives to engage computer scientists with decision theorists, statisticians with economists, mathematicians with behavioral scientists, and operations researchers with people knowledgeable in applied areas ranging from ecology to public health. The Special Focus on Algorithmic Decision Theory (SF-ADT) aims to stimulate such engagement. The special focus will feature a series of workshops held over a period of three years, aimed at bringing the challenges, problems, concepts, and methods of Algorithmic Decision Theory (ADT) to a large, interdisciplinary audience. There will also be several research working groups meeting several times to pursue interdisciplinary research areas. Some SF-ADT Workshops (WSs) and Working Groups (WGs) will be on foundational topics: risk-averse adversarial decision making, risk measures and incorporating them into ADT, the science of expert opinion, evidence-based policy making, and recommender systems. Other WSs and WGs will cover applied topics: electric power systems (``smart grid''), health care, epidemiology, ecology, port security, and urban policy making (``smart cities''). Ideas from foundational meetings will carry over to the applied ones and the applied ones will provide motivation for foundational discussions.

Opportunities to Participate: The Special Focus will include:

- **Workshops:** A variety of workshops and mini-workshops are being planned
- **Working Groups:** Interdisciplinary "working groups" will explore special focus research topics.
- **Tutorial:** A tutorial will provide background knowledge to those who wish to participate in the special focus or just get an introduction to some of the fundamental issues in the field.
- **Seminar Series:** There will be a mix of research talks and practitioner presentations.
- **Visitor Programs:** Applications for research and graduate student visits to the center are invited. Some funds are available for travel and local support.

- **Postdoctoral Positions:** There is a possibility postdoctoral positions will be offered in this area
- **Graduate Student Support:** Funds will be set aside for graduate students interested in attending workshops. Students interested in visiting DIMACS during the special focus are encouraged to apply to the special focus organizers.
- **Publications:** We anticipate that a variety of publications, including AMS-DIMACS volumes, technical reports, abstracts and notes on the WWW, and DIMACS modules will result from the special focus.
- **The Second International Conference on Algorithmic Decision Theory**
  Dates: October 26 - 28, 2011
  Location: DIMACS Center, CoRE Building, Rutgers University
  Organizers: Ronen Brafman, Ben Gurion University; Fred Roberts, DIMACS/Rutgers University; and Alexis Tsoukiàs, LAMSADE
  Email: brafman@cs.bgu.ac.il, froberts at dimacs.rutgers.edu, tsoukias at lamsade.dauphine.fr
- **Foundational Workshops and Working Groups for ADT**
  - **DIMACS/CCICADA Workshop on Adversarial Decision Making**
    Dates: September 30 - October 1, 2010
    Location: DIMACS Center, CoRE Building, Rutgers University
    Organizers: David Banks, Duke University; Janusz Marecki, IBM T.J. Watson Research; Bonnie Ray, IBM T.J. Watson Research; and Milind Tambe, University of Southern California
    Email: banks at stat.duke.edu, marecki at us.ibm.com, bonnier at us.ibm.com, tambe at usc.edu
  - **DIMACS Workshop on Evidence-based Policy Making**
    Dates: December 2 - 3, 2010
    Location: Lamsade, University Paris Dauphine, France
    Organizers: Fred Roberts, Rutgers; and Alexis Tsoukiàs, LAMSADE
    Email: froberts at dimacs.rutgers.edu, tsoukias at lamsade.dauphine.fr
  - **DIMACS/CCICADA Workshop on Risk-Averse Algorithmic Decision Making**
    Dates: May 9 - 11, 2011
    Location: DIMACS Center, CoRE Building, Rutgers University
    Organizers: Melike Baykal-Gursoy, Rutgers University; David Brown, Duke; Aleksandar Pekec, Duke; Andrzej Ruszczynski, Rutgers; and Dharmashankar Subramanian, IBM Watson Labs
    Email: gursoy at rci.rutgers.edu dbbrown at duke.edu, pekec at duke.edu, rusz at business.rutgers.edu, dharmash at us.ibm.com
  - **DIMACS Workshop on The Science of Expert Opinion**
    Dates: October 24 - 25, 2011
    Location: DIMACS Center, CoRE Building, Rutgers University
    Organizer: Cliff Behrens, Telcordia
    Email: cliff at research.telcordia.com
- **Workshops and Working Groups in Applied Topics for ADT**
  - **DIMACS Workshop on Algorithmic Decision Theory for the Smart Grid**
    Dates: October 25 - 27, 2010
    Location: DIMACS Center, CoRE Building, Rutgers University
    Organizers: K. R. Krishnan, Telcordia; Linda Ness, Telcordia; and Tom Reddington, Bell Labs
    Email: krk at research.telcordia.com, lness at telcordia.com, treddington at research.bell-labs.com
  - **DIMACS Workshop on Algorithmic Medical Decision Making: Bridging data sources for drug safety monitoring**
    Dates: May 5, 2011
    Location: The Cancer Institute of New Jersey (CINJ), 195 Little Albany Street, New Brunswick, NJ

Organizers: Ching-Hua Chen-Ritzo, IBM; Jianying Hu, IBM Research; David Madigan, Columbia; and Guna Rajagopal, Cancer Inst. of NJ
Email: chenritzo at us.ibm.com, davidbmadigan at gmail.com, jyhu at us.ibm.com, rajagogu at umdnj.edu

