Railway Applications Section Marks 24 Years

Founding Members Reflect on Origins – RAS Celebrates Silver Anniversary in 2019

Steven Harrod, Public Relations Officer

“I helped organize the first ever RASIG meeting, which took place in the spring of 1994 at MIT,” recalls longtime member Bruce Patty. Multiple sources refer to Mark Turnquist, Professor at Cornell, and Ajith Wijeratne, then a commercial consultant, and now at Norfolk Southern. In those years, much of the rail research was collected and sponsored at the Transportation Research Forum, but Carl Martland recalls, “Mark wanted to form a group that looked more at OR methodologies than at railway system economics.” Organization of what was then called the Railway Applications Special Interest Group began under what was then the Operations Research Society of America (ORSA). At the time, MIT had a dedicated railway research group, and was the logical host for the first RASIG meeting.

Part of the inspiration for RASIG came from an independent group, which still exists today, called the Airline Group of the International Federation of Operational Research Societies (AGIFORS). Bruce Patty left American Airlines and joined the OR group at CSX in 1992, and Barry Freedman joined Conrail from Northwest Airlines. Patty recalls, “Barry and I thought it would be great if there was a similar group for the rail OR community.”

Part of the attraction for RASIG, for many respondents, has been its focus on applications. Martland recalls, “In those years, the focus was on understanding problems and improving performance; the emphasis was much less on methodology than on results.” According to Martland, the participation of managers and executives has been a distinguishing feature of RAS events. Martland recalls a little sarcastic jab at theoretical researchers that originated in the RASIG group, “That works very well in practice, but will it work in theory?”

Today, RASIG has elevated itself to status as a section of INFORMS, hence the name Railway Applications Section (RAS).
INFORMS and RAS are essentially the same age, as the founding of RAS/RASIG coincided with the merger of the Operations Research Society of America and The Institute of Management Sciences on January 1, 1995. The majority of RASIG founders joined ORSA in the 1970s and 1980s, and many of these founders are still with us as RAS members today.

Why are so many members committed to RAS after all these years? Many belong because of a long career love for railways, such as G. Surya Kumar who began his career on the Indian Railways in 1958. Carl Martland remains a follower into his retirement because, “I enjoy seeing the topics that are discussed, many of which are the same ones that were prime research topics 30, even 45 years ago.” David Hunt remains a dedicated member because, “it is relevant to my work, and I have built up a network of friends there.” Goutam Dutta works and lives in India, but has maintained unbroken membership in INFORMS and RAS because, “It helps me to connect with a large number of OR professionals in the USA and know what is happening in OR in the USA.” Erick Wickum, upcoming President of the INFORMS Analytics Society, says “Catching up with these colleagues turned friends is a highlight of my annual conference attendance.” For many members, the Annual Meeting is the highlight of their professional networking. Bruce Patty sums his comments up, “As a practitioner who telecommutes, I like the social interaction that is found at the conference.”

RAS Research Survey for 2018

Steven Harrod, Public Relations Officer

About half of the respondents do not currently have publications “in the pipeline” as it is commonly said. That is, they have not published or submitted this year.

Many of the respondents offered a description of their most important current research. Those texts have been assembled and processed into the “word cloud” shown here. The size of the words represents their frequency in the text. It is interesting that “data” and “maintenance” are two of the most significant descriptive words.
RAS Member Profile 2018
Steven Harrod, Public Relations Officer

The Railway Applications Section (RAS) held steady in membership from 2017, with a statistically insignificant growth. As of August 30, 2018, the paid membership totaled 110 members. 75 of these are from the United States, with nearly every other country being represented by a single member (such as yours truly). 77 members are regular members, and 25 are student members. Membership is bimodal. Over half the membership has belonged for more than five years, but a quarter of the membership are new members of only a year.

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Session Schedule

Railway Applications Section Sponsored Sessions
INFORMS Annual Meeting, Phoenix

All sessions (except RAS Poster Session) will be held in North Building 221A

Sunday, November 4th 2018

SB28. 11:00 AM – RAS Student Paper Competition (Chair: Steven Harrod, Technical University of Denmark)
Awards for the 2018 Railway Applications Section Student Paper Competitions will be presented, along with presentations by the finalists. Winners are announced at the conference, or a few weeks before at the earliest.

