

Wednesday

8:15 : Registration starts

9:15 - 9:30 : Welcome

9:30 - 10:30 : Plenary - Chair : Walid Ben Ameer

Analyzing Network Robustness via Interdiction Problems

by Rico Zenklusen

How susceptible is a network to failures of some of its components? What are the weakest spots of a networked system? These questions lie at the heart of interdiction problems, which seek to determine the maximum impact that the failure/removal of a limited number of edges/vertices can have on the performability of a network. Interdiction problems are a natural way to measure robustness. Furthermore, they give valuable insights in how to best improve the failure resilience of a system, and sometimes, how to best attack it. In this talk, I will first provide a general introduction to interdiction problems, showing some of their varied, and sometimes surprising, applications. I will then discuss, on specific examples, optimization techniques that allow for approaching a variety of interdiction problems.

10:30 - 11:00 : break

11:00 - 12:40 : parallel W1 (4 and 3 talks)

W1-A "Networks and 5G" (room 14)

chair : Wesley da Silva Coelho

Multiband Robust Optimization for Green 5G Virtual Network Function Placement

Thomas Bauschert, Fabio D'Andreagiovanni, Andreas Kessler and Antonella Nardin

Topology Design of Optical Networks Resilient to Multiple Node Failures

Fábio Barbosa, Amaro de Sousa and Agostinho Agra

Routing and Slot Allocation in 5G Hard Slicing

Nicolas Huin, Jérémie Leguay, Sébastien Martin, Paolo Medagliani and Shengmin Cai

Routing and Resource Assignment Problems in Future 5G Radio Access Networks

Amal Benhamiche, Wesley da Silva Coelho and Nancy Perrot

W1-B "Stochastic and/or Robust Optimization" (room 16)

chair : Sabrina Schmitz

Real-time command strategies for smart grids based on the Robust Contract-based Collaboration Problem

Mario Levorato, Rosa Figueiredo, Yuri Frota, Antoine Jouglet and David Savourey

Robust Strategic Planning for Mobile Medical Units with Unsteerable Demands

Christina Büsing, Martin Comis, Eva Schmidt and Manuel Streicher

Robust Minimum Cost Flow Problem Under Consistent Flow Constraints

Sabrina Schmitz, Christina Büsing and Arie M.C.A. Koster

12:40 - 14:00 : lunch

14:00 - 15:40 : parallel W2 (4 talks)

W2-A "Network Design" (room 14)

chair : Stefano Nasini

Liner Shipping Network Design with Autonomous Vessels: a Norwegian Case Study

Mohamed Kais Msakni, Kjetil Fagerholt, Frank Meisel and Elizabeth Lindstad

Smart Grid Topology Designs

Paula Carroll and Cristina Requejo

Random Regret Minimization based Network Design Problem

Shabnam Najafi and Metin Turkay

Road network pricing, regulation and expansion for multiple vehicle categories: an integrated framework

Francisco López-Ramos, Stefano Nasini and Armando Guarnaschelli

TW2-B "Social networks" (room 16)

chair : Ivana Ljubic

Influence maximization with competition in social networks and a Twitter case study

Michael Kahr, Markus Leitner, Markus Sinnl and Mario Ruthmair

Optimal Investment Strategies for Competing Camps in a Social Network

Swapnil Dhamal, Walid Ben-Ameer, Tijani Chahed and Eitan Altman

Investigation into Optimal Solution Space: A Study of the Correlation Clustering Problem

Nejat Arinik, Rosa Figueiredo and Vincent Labatut

On Integer and Bilevel Formulations for the k-Vertex Cut Problem

Fabio Furini, Ivana Ljubic, Enrico Malaguti and Paolo Paronuzzi

15:40 - 16:10 : break

16:10 - 17:50 : parallel W3 (4 talks)

W3-A "Routing and transportation" (room 14)

chair : Filipe Rodrigues

Optimizing charge and relocation operations in electric carsharing systems

Stefano Carrese, Fabio D'Andreagiovanni, Tommaso Giachetti, Antonella Nardin and Leonardo Zamberlan

A heuristic algorithm for a vehicle routing problem with pickup & delivery and synchronization constraints