- **DIMACS Workshop on Smart Cities**
  Dates: September 26 - 27, 2011
  Location: LAMSADE, University Paris-Dauphine
  Organizers: Arun Hampapur, IBM; Jayant Kalagna-nam, IBM; Fred Roberts, Rutgers; Alexis Tsoukiàs, LAMSADE; and Laura Wynter, IBM
  Email: arunh at us.ibm.com, jayant at us.ibm.com, froberts at dimacs.rutgers.edu, tsoukias at lamsade.dauphine.fr, lwynter at us.ibm.com
- **DIMACS/CCICADA/CAIT/USCG 2nd Annual Maritime Risk Symposium - Developing Public-Private Partnerships in Homeland Security: How Risk Impacts Government Policy and Business Requirements**
  Dates: November 7 - 9, 2011
  Location: Fiber Optics Auditorium, Busch Campus, Rutgers University
  Organizers: Tayfur Altiok, Rutgers; Joe DiRenzo, Ops. Analysis & Performance, USCG
  Email: altiok at rci.rutgers.edu
- **DIMACS Workshop on Algorithmic Aspects of Information Fusion (WAIF)**
  Dates: November 8 - 9, 2012
  Location: DIMACS Center, CoRE Building, Rutgers University
  Organizers: D. Frank Hsu, Fordham University; Sebastien Konieczny, CRIL - University of Artois, France;
  Fred Roberts, Rutgers University and DIMACS' and Alexis Tsoukiàs, University of Paris and LAMSADE(CNRS)
  Email: hsu at cis.fordham.edu, konieczny at cril.fr, froberts at dimacs.rutgers.edu, tsoukias at lamsade.dauphine.fr

Workshops/Working Groups under development:

- **DIMACS Working Group on Using Humans as Sensors for Monitoring Public Health**
  Dates: TBA
  Location: DIMACS Center, CoRE Building, Rutgers University
  Organizer: Cliff Behrens, Telcordia
  Email: cliff at research.telcordia.com
- **DIMACS Workshop on Recommender System Tools for Decision Makers**
  Dates: TBA
  Location: DIMACS Center, CoRE Building, Rutgers University
  Organizers: Bob Bell, AT&T Labs; and Vikas Sindhwani, IBM
  Email: rbell at research.att.com, vsindhw at us.ibm.com

GDRI ALGODEC
01/01/2011 – 31/12/2014
Coordonnateur : Denis Bouyssou, LAMSADE UMR7243, INS2I

RAPPORT D'ACTIVITÉ 2013

A. ACTIVITÉS DE COORDINATION

Pour mémoire, le GDRI regroupe les laboratoires suivants :

DIMACS, Rutgers University
Université Paris Dauphine (LAMSADE)
Université Pierre et Marie Curie (LIP6)
Université d'Artois (CRIL)
Université de Mons (MATHRO)
Université Libre de Bruxelles (SMG)
Université du Luxembourg (ILIAS)
Universidad Rey Juan Carlos (DEIO)

A.1- Organisation de réunions de travail sur la thématique du GDRI

ADT 2013

L'année 2013 pour le GDRI ALGODEC a principalement été parqué par la préparation puis la tenue de la conférence ADT 2013. Cette conférence biennale est le point de rencontre privilégié de la communauté travaillant dans le domaine de la théorie algorithmique de la décision.

Cette conférence s'est tenue à Bruxelles du 13 au 15 novembre 2013. Le comité de programme était présidé par Patrice Perny et le Comité d'organisation par Marc Pirlot, tous deux membres du GDRI.

La conférence a réuni environ 75 personnes venant de très nombreux pays. Le volume des actes de la conférence a été publié par Springer dans la collection LNAI (8176). Il réunit 34 contributions qui ont toutes été arbitrée de manière rigoureuse. En plus de ces 34 contributions, une session de Poster a été organisée.

On trouvera en Annexe de ce document le programme de la conférence ainsi que le contenu du volume des actes. Deux volumes des actes de la conférence ont été envoyés par courier postal en complément de ce rapport.

Le GDRI a été étroitement impliqué dans l'organisation de cette conférence et il a soutenu de nombreux participants. La conférence a permis de réunir plus de participants que la conférence ADT 2011 a Rutgers (75 contre 55).

Il a été convenu de poursuivre la série des conférences ADT. La prochaine sera organisée en 2015 à Lexington, Kentucky avec Toby Walsh comme président du Comité de Programme et Judy Goldsmith comme président du Comité d'organisation. L'objectif est d'arriver a réunir de l'ordre de 100 personnes pour ADT 2015.

Fred Roberts Docteur honoris causa de l'Université Paris Dauphine

Les liens entre le LAMSADE et le DIMACS qui sont à l'origine de la création du GDRI ont été raffermi par le fait que l'Université Paris Dauphine a décerné à Fred Roberts un doctorat honoris causa le 27 juin 2013. Au cours de la cérémonie, les activités du GDRI ALGODEC ont été mentionnées comme point central dans les liens entre le LAMSADE et le DIMACS.

Autres manifestations

Le GDRI a été impliqué dans diverses autres manifestations scientifiques :

- le DIMACS Workshop on Algorithmic Information Fusion and Data Mining (WAIFDM) auquel a participé Alexis Tsoukiàs,
- le DIMACS/CCICADA Workshop on Urban Planning for Climate Events auquel a particpé Alexis Tsoukiàs,
- ACM RecSys 2013, conférence au cours de laquelle Alexis Tsoukiàs a donné un tutorial sur le thème « Preference Handling ».
- le Disaster Resilence Lab créé après la catastrophe aux Philippines. Le LAMSADE coordonne les activités du Resilience Lab en matière d'aide à la décision.