SC28. 1:30 PM – RAS Problem Solving Competition Presentations (Chair: Michael F. Gorman, University of Dayton)
This session is reserved for the finalists of the RAS Problem Solving Competition: "Train Delay Forecasting." The presenters and their abstracts will be determined by the Judging Committee by early October. More information about the Competition is available at http://connect.informs.org/railway-applications/awards/problem-solving-competition.

SC28. 4:30 PM – Roundtable: Horsepower-hour in Today’s Railway (Chair: Shantih Spanton - CSX)
Railroads may define locomotive work performed over time in terms of horsepower-hours. This term is primarily used in the context of the work of locomotives shared between railroads, wherein the horsepower-hours of a locomotive used by another railroad must be reimbursed to the owner. The balancing of horsepower-hours owed to a foreign carrier with usage of a railroad’s own locomotive power is an interesting problem that raises both tactical and strategic questions. In this panel, experts from several leading US rail carriers will discuss the impact of balancing horsepower-hours in today’s cost-sensitive environment, including issues of fleet sizing, fleet mix (foreign or system), tactical/seasonal balancing strategies, rules and regulations around horsepower balancing in the US system, and more.
Panelists: Grant Metcalf (Kansas City Southern RR), Kim Archer (CSX), Jermaine Wilkinson (NS), Td Smith (BNSF)

6:00 PM – RAS Business Meeting (Chair: Kamalesh Somani, CSX), continues in same room as SC28

7:20 PM – RAS Dinner (Chair: Kamalesh Somani, CSX), The Arrogant Butcher, see map at end of newsletter

Monday, November 5th 2018

MA28. 8:00 AM – Maximizing Railway Network Capacity (Chair: Carl D. Van Dyke - TransNetOpt)
- Rethinking Train Scheduling to Improve Network Capacity Management (Carl D. Van Dyke, TransNetOpt, West Windsor, NJ)
- Interaction between Yard and Mainline Capacity in Railway Network Performance (Tyler Dick, PE. University of Illinois at Urbana-Champaign, Urbana, IL)
- Impact of Improved Maintenance Programs on Railroad Capacity (David T. Hunt, Oliver Wyman, Princeton, NJ)

MB28. 11:00 AM – Yard and Terminal Operations (Chair: Tyler Dick, PE. - UIUC)
- The Digital Transformation of Rail Yard Planning and Operations (Jeremiah Dimberger. GE Transportation, Jacksonville, FL)
- Improving the Flat Switching Process (Roger Baugher, TrAnalytics Johns creek, GA and Daril Vilhena, Cedar Al, Johns Creek, GA)
- Traffic Complexity and the Performance of Railway Classification Yards (Tyler Dick, PE. University of Illinois at Urbana-Champaign, Urbana, IL)
• Car-Scheduling Based Hump Sequencing (Chip Kraft, Transportation Economics & Management Systems Inc., Roger Baugher, TiAnalytics LLC, Johns Creek, GA)

MC28. 1:30 PM – Train Design and Service Planning (Chair: Seyed Mohamad Nourbakhsh - BNSF)
• Simulating Railcar Transit under Different Operating Strategies (Tzu-Yu Chang, Darkhan Mussanov, University of Illinois at Urbana Champaign, Urbana, IL)
• An Integrated Train Service Plan Optimization Model with Variable Demand (Lingyun Meng, Beijing Jiaotong University, Beijing, China, Xuesong Zhou, Arizona State University, Tempe, AZ)
• Optimization Models for Block Re-design Problem (Chinmoy Mohapatra, BNSF Railways, Anantaram Balakrishnan, University of Texas-Austin)
• Trade-off Between Efficiency and Equity under Time Dependent Passenger Demand in Railway Timetabling (Dewei Li, Tianyu Zhang, Xinlei Dong, Beijing Jiaotong University, Beijing, China)
• Visualizing the Effects of Maintenance on Train and Yard Performance (Trefor Williams, Rutgers University, Piscataway, NJ, John F. Betak, Collaborative Solutions, LLC, Albuquerque, NM)

MD28. 4:30 PM – RAS Interactive Session (Chair: Kamalesh Somani - CSX)
Join us for an interactive look at the substantial use of advanced OR techniques in the railroad industry. Four major North American rail carriers (BNSF, CSX, NS, UP and Amtrak) will be onsite to give in-depth practical demonstrations of OR tools. Join us to learn how railroads implement robust solutions to complex business problems. The demonstrations will focus on the practical implementation of advanced OR models within companywide systems including the core software and technologies used, large scale data constraints, production level deployment, and business alignment.

