第二届交通系统分析青年论坛（哈尔滨）

组织人：要甲，哈尔滨工业大学交通科学与工程学院副教授

2020 年 1 月 4 日 （地点：交通学院 314 会议室）
    9:00-11:00
        谢驰，同济大学交通运输学院教授、国家高层次人才引进计划
        报告题目：A network flow approach to relocating vehicles and assigning operators for large-scale one-way carsharing systems
        徐猛，北京交通大学轨道交通安全与控制国家重点实验室教授、优青
        报告题目：Integration optimization problem of land-use and transport development
        要甲，哈尔滨工业大学交通科学与工程学院副教授
        报告题目：Agricultural product harvest equilibrium under bottleneck and random disasters
    11:00-12:30 （午餐）
    12:30-18:00
      参加校内参观和市区游览
    18:00-19:30 （晚餐）

2020 年 1 月 5 日 （地点：交通学院 314 会议室）
    9:00-11:00
        郑建风，大连海事大学交通运输工程学院教授
        报告题目：班轮运输中的枢纽港选址问题
        王亚东，南京理工大学经管学院教授
        报告题目：半定期船舶的航线优化设计方法
        张伟斌，南京理工大学光电学院教授
        报告题目：数据驱动的交通流预测方法研究
    11:00-12:30 （午餐）

另附第一届交通系统分析青年学者论坛（哈尔滨）举办情况链接：
http://jtxy.hit.edu.cn/2019/0106/c6032a220203/page.htm

报告人简介：

谢驰：同济大学交通运输工程学院教授、博士生导师。谢教授曾先后执教于德克萨斯大学、上海交通大学、同济大学，兼任澳大利亚新南威尔士大学土木与环境工程学院访问教授及上海咔酷咔新能源科技有限公司首席科学家。主要研究方向包括「交通网络管理与控制」、「交通需求分析与预测」、「货运与物流系统优化」、「交通与能源系统互动」等。擅长运用运筹与管理科学、微观与区域经济学、认知与行为科学等多学科结合的方法来分析和预测交通运输系统中的经济与社会现象，并为大型综合交通运输系统的规划、控制、运营、管理建立优化模型和提供战略决策。研究成果被累计发表在一百余篇各种学术论文、书籍章节和研究报告中，其中包括四十余篇国际期刊论文。曾于 2005 年获得美国军事运筹学会 Richard E. Rosenthal Competition 冠军，于 2006 年获得美国康奈尔大学 John E. Perry Prize，于 2013 年入选国家高层次人才引进计划，于 2014 年获得澳洲新南威尔士大学 UNSW Visiting Professorial Fellowship，于 2017 年入选中国工程院「中国工程前沿杰出青年学者」及中国工程院和美国工程院联合主办的 China-America Frontiers of Engineering Symposium 演讲嘉宾，并于 2018 年获得世界交通大会优秀论文奖。谢驰教授目前担任交通运输领域国际学术期刊《International Journal of Transportation Science and Technology》副主编以及三本其他国际学术期刊的编辑委员或客座编辑、世界交通大会「货运规划与物流委员会」及「水运物流优化与管理委员会」主席、美国交通研究理事会「货运规划与物流委员会」委员、华南交通与物流发展研究中心咨询委员会专家委员等。

报告题目： A network flow approach to relocating vehicles and assigning operators for large-scale one-way carsharing systems

摘要： Though its first use dates back to 1940s, carsharing has not widely attracted the public's awareness until the last decade as an emerging form of shared economy in the transportation sector, for which shared cars are either provided by a carsharing service company or circulated among private car owners and users in a neighborhood or community. Compared to private car ownership, carsharing offers a cost-effective and environment-friendly solution for personal transportation, and has been playing a critical role in transforming ownership-based transportation modes toward the so-called mobility-as-a-service paradigm. Different from the eodem loco pickup-and-dropoff policy enacted by traditional car rental companies, most of current carsharing services allow for taking and returning a car at different service stations. This one-way setting greatly enhances the car renting and returning convenience of travelers and increases the attractiveness and competitiveness of carsharing in the transportation service market, while creating an imbalance problem between car supply and user demand. The most primitive and widely accepted strategy for reducing the supply-demand imbalance is vehicle relocation, the main operation of which is to dispatch a group of human operators to drive shared vehicles from those stations with car abundance to other stations with car shortage. The movement of an operator between two consecutive driving tasks, if any, typically relies on another dedicated vehicle or transit system. Obviously, in a large-scale carsharing system, these operator dispatchment and movement activities are rather cost- and time-consuming, involving a complex decision process executed at a frequent basis in real time, which must be implemented on the individual level and may comprise hundreds of or even thousands of vehicles and operators. This decision process relies on solving a combined vehicle relocation and operator assignment problem.