Les programmes des deux DIMACS Workshops est donné en annexe de ce document.

Signalons également que de nombreux participants du GDRI sont impliqués dans l'organisation du Fifth International Workshop on Computational Social Choice Pittsburgh, Pennsylvania, June 23-25, 2014.

Les membres du GDRI sont également très actif dans la COST Action IC1205 on Computational Social Choice. Le coordinateur français est Jérôme Lang. De nombreuses activités liées à cette action COST ont été organisées en 2013 (voir http://www.illc.uva.nl/COST-IC1205/).

Raymond Bisdorff a donné une présentation du projet du GDRI à la conférence ICOBA 2012 à la fin décembre 2012 (non mentionné dans le rapport 2012)

A.2 – Organisation de conférences, écoles d'été, ateliers etc. par les partenaires du GDRI

Contrairement à ce qui a été le cas en 2012, le GDRI n'a pas organisé d'école d'été. Une telle manifestation aurait fait concurrence à la conférence ADT 2013.

A.3 – Autres activités de coordination

Le GDRI reste impliqué dans le projet Decision Deck (www.decision-deck.org). Le projet a organisé deux événements en 2013 :

- 11th Decision Deck Workshop
- 3rd Decision Deck Developer's Day

A.4 – Bilan des activités du GDRI

5 pages maximum pour l'année en cours ou 15 pages maximum pour les GDRI arrivant au terme des 4 ans.

Le domaine de la Théorie Algorithmique de la Décision (Algorithmic Decision Theory) est un résultat de la coopération entre le LAMSADE et le DIMACS commencée déjà en 2004 autour de la thématique générale du rapprochement entre Théorie de la Décision et Informatique. Cette coopération, financée entre autre par le CNRS et la NSF, a permis l'organisation des colloques LAMSADE/DIMACS (2004, 2006, 2008, 2010, voir www.lamsade.dauphine.fr/dimacs) la publication des deux numéros spéciaux dans les revues Annals of Operations Research et Mathematical Social Sciences et l'échange d'une douzaine des chercheurs entre les deux Institutions. Surtout a donné l'impulsion à l'établissement de l'Action COST IC0602, qui a démarrer ses travaux en Mai 2007 (voir www.algodec.org), coordonnée par le LAMSADE.

Fred Roberts et Alexis Tsoukiàs, les deux chercheurs à l'origine de cette coopération, vue le succès de l'Action COST, de la première conférence Internationale : www.adt2009.org et de tout le projet ALGODEC en général, ont voulu continuer dans la construction de cette communauté des chercheurs au croisement entre Décision et Informatique et ont proposé l'établissement du DIMACS Special Focus on Algorithmic Decision Theory qui a commencé ses activités en 2010 grâce à un financement spécifique de la NSF.

Le GDRI ALGODEC a été conçu comme idée dans le cadre de l'Action COST IC0602 (terminée en Mai 2011) pour créer une contrepartie Européenne aux activités du DIMACS Special Focus adressé en priorité aux chercheurs en Amérique du Nord.

L'année 2011 a été caractérisée par la continuité des activités déjà programmées dans le cadre d'une part de l'Action COST IC0602 « Algorithmic Decision Theory » et d'autre part du DIMACS Special Focus on Algorithmic Decision Theory qui fait partie maintenant en plein titre des activités du GDRI.

L'année 2012 a débuté par un changement de coordinateur du GDRI (Denis Bouyssou remplaçant Alexis Tsoukiàs, devenu directeur du LAMSADE). Au cours de l'année 2012, deux manifestations importantes ont été organisée dans le cadre du GDRI :
* le workshop DA2PL (Mons, novembre 2012)
* le Workshop on Algorithmic Aspects of Information Fusion (WAIF) (Rutgers, Novembre 2012).
De nombreux membres du GDRI participent à ces deux manifestations.

D'autre part, le GDRI a soutenu l'organisation de l'Ecole de printemps et théorie des jeux algorithmique (Paris, 18-20 juin 2012). Enfin, de nombreux participants du GDRI ont été impliqués dans l'organisation de Fourth International Workshop on Computational Social Choice (Cracovie, 11-13 septembre 2012). Enfin, le GDRI reste impliqué dans le projet Decision Deck qui a organisé deux manifestations importantes au cours de l'année 2012.

L'année 2013 a principalement été parquée par l'organisation de la conférence ADT 2013 auquel le GDRI a été étroitement associé. Elle a également été marquée par la poursuite de nos workshops avec le DIMACS. L'année 2013 a également vu le démarrage de la COST Action IC1205 on Computational Social Choice qui peut être vue comme un prolongement des activités du GDRI sur un sous-ensemble de ses activités.

Les projets pour l'année 2014 consistent essentiellement en l'organisation d'une troisième école doctorale sur les thèmes relevant du GDRI (après celles de Han sur Lesse en 2007 et celle de Catane en 2009. On se consacrera également à la préparation de la Conférence ADT 2015.

Objectifs et Bilan

Les objectifs du GDRI ALGODEC sont multiples et peuvent être synthétisés ainsi :
- Progresser dans la construction et le renforcement de la communauté ALGODEC au niveau international, notamment parmi les jeunes chercheurs ;
- Identifier des domaines d'application qui permettent de montrer l'intérêt d'investir en termes de recherche scientifique dans la Théorie Algorithmique de la Décision ;
- Aider le développement des recherches dans ce domaine à travers la mise en réseau et la création de synergies entre les laboratoires participants et au-delà.