Tuesday, November 6th 2018

TA28. 7:30 AM - Passenger and High Density Railway Corridor OR/MS (Chair: Nikola Besinovic - Delft University of Technology)
• Train Rescheduling and Circulation Planning in Case of Complete Blockade for an Urban Rail Transit Line (Yihui Wang, Lingyun Meng, Tao Tang, Bin Ning, Beijing Jiaotong University, Beijing, China)
• Modelling Resilience of Rail Transport Networks (Nikola Besinovic, Delft University of Technology, Delft, Netherlands)
• Modeling and Predicting Recurrent Rail Defects (Faeze Ghofrani, Qing He, Reza Mohammadi, University at Buffalo, SUNY, Buffalo, NY)
• Positioning and Coordination of Resources for Reliable Emergency Response to Railroad Incidents (Yanfeng Ouyang, Siyang Xie, University of Illinois at Urbana-Champaign, Urbana, IL)

TB28. 10:30 AM – Joint session RAS/TSL: Intermodal (Chair: Mike Prince - BNSF)
• Opportunities for Optimization and Automation in Intermodal Terminal Operations (Steven Jay Tyber, General Electric, Chicago, IL)
• The Role Of Partial Information And Commitment In Dynamic Transportation Procurement (Pol Boada-Collado, Karen Smilowitz, Sunil Chopra. Northwestern University, Evanston, IL)
• Investigating the Capacity of Different Intermodal Terminal Layouts with AnyLogic (Wesley Chen, University of Illinois Urbana-Champaign, Urbana, IL)
• Appointment Scheduling for Intermodal Dray Operations (Lisa Tang, Schneider, Green Bay, WI)

TC28. 12:05 PM – RAS Poster Session - Location: Foyer, North Bldg 221 (Chair: Andy Yoon - NS)
The RAS poster session provides an interactive way to share knowledge and state-of-the-art research in railroad applications. Poster presenters will have the opportunity to show case research or projects that are at early stages of development, and benefit from the interactive critique, suggestions, and encouragement from colleagues working in the area of railroad business analytics and optimization.

TD28. 2:00 PM – Maintenance (Chair: Nathaniel O. Richmond, BNSF, Steven Jay Tyber, GE)
• Predictive Switch Health Using Switch Amperage (Casey Jen, CSX Corporation, Jacksonville, FL)
• Predicting Rail Defects with Massive Foot-by-foot Track Geometry Data (Reza Mohammadi, Faeze Ghofrani, Qing He, University at Buffalo, Amherst, NY)
Mike Gorman Named 2018 Distinguished member

Nathaniel Richmond, Secretary

The success of the RAS organization depends upon two things: the generous support of its sponsors and the contributions of its volunteer leadership. While the volunteer efforts of all our members are valued, certain member contributions go above and beyond the expected, resulting in lasting impacts to the organization. The effect of such members gives RAS new direction, needed support, and inspires others to contribute. The RAS Distinguished Member Award began in 2012 as a way to recognize member contributions of great impact. This award is not necessarily given every year, and will only be award if nominations of members of noteworthy contributions are obtained. The award selection committee consists of the current officers, past award winners and past RAS Chairs/Presidents.

The RAS officers committee is pleased to announce the winner of the 2018 RAS Distinguished Member Award: Mike Gorman. Mike’s nomination materials indicate beyond the shadow of a doubt that his contributions have gone above and beyond the expected, and have truly shaped RAS’s history.

Mike has been an integral part of the Operations Research rail community for the past 25 years. Mike is a professor at the University of Dayton in the Department of MIS, Operations and Decision Sciences. He has been a RAS member since its inception in 1994 and has held numerous officer positions. Additionally, Mike has been an active organizer and volunteer for the larger INFORMS organization in several capacities.