Seddik Hadjadj and Hamamache Kheddouci

Optimal routing configuration clustering through dynamic programming

Yacine Al Najjar, Jocelyne Elias, Jeremie Leguay and Walid Ben Ameer

Comparing techniques for modelling uncertainty in a maritime inventory routing problem

Filipe Rodrigues, Agostinho Agra, Marielle Christiansen, Lars Magnus Hvattum and Cristina Requejo

W3-B "Flow problems and related" (room 16)

chair : Michal Pioro

A scalable interior-point method for classes of minimum cost flows problems

Jordi Castro and Stefano Nasini

Bookings in the European Gas Market

Martine Labbé, Fränk Plein, Martin Schmidt and Johannes Thürauf

On the maximum flow problem with temporary arc closures

Arie M.C.A. Koster and Lotta Merz

On Optimization of Semi-stable Routing in Multicommodity Flow Networks

Artur Tomaszewski, Michal Pioro, Davide Sanvito, Ilario Filippini and Antonio Capone

18:00 - 20:00 welcome drink

Thursday

9:00 - 10:00 : Plenary - chair : Arie Koster

Hub Location Problems: Applications, Models and Solution Methods
Hande Yaman

Hubbing is commonly used in airlines, cargo delivery and telecommunications networks where traffic from many origins to many destinations are consolidated at hubs and are routed together to benefit from economies of scale. Each application area has its specific features and the associated hub location problems are of complex nature. In the first part of this talk, I will introduce the basic hub location problems, present the important models and mention the shortcomings of these in addressing real life situations. In the second part, I will introduce new variants of the hub location problem that incorporate features such as hierarchical and multimodal networks, service of quality constraints, generalized allocation strategies and demand uncertainty. I will conclude the talk with an ongoing work on a joint problem of hub location and network dimensioning.

10:00 - 10:30 : break

10:30 - 11:45 : parallel T1 (3 talks)

T1-A "wireless and IOT" (room 14)
chair : Muhammed Emre Keskin

Planning of wireless sensor networks to detect border intruders
Muhammed Fatih Çorapsız

Optimized Monitoring for Fault-Tolerant Internet of Things Networks
Basma Mostafa, Miklos Molnar, Mohamed Saleh, Abderrahim Benslimane and Sally Kassem

Consideration of Nonzero Traveling Times in Wireless Sensor Networks
Muhammed Emre Keskin

T1-B "Graphs" (room 16)
chair : Timo Gersing

Minimum Color-Degree Perfect b-Matchings
Mariia Anapolska, Christina Büsing, Martin Comis and Tabea Krabs

Local Search via Improvement Graphs for the Planning of Out-of-Hours Services for Pharmacies
Timo Gersing, Christina Büsing, Arie Koster and Robert Lipp

Bi-level approach for Minimizing Energy and Link Utilization in ISP Backbone Networks with Multi-path Routing Protocol
Ikram Bouras, Rosa Figueiredo, Michael Poss and Fen Zhou

11:45 - 12:00 : break

12:00 - 12:50 : parallel T2 (2 talks)

T2-A "time-dependent networks" (room 14)
chair : Yun He

A Dynamic Discretization Discovery Algorithm for solving the Continuous-time Service Network Design and Routing Problem
Yun He, Mike Hewitt, Fabien Lehuédé, Juliette Medina and Olivier Péton

Time-dependent shortest path with discounted waits
Jeremy Omer and Michael Poss

T2-B "Integer Programming"
chair : Klaus Jansen

Valid constraints for time-indexed formulations of job scheduling problems with distinct time windows and sequence-dependent setup times
Bruno Ferreira Rosa, Marcone Jamilson Freitas Souza, Sergio Ricardo De Souza, Zacharie Ales and Philippe Yves Paul Michelon

On Integer Programming and Convolution
Klaus Jansen and Lars Rohwedder

12:50 - 14:15 : lunch

14:15 - 17:15 : social event

Friday

9:00 - 10:00 : Plenary - Chair : Bernard Fortz

Scalable On-Demand Mobility Services

Pascal Van Hentenryck

The convergence of several technology enablers, including ubiquitous connectivity, autonomous vehicles, and sophisticated analytics, provides unique opportunities to fundamentally transform mobility in the next decade. Ride-sourcing services have already modernized taxi services but they have also increased congestion and widened inequalities in accessibility. This talk looks at mobility from a logistics and supply chain angle and presents novel on-demand mobility services that have the potential to be scalable and sustainable, handling both the first/last mile problem and congestion. Case studies demonstrating novel mobility services will also be presented.