En ce qui concerne le premier objectif on a :
* été impliqué dans la poursuite de l'organisation de la série de conférences Algorithmic Decision Theory qui représentent le « vaisseau amiral » de notre communauté,
* été impliqué dans l'organisation en 2012 de deux Workshops internationaux (Workshop on Algorithmic Information Fusion and Data Mining et Workshop on Urban Planning for Climate Events),
* continué à participer aux activités du DIMACS Special Focus on Algorithmic Decision Theory,

* été impliqué dans le programme Mathematics of Planet Earth.

En ce qui concerne le deuxième objectif, les domaines d'application choisis sont :

- Smart Cities. Les grandes villes au niveau mondial continuent à progresser et constituent un défi majeur pour les Sciences et Technologies de la Décision dans la perspective de concevoir des villes durables, intelligents, ouverts à l'inclusion et la création des nouveaux modèles de citoyenneté. Le colloque « Smart Cities » qui nous avons organisé en Septembre 2011 a permis de rassembler un grand nombre d'acteurs (scientifiques, industriels et villes) et a établi un premier agenda de travail pour le futur. On compte poursuivre les travaux dans cette direction comme le montre le colloque et Workshop on Urban Planning for Climate Events.
- Sûreté et Sécurité. Le risque est un élément présent dans tous les problèmes de décision du monde réel et a été un sujet de réflexion en Théorie de la Décision depuis son origine. Aujourd'hui cette thématique est présente d'une part dans la conduite sécurisée des systèmes complexes (industriels ou autres) et d'autre part dans la conception des politiques publiques à la fois sous la forme du hasard (risques naturelles ou technologiques) et de la menace (crime, terrorisme etc.). Nous allons continuer développer la discussion entamée avec le premier colloque sur « Adversarial Risk Analysis » et démarrer une réflexion avec des agences Nationales et Internationales autour de la « gouvernance du risque ».
- Policy Analytics. Le sujet a été identifié pendant le colloque LAMSADE/DIMACS en Décembre 2010 (www.lamsade.dauphine.fr/dimacs) comme un défi scientifique et technologique : élaborer des méthodologies originales pour l'aide à la décision dans la conception, mise en ouvre et évaluation des politiques publiques, notamment en exploitant l'énorme masse des données aujourd'hui disponibles. Le colloque organisé le e 1 Décembre 2011 a fait le point sur la discussion commencée en 2010. On prévoit de lancer un numéro spécial d'un journal du domaine. On a organisé trois journées d'étude en 2013 au LAMSADE autour de la conception innovantes de politiques publiques (voir les programmes de ces trois journées à http://www.lamsade.dauphine.fr/cipp). Ces journrnées d'étude doivent préparer la constitution d'un GdR sur ces questions.

En ce qui concerne le troisième objectif nous sommes en train de développer deux axes :
Le premier concerne le soutien aux activités de recherche de base dans les laboratoires participants à travers la mise en place d'un programme d'échange, notamment des jeunes chercheurs ainsi que le déploiement de cotutelles de thèses. Il s'agit d'un programme, expérimenté avec grand succès dans l'Action COST. Son développement est sur notre agenda pour 2014.

Le deuxième concerne le soutien au projet Decision Deck (www.decision-deck.org) qui a pour objectif la conception d'une plateforme de développement des logiciels d'aide à la décision open source et l'expérimentation de la mise en place de services web d'aide à la décision en connexion à des grandes bases de données en exploitant les potentialités offertes par le cloud computing.

B. RELATIONS ENTRE laboratoires partenaires du GDRI

B.1 - Accueil, dans les laboratoires français, de chercheurs des laboratoires partenaires étrangers

Marc Pirlot de l'Université de Mons a effectué plusieurs séjours de courte durée (une dizaine de fois) à l'Université Paris Dauphine et à l'Université Pierre et Marie Curie dans le cadre de son travail de recherche avec Denis Bouyssou (LAMSADE) et Patrice Perny (LIP6).

David Rios Insua de l'Universidad Rey Juan Carlos de Madrid a visité l'Université Paris Dauphine dans le cadre des discussions sur la mise en place du futur Master International en Sciences et Technologies de la Décision.

Fred Roberts a reçu un doctorat honoris causa de l'Université Paris Dauphine en 2013. Il a séjourné au LAMSADE durant la période.

B.2 - Séjours, dans les laboratoires partenaires étrangers, de chercheurs des laboratoires français

Alexis Tsoukiàs a visité le DIMACS a diverses repriises en liaison avec les colloques qui y ont été organisés.

Denis Bouyssou a effectué divers séjours à Bruxelles et à Mons pour y travailler avec Marc Pirlot et Thierry Marchant.

B.3 - Co-encadrement de doctorants et/ou participation à des jurys

a) Thèses co-encadrées ou en co-tutelle transnationale
Titre de la thèse, nom du doctorant, laboratoire principal de rattachement, nom des co-encadrants dans chaque laboratoire.

b) Participation à des jurys de soutenance de thèse ou d'habilitation dans un des laboratoires partenaires étrangers
Titre de la thèse/habilitation, nom du candidat, laboratoire principal de rattachement, date, lieu de la soutenance, nom du (des) membre(s) du GDRI participant au jury

C. PRODUCTION SCIENTIFIQUE COMMUNE

a) Publications collectives du GDRI (actes des conférences organisées dans le cadre du GDRI, ouvrages thématiques…)

Patrice Perny Marc Pirlot, Alexis Tsoukiàs (Eds.), Algorithmic Decision Theory, Third International Conference, ADT 2013, Bruxelles, Belgium, November 13-15, 2013, LNAI 8176, Springer, 2013.

