Final report on the Euro Winter Institute "Methods And Models In Transportation Problems"

General information about the EURO Winter Institute on Methods and Models in Transportation Problems

Aims and Scope

The EURO Winter Institute on "Methods and Models in Transportation Problems" took place in Bressanone, Italy, from the 14th to the 23rd of February 2017. The event has been hosted by University of Padova and organized by Euro Working Group on Transportation, under the patronage and sponsorship of the Association of European Operational Research Societies (EURO). It aimed at gathering early stage researchers establishing a network of outstanding people who hopefully should continue to work together in the future.

Main topics of interest were OR methods, mathematical models and computation algorithms to solve and support the solution of problems in the field of Transportation and Logistics. Other related fields of main interest are:

- land-use and transportation planning
- traffic control and simulation models
- traffic network equilibrium models
- public transport planning and management
- applications of combinatorial optimization
- vehicle routing and scheduling
- intelligent transportation systems
- logistics and freight transportation
- environment problems
- evaluation methods

Requirements for participation

Only PhD students at the final stage of their course (last one or two years) and researchers who have less than two years research experience since completing a PhD, were eligible for applying to participate at the school. Candidates had to come from EURO member society country, or to study in a EURO member society country. Up to two candidates could be appointed by IFORS.

The participants had to submit:

- Curriculum Vitae including information about education, research projects, awards and other pertinent experiences
- A paper: applicants had to submit a single-authored or co-authored paper in the field of "Transportation and Logistics", which was not yet published, nor accepted for publication
- A motivation statement outlining your perspective and motivation to participate to the EWI

The selection was done by the Scientific Committee. The admission process for candidates focused on the quality of their scientific background as well as their interest in the fields of Transportation and Logistics. The final decision was notified by email and the selected applicants were then announced in the official program and published on the Winter Institute's web page. Participation and accommodation were free for the selected participants. The conference was financially supported by EURO. The participants had to pay only their travel costs.

Invited Speakers and Scientific Committee

The Scientific Committee which contained the senior speakers of the EWI had the following members:

- Jaume Barceló (Universitat Politècnica de Catalunya, Spain) (Chairman)
- Mauro Dell'Orco (Technical University of Bari, Italy)
- Giulio Erberto Cantarella (University of Salerno, Italy)
- Jorge Freire de Sousa (University of Porto, Portugal)
- Jorge Pinho de Sousa (University of Porto, Portugal)
- Markos Papageorgiou (Technical University of Crete, Greece)
- Riccardo Rossi (University of Padova, Italy)
- Anna Sciomachen (University of Genova, Italy)
- Walter Ukovich (University of Trieste, Italy)
- Jacek Zak (Poznan Technical University, Poland)

Organizing Committee

The Organizing Committee contained the following members:

- Riccardo Rossi (University of Padova, Italy)
- Massimiliano Gastaldi (University of Padova, Italy)
- Yuval Hadas (Bar-Ilan University, Ramat Gan, Israel))

Venue

Bressanone is a town in South Tyrol in northern Italy, located about 40 kilometres north of Bolzano. Bressanone is the third largest city and oldest town in the province, and the artistic and cultural capital of the valley. Bressanone is also known as a major skiing resort (the Plose). The conference was held at the Youth House of University of Padova in Bressanone.

Participants

The following 18 students was selected and participated at the Winter Institute:

- Estelle Altazin (Ecole Nationale Superieure des Mines de Saint-Etienne - Department of Logistics and Manufacturing Science, France)
- Nikola Besinovic (Delft University of Technology - Department of Transport and Planning, The Netherlands)
- Riccardo Ceccato (Politecnico di Torino - Department of Environment, Land and Infrastructure Engineering, Italy) (he didn't take part to the WI because he was ill)
- Alice Consilvio (University of Genoa- Department of Mechanical, Energy, Management and Transportation Engineering, Italy)