10:00 - 10:30 : break

10:30 - 11:45 : parallel F1 (3 talks)

F1-A "Best Student Paper" (room 14)
 chair : Gabriel Volte

On the Complexity of RSSA of Anycast Demands in Spectrally-Spatially Flexible Optical Networks

Róza Goścień and Piotr Lechowicz

The Workforce Routing and Scheduling Problem: solving real-world Instances

Gabriel Volte, Chloé Desdouts and Rodolphe Giroudeau

Distributionally robust airline fleet assignment problem

Marco Silva and Michael Poss

F1-B "logistics" (room 16)
 chair : Sascha Kuhnke

An Iterative Local Search Algorithm for the Team Orienteering Problem with Integrated Tours in the Mobile Collection System of Blood

Andrea Piraban Ramirez, William Javier Guerrero Rueda and Nacima Labadie

Pooling Problems with Single-Flow Constraints

Dag Haugland

A Dynamic Adaptive Discretization Algorithm for the Pooling Problem

Sascha Kuhnke, Akshay Gupte and Arie M.C.A. Koster

11:50 - 12:40 : tutorial

Tuto-A (room 14)
 chair : Cristina Requejo

Modern Branch-and-cut-and-price for Vehicle Routing Problem

Ruslan Sadykov

Tuto-B (room 16)
 chair : Michal Pioro

Linearization techniques for MINLP: recent developments, challenges and limits

Sandra Ulrich Nogueve

12:40 - 14:00 : lunch

14:00 - 15:40 : parallel F2 (3 and 4 talks)

F2-A "Best Student Paper" (room 14)
 chair : Guillermo Rela

A Nested Decomposition Model for Reliable NFV 5G Network Slicing

Huy Quang Duong and Brigitte Jaumard

Minimum Concurrency for Assembling Computer Music

Carlos Eduardo Marciano, Abilio Lucena, Felipe M. G. França and Luidi G. Simonetti

Challenges in System Reliability and its application in Network Optimization

Guillermo Rela, Pablo Romero and Franco Robledo

F2-B "Integer Programming" (room 16)
 chair : Jannis Kurtz

Optimizing the investments in mobile network technologies and designing of offers

Adrien Cambier, Matthieu Chardy, Rosa Figueiredo, Adam Ounou and Michael Poss

Formulation and Branch-and-cut algorithm for the Minimum Cardinality Balanced and Connected Clustering Problem

Alexandre Salles da Cunha

A Branch-and-Bound Algorithm for the Maximum Weight Perfect Matching Problem with Conflicting Edge Pairs

Temel Oncan, M. Hakan Akyuz and I. Kuban Altinel

An Oracle-Based Branch & Bound Algorithm for Binary Two-Stage Robust Optimization

Nicolas Kämmerling and Jannis Kurtz

15:40 - 16:10 : coffee

16:10 - 17:25 : parallel F3 (3 talks)

F3-A "Routing and transportation" (room 14)
 chair : Bernard Fortz

MILP approaches to practical real-time train scheduling: the Iron Ore Line case

Lukas Bach, Carlo Mannino and Giorgio Sartor

New models and preprocessing techniques for segment routing optimization

Bernard Fortz

Effects of Raster Terrain Representation on GIS Spatial Network Analysis

F. Antonio Medrano

F3-B "Stochastic and/or Robust Optimization" (room 16)
 chair : Sophie Demassey

Hub Location under Congestion and Capacity Considerations

Mohammad Saleh Farham, Vedat Bayram and Baris Yildiz

Municipal Solid Waste Management with Cost Minimization and Emission Control Objectives

Melika Mohsenizadeh, Mustafa Kemal Tural and Elcin Kentel

Extended linear formulation of the pump scheduling problem in water distribution networks

Gratien Bonvin and Sophie Demassey

19:00 dinner