Vincent Mousseau, Marc Pirlot, From Decision Aiding to Preference Learning, Proceedings, 2012, Université de Mons, 122 pages.

Ronen I. Brafman, Fred S. Roberts and Alexis Tsoukiàs, Lecture Notes in Computer Science Volume 6992, 2011, DOI: 10.1007/978-3-642-24873-3, Algorithmic Decision Theory Second International Conference, ADT 2011, Piscataway, NJ, USA, October 26-28, 2011.

Les proceedings du Workshop on Algorithmic Aspects of Information Fusion sont en préparation.

b) Productions collectives du GDRI (bases de données, plateformes, sites web, portails thématiques…)

www.algodec.org: portail thématique de la communauté ALGODEC ;
www.gdri-algodec.org: site web du GDRI (en construction);
www.decision-deck.org: site web du projet Decision Deck.

c) Liste des publications parues, acceptées ou soumises (préciser) dans des revues avec comité de lecture, co-signées avec des chercheurs des laboratoires partenaires étrangers

Voir plus bas avec la liste de publications, publications marquées *.

d) Liste des publications dans des ouvrages (livres, proceedings,…) co-signées avec des chercheurs des laboratoires partenaires étrangers

Voir plus bas avec la liste de publications, publications marquées **.

e) Liste des présentations à des colloques co-signées avec les partenaires étrangers du GDRI (indiquer si exposés oraux ou affiches)

f) Liste des brevets en co-propriété

D. OBSERVATIONS EVENTUELLES

Un changement dans la coordination du GDRI est intervenu en janvier 2012, Denis Bouyssou remplaçant Alexis Tsoukiàs.

Publications des partenaires français du GDRI relevant de sa thématique :

Alexis Tsoukiàs, Herimandimbiniaina Ralijaona. Rural Road Maintenance in Madagascar: the GENIS project, Book chapter, to appear. Evaluation and Decision Models: real case studies, Springer Verlag. Raymond Bisdorff, Luis Dias, Vincent Mousseau, Marc Pirlot, editor(s) to appear

Alexis Tsoukiàs. Aiding to decide: concepts and issues, Book chapter, pages to appear, to appear. Evaluation and Decision Models: real case studies, Springer Verlag. Raymond Bisdorff, Luis Dias, Vincent Mousseau, Marc Pirlot, editor(s)

B. Escoffier, D. Ferraioli, L. Gourvès, S. Moretti, Designing Frugal Best-Response Mechanisms for Social Network Coordination Games, SAGT 2013

B. Escoffier, L. Gourvès, J. Monnot, Fair solutions for some multiagent optimization problems, Journal of Autonomous Agents and Multi-Agent Systems, vol. 26(2): 184-201, 2013.

Bruno Escoffier, Jérôme Monnot, Fanny Pascual, Olivier Spanjaard: Truthful Many-to-Many Assignment with Private Weights. CIAC 2013: 209-220

C. Bazgan, L. Gourvès, J. Monnot, Approximation with a fixed number of solutions of some multiobjective maximization problems, Journal of Discrete Algorithms, vol. 22: 19-29, 2013.

C. Bazgan, L. Gourvès, J. Monnot, F. Pascual, Single approximation for Multiobjective Max TSP, Theoretical Computer Science vol. 478, pages 41-50, 2013.

Charles Delort, Olivier Spanjaard: A hybrid dynamic programming approach to the biobjective binary knapsack problem. ACM Journal of Experimental Algorithmics 18 (2013)

Coste-Marquis Sylvie, Konieczny Sébastien, Mailly Jean-Guy, Marquis Pierre, On the Revision of Argumentation Systems: Minimal Change of Arguments Status, dans 2nd International Workshop on Theory and Applications of Formal Argumentation (TAFA'13), août 2013. (workshop at IJCAI'13)

Couceiro, Miguel; Marichal, Jean-Luc, Discrete integrals based on comonotonic modularity, Axioms (2013), 2(3), 390-403
dans 7èmes Journées Nationales de l'Intelligence Artificielle Fondamentale (IAF'13), 2013.

De Marchi G., Lucertini G., Tsoukiàs A., ``From evidence based policy making to policy analytics'', to appear in Annals of Operations Research,

Denis Bouyssou , Thierry Marchant Multiattribute preference models with reference points, European Journal of Operational Research, 229 (2), 470--481, 2013 *

Denis Bouyssou, Marc Pirlot, An axiomatic approach to TACTIC, Studia Informatica Universalis, ISSN 1621-7545, 10 (2), 45--71, 2012 (publié en 2013) *

Denis Cornaz, Lucie Galand, Olivier Spanjaard. Kemeny Elections with Bounded Single-peaked or Single-crossing Width, In Proceedings IJCAI 2013, pages 76-82, 2013.

Everaere Patricia, Konieczny Sébastien, Marquis Pierre, Correspondances d?agrégation de jugements basées sur le nombre de votes, dans 7èmes journées francophones sur les Modèles Formels de l'Interaction (MFI'13), 2013.