- Arkadiusz Drabicki (Cracow University of Technology - Department of Transportation Systems, Poland)
- Luigi Elia (University of Salerno, Italy)
- Arthur Gaudron (MINES ParisTech - Center for Robotics, France)
- Natalia Isaenko (Sapienza University of Rome - Department of Civil, Constructional and Environmental Engineering, Italy)
- Junchen Jin (KTH Royal Institute of Technology - Department of Transport Science, Sweden)
- David Franz Koza (Technical University of Denmark - Management Engineering department, Denmark)
- Omar Mansour (Technion - Department of Civil and Environmental Engineering, Israel)
- Rahimeh Neamatian Monemi (CORMSIS Business School, University of Southampton, United Kingdom)
- Mariangela Rosano (Politecnico di Torino - Department of Control and Computer Engineering, Italy)
- Marcel Sala (Polytechnic University of Catalonia - Department of Civil and Environmental Engineering, Spain)
- Mehmet Ali Silgu (Technical University of Istanbul- Department of Civil Engineering, Transportation Engineering Programme, Turkey)
- Schwerdfeger Stefan (Friedrich-Schiller-University Jena - Chair for Management Science, Germany)
- Christian Truden (Alpen-Adria-Universität Klagenfurt, Department of Mathematics, Austria)
- Biao Yin (École des Ponts ParisTech - Laboratoire Ville Mobilité Transport, France)

Scientific program

School format

The course was composed by lectures and workshops. Every junior participant gave a well-prepared presentation of her/his paper used to apply for participation as a starting point for discussion (30 minute talks, plus 15 minute discussion at the end). The senior speakers gave longer lectures (90 minutes) about some subfields of methods and models in transportation problems, giving a detailed overview of the classical results and also presenting the most recent ones.

The program of the conference

14 of February (Tuesday) arrivals

- 19.00 Welcome dinner party

15 of February (Wednesday)

- 09.00- 10.30 Jaume Barcelò - Traffic Simulation: where we are, where we go? (lecture)
- 11.00-12.30 Yuval Hadas - Public transport spatiotemporal analysis: models, data, and techniques (lecture)
- 14.30-16.00 Walter Ukovich - Cooperative logistics - H2020 projects - part 1 (lecture)
- 16:15-18:00 WORKSHOP
  - David Franz Koza - A Branch-And-Price Algorithm for The Liner Shipping Network Design Problem With Transit Time Restrictions

- Mariangela Rosano - Business Perspectives for Freight Transportation Management: The SYNCHRO-NET Project

16 of February (Thursday)

- 09.00- 10.30 Walter Ukovich - Cooperative logistics - H2020 projects - part 2 (lecture)
- 11.00-12.30 Markos Papageorgiou - Freeway Traffic Control (lecture)
- 14.30-16.00 Giulio Erberto Cantarella - User equilibrium in transportation networks: fixed-point models (lecture)
- 16:15-18:00 WORKSHOP
  - Biao Yin - Approximate Dynamic Programming for Vehicles in Balance at Signalized Intersection
  - Junchen Jin - Simulation-based Optimization of a Group-based Signal Control using an Enhanced Genetic Algorithm

17 of February (Friday)

- 09.00- 10.30 Giulio Erberto Cantarella - Day-to-day dynamics in transportation networks: deterministic process models (lecture)
- 11.00-12.30 Markos Papageorgiou - Traffic Management in the Era of Vehicle Automation and Communication Systems (VACS) (lecture)
- 14:30 -18:00 WORKSHOP
  - Rahimeh Neamatian Monemi - Ring Spur Assignment Problem: New Formulation, Valid Inequalities and A Branch-And-Cut
  - Luigi Elia - Multimodal Accessibility and the Interest Towards Inter-Urban Carsharing Services: A Behavioural Approach
  - Arkadiusz Drabicki - Modelling the Real-Time Crowding Information Effects on Public Transport Passenger Path Choices

18 of June (Saturday)

- 09.00-18.00 Free day or sport activities in the high-alpine area Plose

19 of February (Sunday)