In addition to his active service to RAS over the years in his capacities as Chair, Vice Chair, Treasurer, and Secretary, Mike has served in various volunteer roles. He has both organized and judged the RAS Problem-Solving Competition and the RAS Student Paper Competition, organized the RAS Roundtable 5 times, chaired the RAS Cluster at the INFORMS annual meeting for 5 years, and chaired over 20 RAS sessions since 1994.

Mike’s passion for operations research in railroading is evident in the greater OR community, where his activities help spread the word for operations research the rail industry. Mike has authored more than 20 rail-based publications, and he was a collaborator in a book titled Handbook of Operations Research Applications at Railroads (Springer). Mike has contributed to very impactful projects, some of which were finalists for the Wagner Prize and Edelman Award. It is evident that Mike is an esteemed leader both within and outside of RAS.

Please join the RAS 2018 officers in extending our deepest thanks and hearty congratulations to Mike Gorman for his receipt of the 2018 RAS Distinguished Member Award.
2018 Rail Problem Competition Finalists: Predicting Passenger Rail Delay

Michael F. Gorman, Competition Chair

I am happy to announce the 2018 RAS Rail Problem finalists! Over 40 teams participated in this year's Rail Problem Competition, which seeks to predict delays in the Netherlands Railway passenger rail network.

Contestants were given a month of train event (and other) data over which to learn what contributes to the prediction of delay. There were a number of ‘gaps’ in the data, where students’ solutions were graded against actual events that were unknown to them at the time of their submission.

The three finalists used three very diverse methods. The finalists’ methods were random forests, Markov chains, and neural nets to address the same problem! The finalists are from University of Illinois, NC State/Texas A&M, and QUAMP/Technical University of Denmark.

They will be presenting on Sunday, November 4 at 1:30 PM (SC28) of the RAS Cluster INFORMS Phoenix conference for first, second and third place. It should be quite an interesting session, and I invite all of you to attend!

The titles, abstracts and contributors are below.

Finalist submissions:

Predicting Near-Term Train Schedule Performance and Delay Using Bi-Level Random Forests

Abstract: Near-term train delays prediction is critical for railway management. We propose a bi-level random forest approach to predict train delays. The primary level predicts the delay category, and the secondary level estimates the delay (in minutes). The proposed model is compared with several alternative approaches, validating its superior accuracy.

Authors:

1. Mohammad Amin Nabian, PhD Candidate, Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign (email: mnabia2@illinois.edu)
2. Negin Alemazkoor, PhD Candidate, Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign (email: alemazk2@illinois.edu)
3. Hadi Meidani, Assistant Professor, Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign (email: meidani@illinois.edu)

A Railway Delay Prediction Model Based on Non-homogeneous Markov Chains

Abstract: Assuming the delay on a certain station depends only on delay attained in the previous station, we model the delay evolution over stations as a non-homogenous Markov chain. By discretizing the state space and retrieving transition matrices from historical data, we accurately predict delay using a probabilistic approach.
Authors:

1. Gao, Zheming, Department of Operations Research, NC State University (email: zgao5@ncsu.edu)
2. Luo, Haochen, ISEN Department, Texas A&M University (email: hcluo@tamu.edu)
3. Wu, Qian, ISEN Department, Texas A&M University (email: hi_qianwu@tamu.edu)
4. Xu, Jin, ISEN Department, Texas A&M University (email: jinxu@tamu.edu)

Forecasting Train Delays in the Netherlands Using Neural Networks

Abstract: We investigate to what extent low-maintenance and out-of-the-box machine learning models can provide accurate predictions of train delays. We focus on predicting actual delay and but also the delay development. The results on real-life data from the Netherlands indicate that our models can outperform a constant prediction model.

Authors:

1. Jørgen Thorlund Haahr (PhD), Decision Scientist, QAMPO, (email: jth@qampo.com)
2. Erik Hellsten, PhD candidate, Technical University of Denmark, (email: erohe@dtu.dk)
3. Evelien van der Hurk (PhD), Assistant Professor, Technical University of Denmark, (email: evdh@dtu.dk)

2018 Marks Very Competitive Student Paper Competition

Steven Harrod, Competition Chair

In conversations among the judges, it was mutually agreed that this was the most competitive pool of papers in memory. Fourteen papers were submitted from three continents. In the end some very careful selections were made to determine the prize recipients for this year. These papers were each reviewed by multiple judges, and ranked by composition, methodology, and contribution to the literature. The Railway Applications Section is grateful for the assistance of the judges: Carl Van Dyke, Francesco Corman, Javier Faulin, Lingyun Meng, Seyed Mohammad Nourbakhsh, Steven Tyber, and Zhijie (Sasha) Dong.