Everaere Patricia, Konieczny Sébastien, Marquis Pierre, Sur la fusion de croyances égalitaire,
Fargier Hélène, Marquis Pierre, Schmidt Nicolas, Compacité pratique des diagrammes de décision valués : normalisation, heuristiques et expérimentations, dans 9èmes Journées Francophones de Programmation par Contraintes (JFPC'13), 2013.

Galand, Lucie; Ismaili, Anisse; Perny, Patrice; Spanjaard, Olivier, Bidirectional Preference-based Search for Multiobjective State Space Graph Problems; 6th Annual Symposium on Combinatorial Search (SoCS 2013) 2013

Galand, Lucie; Lesca, Julien; Perny, Patrice, Dominance Rules for the Choquet Integral in Multiobjective Dynamic Programming; proceedings of IJCAI 2013 pp. 538-544
Herzig Andreas, Lang Jérôme, Marquis Pierre, Propositional Update Operators based on Formula/Literal Dependence, dans ACM Transactions on Computational Logic (ACM TOCL), 2013 **

Ismaili, Anisse; Bampis, Evripidis; Maudet, Nicolas; Perny, Patrice, A study on the stability and efficiency of graphical games with unbounded treewidth, proceedings of AAMAS 2013
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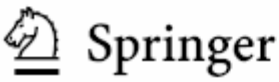
Annexe 1
ADT2013

Patrice Perny Marc Pirlot
Alexis Tsoukiàs (Eds.)

Algorithmic Decision Theory

Third International Conference, ADT 2013
Bruxelles, Belgium, November 13-15, 2013
Proceedings



Volume Editors

Patrice Perny
UPMC, LIP6, 75005 Paris, France
E-mail: patrice.perny@lip6.fr

Marc Pirlot
UMONS Faculty of Engineering, Mathematics
and Operations Research
7000 Mons, Belgium
E-mail: marc.pirlot@umons.ac.be

Alexis Tsoukiàs
CNRS, LAMSADE, Université Paris Dauphine
75016 Paris, France
E-mail: tsoukias@lamsade.dauphine.fr

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Preface

This volume contains the proceedings of ADT 2013, the Third International Conference on Algorithmic Decision Theory held at ULB (Université Libre de Bruxelles), Belgium, November 12–14, 2013.

ADT seeks to bring together researchers and practitioners coming from diverse areas such as articial intelligence, database systems, operations research, decision theory, discrete mathematics, game theory, multiagent systems, computational social choice, and theoretical computer science in order to improve the theory and practice of modern decision support and automation systems.

ADT provides a multi-disciplinary forum for sharing knowledge in these areas with a special focus on algorithmic issues in decision theory. The two first International Conference on Algorithmic Decision Theory (ADT 2009, 2011) brought together researchers and practitioners from diverse areas of computer science, economics, and operations research from around the globe, with proceedings published in LNAI 5783 and LNAI 6992. ADT 2013 sought to continue this tradition and presented 33 technical research papers concerning preferences in reasoning and decision making, uncertainty and robustness in decision making, multi-criteria decision analysis and optimization, collective decision making, learning and knowledge extraction for decision support.

There were more than 70 submissions of abstracts, and finally 60 full papers. Each submission was reviewed by at least two Program Committee members. The committee decided to accept 33 papers for the proceedings. We also accepted six oral presentations not submitted to the proceedings. In addition to the contributed papers, the conference proposed various invited talks including talks by Matthias Ehrgott (Lancaster University) on "Multiobjective Optimisation," Itzhak Gilboa (Tel Aviv University and HEC Paris) on "Decision Making Under Uncertainty," and Arkadii Slinko (University of Auckland) on "Social Choice."

We wish to thank all authors who submitted papers to this conference, as well as the Program Committee members and external reviewers for their involvement in the reviewing process. ADT 2013 was made possible thanks to the support of CNRS (the French national research center) through the International Research Group Algodec, FNRS (Research foundation of the Federation Wallonia-Brussels, Belgium), EURO (Association of European Operational Research Societies), LIP6, LAMSADE, ULB, and UMONS (Université de Mons).

We would also like to acknowledge the support of Easychair in the management of submitted papers and in the preparation of the proceedings.

July 17, 2013

Patrice Perny
Marc Pirlot
Alexis Touskiàs

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Annexe 2

DIMACS Workshop on Algorithmic Information Fusion and Data Mining (WAIFDM)

Workshop Announcement

The proliferation of sensor technology, information appliances, and imaging modalities has enabled us to monitor the interconnected physical planet and the interrelated social world. Big data with large volumes and wide variety, spatial vs. temporal and structured vs. unstructured, are being generated dynamically from monitoring sensors and embedded devices. On the one hand, data-centric algorithms and systems such as regression, inference, classification, clustering, association rule, neural network, SVM, decision trees, k-NN, naïve Bayes, and genetic algorithms have been developed and widely used in machine learning and data mining. On the other hand, data and information obtained from these heterogeneous sources and diverse systems such as information appliances, geographic mapping, social networks, multimedia, scoring, and ranking have to be explored, combined, and analyzed. For these huge amounts of data to be meaningful and useful, significant patterns have to be identified, information from various sources and systems has to be fused, and useful knowledge must be extracted for decision making and valuable action.

Information fusion and data mining are fundamental in the scientific discovery process of data acquisition, information integration, and knowledge discovery. Although methods for information fusion and data mining have been used for hundreds of years, it remains a challenging problem to understand when, what, and how to optimally mine data, fuse information and discover knowledge. Among others, the DIMACS Workshop on Algorithmic Information Fusion and Data Mining (WAIFDM) will address the following two types of problems:

Given a complex problem in a data-rich environment, how to extract variables and how to perform variable selection and combination? Here "variable" includes feature, attribute, cue, indicator, and parameter.