徐猛：北京交通大学教授，博士生导师。主要研究兴趣：城市交通管理政策，分析交通需求管理政策对出行行为的影响、城市交通系统的可持续性发展。在城市交通政策与交通系统建模分析，城市公交系统管理与政策分析等方面取得了一系列创新性的成果。迄今发表学术论文百余篇，主持各类项目二十余项。现为国际学术期刊《International Journal of Urban Studies》副主编，期刊《The Open Transportation Journal》，《International Journal of Transportation》，《交通运输系统工程与信息》等编委。入选国家自然科学优秀青年基金、欧盟第七框架"玛丽居里"国际人才支持计划、教育部"新世纪优秀人才支持计划"以及北京交通大学"卓越百人"人才支持计划。

报告题目：Integration optimization problem of land-use and transport development

摘要：We present an activity-based approach to investigate the optimization problem of land use allocation and transportation network enhancement, in which the budget for investment and some other constraints are given for the purpose of sustainable urban development. To make investigation on residential and employment development as well as road link capacity expansions for short-term strategic planning purpose, a new bi-level programming model is proposed to capture the interactions between land use and transportation network development together with their impacts on activity-travel choice behaviors. The lower level of the proposed model is used to model the choice behavior of commuters on activity chain, departure time, path and activity scheduling duration simultaneously over the time of day, while the upper level is to maximize the population allocation and network enhancement subject to a set of given constraints. A heuristic solution method is developed to solve the proposed bi-level model. Finally, two numerical examples are presented to demonstrate the application of the proposed model and solution algorithm together with some insightful findings.

要甲：哈尔滨工业大学交通科学与工程学院副教授，博导。2014 年入选哈工青年拔尖人才选聘计划，主持国家自然科学基金面上项目、青年项目、中国博士后科学基金面上项目和国际交流计划派出项目、CCF-滴滴大数据联合实验室盖亚青年学者项目等。研究领域包括网络交通流理论、交通系统可靠性、公交优先策略和交通大数据分析，研究成果发表在：Transportation Research Part B, Transportation Research Part C、European Journal of Operational Research、Transport Policy、Transportmetrica A、Journal of Transportation Engineering 等国际顶级/权威期刊。目前，担任世界交通运输大学（WTC）交通工程学部"交通网络设计"技术委员会主席，Transportation Research Part A&C、IEEE Transactions on ITS、Transportmetrica A、IET ITS、International Journal of Sustainable Transportation 等交通领域国际期刊审稿人。

报告题目：Agricultural product harvest equilibrium under bottleneck and random disasters

摘要：In this presentation, the agricultural product harvest equilibrium models with bottleneck capacity are proposed. The value of the harvested product is assumed to be a non-negative, continuous, differentiable and strictly concave function with respect to harvest time, which is monotonically increasing/decreasing before/after the best harvest time, respectively. The queuing cost per unit product is assumed to be a continuous linear increasing function with respect to the queuing time. After that, how the random nature disasters affect the harvest equilibrium is also formulated. The sufficient and necessary conditions, making the harvest equilibrium status, satisfy first-come first-service (FCFS) and some other specific features are proved strictly. For comparison, the related optimal harvest schedules are also derived. Finally, a numerical example is used to illustrate the effectiveness of the proposed models and the sensitivity analysis of the related parameters and their potential applications are also performed.