- 09.00-13.00 guided tour at Novacella Abbey
- 14:30 -18:00 WORKSHOP
  - Natalia Isaenko – Machine-Learning Methods for Short-Term Forecasting
  - Marcel Sala - Fundamental Diagram, an Automatic Calibration with Stationary Data From Traffic Time Aggregated Data
  - Estelle Altazin - Rescheduling through Stop Skipping in Dense Railway Systems
  - Nikola Besinovic - Resolving Instability in Railway Timetabling Problems

20 of February (Monday)

- 09.00- 10.30 Yuval Hadas - Transportation networks evacuation: design, planning, and operations (lecture)
- 11.00-12.30 Jacek Zak - Multiple Criteria Decision Making/Aiding in Transportation (lecture)
- 14.30-16.00 Jorge Pinho de Sousa - Trends and challenges in Urban Mobility – data, decision support and operations management – part 1 (lecture)
- 16:15-18:00 WORKSHOP
  - Arthur Gaudron - Loading/Unloading Spaces Location and Evaluation: an Approach Through Real Data
  - Christian Truden - Solving an On-line Capacitated Vehicle Routing Problem with Structured Time Windows

21 of February (Tuesday)

- 09.00- 10.30 Jorge Pinho de Sousa - Trends and challenges in Urban Mobility – data, decision support and operations management - part 2 (lecture)
- 11.00-12.30 Jacek Zak - Mathematical Modeling of Transportation Processes and Systems. State of the Art (lecture)
- 14.30-16.00 Mauro Dell'Orco - Introduction to the Fuzzy Sets (lecture)
- 16:15-18:00 WORKSHOP
  - Mehmet Ali Silgu - Simulation-Based Variable Speed Limit Systems Modelling: an Overview and a Case Study on Istanbul Freeways
  - Omar Mansour - Optimal Dynamic Tolls for Managed Lanes

22 of February (Wednesday)

- 09.00- 10.30 WORKSHOP
  - Jacek Zak - Practical Application of Mcda/M Tools in Transportation and Logistics

- 11.00-12.30 Mauro Dell'Orco - Introduction of the Fuzzy Set Theory to Transportation Problems (lecture)
- 14.30-16.00 Anna Sciomachen - Facilities location in freight logistic network. Impact of externality costs (lecture)
- 16:15-18:00 WORKSHOP
  - Alice Consilvio - Risk-Based Optimal Scheduling of Maintenance Activities in a Railway Network
  - Stefan Schwerdfeger - Just-In-Time Logistics for Far-Distant Suppliers: Scheduling Truck Departures from an Intermediate Cross Docking Terminal

23 of February (Thursday)

- 09.00- 10.30 Anna Sciomachen - Fleet planning decisions in distribution networks within a Smart City framework (lecture)

- 11.00-12.30 JaumeBarcelò -   From Smart Cities to Wise Cities (lecture)
- 13.00 Farewell lunch party

Departures

Special issue

A special issue at EURO Journal on Transportation and Logistics is organized also for the papers submitted by the students.

Social programs

The participants could take part in the following social programs.

- 14 of February (Tuesday): welcome party at the Cusanus Academy
- 18 of February (Saturday): sport activities as ski, sled or racket ski in the high-alpine area Plose with a traditional lunch at a restaurant on the Plose ski area and dinner in a famous restaurant in the down-town.
- 19 of February (Sunday): guided tour at Novacella Abbey, one of the Bressanone area's impressive cultural / historical sites.
- 23 of February (Thursday): Farewell lunch at the Youth House of University of Padova.

Financial report

Income:

Support from EURO: 19.400eu

Support from Municipality of Bressanone: 500eu

Total: 19.900eu

Expenses:

Accommodation of students (dinners included): 8.863eu

Invited speakers travel: 4.022eu

Accommodation invited speakers and organizing members (dinners included): 3.584eu

Lunches: 1.690eu

Social programs: 837eu

Organization and others (we site, rent, secretary, conference materials, etc.) 926eu

Total: 19.922eu

Padova 21/03/2017   Chair of the EWI Organising Committee

Riccardo Rossi