Given two machine learning or data mining systems A and B, when and how to best combine A and B? Given many possible decisions systems for a solution, how to best select and combine a subset of these systems?

Results in several contexts have shown that fusion of two systems A and B can be better than each of the individual systems only if these individual systems performs relatively well and they are cognitively diverse. However, to understand when and why this might happen, the concept of diversity has to be well defined. Another issue of great importance is the performance variation between score combination and rank combination.

The Workshop WAIFDM will provide a forum for researchers and practitioners to mingle with and learn from each other regarding the design, analysis, and implementation of algorithms for information fusion and data mining. This workshop will gather and enable multidisciplinary researchers and domain experts to conceive new ideas and create novel solutions. WAIFDM will address, among others, the following topics and directions:

Combining two variables or systems A and B:

When and how to best combine A and B

Criteria to measure "diversity" or "dissimilarity" between A and B (e.g.: statistical correlation vs. cognitive diversity)

Score combination vs. rank combination

Combination of multiple variables or systems:

What is the optimal number of systems for fusion?

Methods for combining variables or systems: weighted combination, rank aggregate, mixed group rank, U-statistics and POSet, other novel methods

Combinatorial process of combining multiple (scoring) systems

Interaction between information fusion and data mining:

Comparative study of information fusion and data mining systems

Fusion of multiple classifier systems or multiple neural nets

Feature selection and combination in pattern recognition, image processing, or target tracking

Real world applications and case studies:

Applications in regression, machine learning, rank aggregate, pattern recognition, knowledge discovery and decision making.

Applications in target tracking, robotics and computer vision, virtual screening and drug discovery, bioinformatics, systems biology, medical informatics, information retrieval, expert opinion, text mining, portfolio management, fraud detection, market intelligence, business analytics, cyber security, climate change, and voting policy.

Design, development and implementation of algorithm and software systems for real world information fusion and data mining problems and projects.

Programme

Thursday, September 19, 2013

8:15 - 9:00 Breakfast and Registration
9:00 - 9:15 Welcome and Opening Remarks
Fred Roberts, DIMACS
9:15 - 9:50 Social Choice inspired Ordinal Measurement
Alexis Tsoukiàs, CNRS - LAMSADE, Université Paris Dauphine
9:50 - 10:25 Multi-View Learning, Ensemble Methods and Diversity
Zhi-Hua Zhou, Nanjing University
10:25 - 10:45 Break
10:45 - 11:20 Consensus List Coloring of Graphs
Fred Roberts, Rutgers University
11:20 - 11:55 Generalized Oligarchies
Melvin F. Janowitz, DIMACS
12:00 - 1:30 Lunch
1:30 - 2:05 Qualitative Learning through "Fitness"
Miguel Couceiro, University Paris Dauphine
2:05 - 2:40 CoDisease Network Marker Query from Next Generation Sequencing (NGS) Data
Xiaoxu Han, Fordham University
2:40 - 3:00 Break
3:00 - 3:35 Cognitive Diversity vs. Statistical Correlation in the Analytics and Fusion of Big Data
Frank Hsu, Fordham University
3:35 - 4:10 Bioinformatics Application of Information Fusion: ChIP-seq Peak Finding
Christina Schweikert, St. John's University
5:00 Reception and dinner

Friday, September 20, 2013
8:30 - 9:15 Breakfast and Registration
9:15 - 9:50 Information Fusion in Robotics and Unmanned Vehicles
Howard Li, University of New Brunswick, Canada
9:50 - 10:25 Organizations and Environmental Complexity
Gökçe Sargut, Governors State University
10:25 - 10:45 Break
10:45 - 11:20 Improving Repeated Labeling for Crowdsourced Data Annotation
Chris Mesterharm, Applied Communication Sciences
11:20 - 11:55 Discussion of Next Steps and Open Problems
12:00 Lunch

Annexe 3
DIMACS/CCICADA Workshop on Urban Planning for Climate Events

Workshop Announcement

The workshop will investigate sustainable human environments through an emphasis on urban planning for climate events such as storms, heat events, and floods. We will look at algorithmic tools to make better decisions about adaptation and mitigation for climate events. We will look at ways to understand a great deal of data that might be relevant to adaptation planning for sea level rise: flight delays, beach erosion, ferry service interruptions, salt water intrusion, water treatment plant operations, power plant location, subway and train track location, and emergency services preparedness. We will consider planning for modifications in the energy, transportation, water supply, waste, and communications sectors. Changes in one sector potentially impact other sectors and so call for mathematical modeling and algorithmic analysis. We will study algorithmic tools for evaluating, comparing, and making decisions about adaptation and mitigation strategies.