郑建风：大连海事大学交通运输工程学院教授。主要从事城市交通网络规划、港航交通运输规划与管理等方面的教学与科研工作。先后主持国家自然科学青年基金项目、国家自然科学基金面上项目、国家自然科学基金重点项目子课题、教育部博士点基金项目、大连市交通科技项目等。在国内外重要学术期刊上发表 SCI、SSCI 检索论文四十余篇，包括交通运输领域国际顶级期刊 Transportation Science、Transportation Research Part B、Transportation Research Part E，以及国际知名期刊 Journal of Transport Geography、European Journal of Operational Research 等。入选辽宁省百千万人才工程千层次，获得教育部自然科学成果奖、辽宁省自然科学学术成果奖等若干项，也获得若干国际会议最佳论文奖等。担任国际期刊 Maritime Business Review 和 The Open Transportation Journal 的编委。

报告题目：班轮运输中的枢纽港选址问题

摘要：选址问题是一个非常传统的问题，已经得到了国内外学者的广泛研究。通过对班轮运输网络的特点进行深入分析，提出适合于班轮运输的枢纽港选址问题的若干数学规划模型，并根据模型的特点设计合适的求解算法。

王亚东：南京理工大学经管学院教授。王教授本科和硕士毕业于华中科技大学，博士毕业于新加坡国立大学。于 2019 年加入南京理工大学经济管理学院任教授。一直致力于物流和交通运输管理方面的研究工作。通过运用和发展先进的建模和优化方法，解决城市交通运输和海事运输网络设计等方面一系列运营管理问题。在交通运输领域权威 SCI/SSCI 期刊发表论文近二十篇，包括交通领域顶级期刊 Transportation Science、Transportation Research Part B。学术成果受到了国内外同行的广泛关注和一致好评，长期担任多个交通领域 SCI/SSCI 主流期刊审稿人，获得多个国际学术奖项，受邀参加国际学术会议并做学术报告。

报告题目：Optimal design method for semi-liner shipping service

摘要：Semi-liner shipping transports various types of cargoes such as containers, break-bulk cargo, and heavy-lift project cargo between different ports. Similar to liner shipping, semi-liner shipping publishes shipping routes for customers' reference. However, it does not strictly follow the published route, and usually makes some adjustments for each ship voyage by adding some port calls to transport more cargoes considering the excess ship capacity. This study first proposes the semi-liner shipping service design (SLSSD) problem that aims to maximize the shipping profit by determining a shipping route subject to the potential adjustments. The proposed SLSSD problem is subsequently formulated as a two-stage stochastic mixed integer programming model with integer recourse variables. The first stage determines the visit sequence of a set of compulsory ports under shipping demand uncertainty. The second stage decides whether to add or remove some ports in the route in view of the realized shipping demand for each ship voyage. To effectively solve the model, two decomposition methods are developed, namely, the stage decomposition method and the scenario decomposition method that decompose the problem by stage and demand scenario respectively. In addition, two novel acceleration techniques are also provided to expedite the scenario decomposition method. Numerical experiments reveal satisfactory efficiency of these two methods to solve the semi-liner shipping service design problem, especially the scenario decomposition method, which is generally better than the stage decomposition method and can be thousands of times faster than the classic Branch&Cut algorithm.

张伟斌：南京理工大学电子工程与光电技术学院，教授，江苏省智能交通信息感知与数据分析工程实验室副主任。西安交通大学控制科学与工程专业工学博士。芬兰阿尔托大学博士后，研究方向为航运安全；曾任美国华盛顿大学智能交通应用与研究实验室研究员，研究方向为智能交通系统与交通大数据。中国交通运输协会新技术分会理事，中国智能交通协会青年专家工作委员会专家；入选江苏省双创团队；发表学术论文 50 余篇，其中 SCI 检索 23 篇，ESI 高被引论文 2 篇；主持国家自科基金面上项目 1 项，国家重点研发计划子课题 1 项；获省部级科技二等奖等 3 项；出版专著 1 部；SCI 期刊 Journal of Intelligent Transportation Systems 的 Guest Editor。

报告题目：数据驱动的交通流预测方法研究

摘要：交通流预测是建设城市交通系统所面临的重要问题之一。随着大数据技术的发展，通过数据驱动的模型方法，对交通流进行短时预测，成为有效的预测方式。报告介绍了在数据驱动的交通流预测方面所进行的研究，特别是深度学习方法在预测中的应用，包括基于 SCATS 数据的交通流预测，基于时空特征分析和 CNN 卷积神经网络的交通流预测，基于混合序列分析和 LSTM 的交通流量短时预测等。