Workshop Program:
Monday, September 23, 2013
8:15 - 9:00 Continental Breakfast and Registration
9:00 - 9:40 Mathematics of Planet Earth, Homeland Security, and Algorithmic Decision Theory
Fred Roberts, Rutgers University
9:40 - 10:20 Science and Technology in Disasters - Opportunities Revealed by Sandy
Mitch Erickson, DHS
10:20 - 10:40 Break
10:40 - 11:20 Adaptation Planning to Climate Change: Results from a Participative Approach Applied in Québec City
Florent Joerin, School of Engineering Management of Canton of Vaud, Switzerland
11:20 - 12:00 Once Again, the Urban Planning Challenge Associated with Climate Change and Disasters
Rae Zimmerman, NYU
12:00 - 12:40 Regionalizing Sea-level Rise Projections for Urban Planning
Robert Kopp, Rutgers University
12:40 - 2:00 Lunch
2:00 - 2:40 Urban Influences on Temperature in New Jersey
David Robinson, Rutgers University and NJ State Climatologist
2:40 - 3:20 Sustainability and Human Behaviors: Modeling
Perception of Factors Impacting the Urban Environment
Lou Gross, University of Tennessee
3:20 - 4:00 Closing Some Gaps: Planning for Sheltering and Sheltering in Place for Frail Seniors
Michael Greenberg, Rutgers University
4:00 - 4:20 Break
4:20 - 5:00 A Decision Support Tool (DST) to Plan Effective Resiliency Measures
Joe Picciano, NJ Office of Homeland Security and Preparedness
5:00 - 5:40 Anticipating Coastal Residents' Responses to Storm Recovery Plans
Clinton Andrews, Rutgers University
6:00 - 7:45 Banquet

Tuesday, September 24, 2013
8:30 - 9:00 Continental Breakfast and Registration
9:00 - 9:40 Capability Theory for Urban Planning
Alexis Tsoukiàs, CNRS - LAMSADE, Université Paris Dauphine
9:40 - 10:20 Impacts of Hurricane Induced Transportation Disruptions on Work Trips
Pamela Murray-Tuite, Virginia Tech
10:20 - 10:40 Break

10:40 - 11:20 Pre-Sandy Impact Modeling of Storm Surge on the NYC Metro Region's Transportation Infrastructure, Validation by Sandy, and post-Sandy Resilience Issues
Klaus H. Jacob, Columbia University

11:20 - 12:00 Smarter Cities Research at IBM
Laura Wynter, IBM Research

12:00 - 12:40 Adapting to Climate Change: Lessons from Natural Hazards Planning
Gavin Smith, University of North Carolina

12:40 - 2:00 Lunch

2:00 - 2:40 Analyzing the Reliability and Resiliency of New Jersey's Urban Energy Systems in Response to Climate Change
Frank Felder, Rutgers University

2:40 - 3:20 The Application of Web-based Decision Support Tools for Visualizing Coastal Flooding Vulnerabilities and Planning for Resiliency: the NJFloodMapper
Rick Lathrop, Rutgers University

Annexe 4
Le GDRI ALGODEC en bref

Le GDRI ALGODEC aborde le domaine de la Théorie Algorithmique de la Décision (Algorithmic Decision Theory). L'émergence de ce thème de recherche est le résultat d'une coopération entre le LAMSADE et le DIMACS, commencée déjà en 2004, et qui a été formalisée par des accords entre le CNRS et la NSF puis par l'Action COST IC0602. Le GDRI ALGODEC se propose de poursuivre ces développements. Plus précisément, les objectifs du GDRI consistent en :

- la construction et le renforcement de la communauté ALGODEC au niveau international, notamment parmi les jeunes chercheurs ;
- l'identification des domaines d'application pertinents ;
- l'aide au développement de recherches dans ce domaine à travers la mise en réseau et la création de synergies entre les laboratoires participants et au-delà.

En ce qui concerne le premier objectif les instruments choisis sont :

- l'organisation d'écoles d'été et de formation doctorale spécialisées destinées aux jeunes chercheurs. Une école d'été en « Algorithmic Game Theory » sera proposée pour le 2012.
- l'organisation de conférences spécialisées qui permettent l'établissement des forums internationaux d'échange entre les chercheurs du domaine : conférence ADT 2011 (www.adt2011.org), colloques proposés dans le cadre du DIMACS Special Focus. Une conférence « Computational Social Choice » est prévue en septembre 2012.

Les domaines d'applications privilégiés sont :

- Smart Cities. Les grandes villes au niveau mondial continuent à progresser et constituent un défi majeur pour les Sciences et Technologies de la Décision dans la perspective de concevoir des villes durables, intelligents, ouverts à l'inclusion et la création des nouveaux modèles de citoyenneté.
- Sûreté et Sécurité. Le risque est un élément présent dans tous les problèmes de décision du monde réel et a été un sujet de réflexion en Théorie de la Décision depuis son origine. Aujourd'hui cette thématique est présente d'une part dans la conduite sécurisée des systèmes complexes (industriels ou autres) et d'autre part dans la conception des politiques publiques à la fois sous la forme du hasard (risques naturelles ou technologiques) et de la menace (crime, terrorisme etc.).
- Policy Analytics. Le sujet a été identifié pendant le dernier colloque LAMSADE/DIMACS en Décembre 2010 (www.lamsade.dauphine.fr/dimacs) comme un défi scientifique et technologique : élaborer des méthodologies originales pour l'aide à la décision dans la conception, mise en ouvre et évaluation des politiques publiques, notamment en exploitant l'énorme masse des données aujourd'hui disponibles.

Le GDRI ALGODEC soutient les activités de recherche de base dans les laboratoires participants à travers la mise en place d'un programme d'échange, notamment des jeunes chercheurs ainsi que le déploiement de cotutelles de thèses. Il apporte un soutien au projet Decision Deck (www.decision-deck.org) qui a pour objectif la conception d'une plateforme de développement des logiciels d'aide à la décision open source et l'expérimentation de la mise en place de services web d'aide à la décision.