The winners of the 2018 Railway Applications Section Student Paper Award are:

First Prize: Fei Yan; Nikola Bešinović; Rob M.P. Goverde, “Multi-objective Periodic Railway Timetabling”, Technical University of Delft

I am a PhD candidate from the Delft University of Technology, the Netherlands. My research mainly focuses on the optimization of railway line plan and timetable, under the supervision of Rob Goverde. I got both my bachelor degree and master degree in traffic and transportation management from Beijing Jiaotong University, China. From my bachelor study, I became interested in railway traffic management. It is quite interesting to work on a topic which is so related to our daily life, and I could demonstrate the theory in the real world case. After my PhD I hope to continue doing research in this area.
Second Prize: Rolf N. van Lieshout; Paul C. Bouman; Dennis Huisman, “Determining and Evaluating Alternative Line Plans in (Near) Out-of-Control Situations”, Erasmus University Rotterdam

I am 24 years of age and currently a second year PhD student at Erasmus University Rotterdam. I got involved in railway optimization when Dennis Huisman, who now is my promotor, offered me a PhD position after I wrote a bachelor thesis on bus rescheduling under his supervision. The goal of my research project is to find new disruption management strategies for dealing with extreme disruptions in railway networks. I am really enjoying my PhD, as I get the chance to work on challenging problems that offer a nice mix between theory and practice.

Third Prize: Manuel Fuentes; Luis Cadarso; Ángel Marín, “A Hybrid Model for Robust Crew Scheduling in Rapid Transit Networks”, Technical University of Madrid

I am an aerospace engineer from Spain. I am a last year PhD student at the Technical University of Madrid, under the supervision of Ángel Marín and Luis Cadarso, which is focused on transportation planning. The topics I cover in my research are crew scheduling in rapid transit networks (railways) and tail assignment in air transportation. I have also worked in the defense industry. First, as an aerospace engineer and later as a project manager.

Each recipient will receive a cash award of $1,000, first place, $500, second place, and $250, third place. The winners will present their research at the INFORMS Annual Meeting, Sunday, 4 November 2018, in Phoenix, Arizona. Come to session SB28 in North Building 221A.

BNSF Railway Wins 2018 INFORMS Prize

BNSF Railway

BNSF Railway is the winner of this year’s “INFORMS Prize”, which was awarded at the 2018 INFORMS Business Analytics Conference in Baltimore. The INFORMS Prize is awarded for effective integration of advanced analytics and operations research/management sciences (OR/MS) in an organization. The award is given to an organization that has repeatedly applied the principles of advanced analytics and OR/MS in pioneering, varied, novel, and lasting ways. Winners in previous years have included the Walt Disney Company, the U.S. Air Force, General Motors, and Chevron.

BNSF Railway tackles challenges old and new in innovative, analytical ways. BNSF was recognized this year for its culture of quantitative problem solving. The Operations Research & Advanced Analytics (OR & AA) team’s 25-year existence seems short in comparison with BNSF’s robust nearly 170-year history. Despite its relatively...
short tenure, the OR & AA team has grown to a centralized team of 25 full-time members with advanced degrees in a variety of fields including operations research, industrial engineering, applied mathematics, computer science, and statistics. Dr. Pooja Dewan, BNSF’s Chief Data Scientist, has led the team for the past 14 years.

The OR & AA team provides strategic analytical support to leadership for capital-intensive projects as well as the creation of decision-assist and automated tactical software tools. It uses advanced modeling, statistical analysis, algorithm design, and optimization techniques to drive innovation, productivity, and growth. The results of its work drive enhanced decision-making in several areas including train routing, crew scheduling, train building, fleet sizing, train dispatching, locomotive fueling and inspections, equipment distribution, facility simulation, and car-to-customer assignment.

Hundreds of people at BNSF use tools with algorithms created by the OR & AA team daily. Their automated systems have been deployed across the rail network and throughout all business units. The OR & AA team’s work is conservatively estimated to save BNSF more than $110 million annually. While not a paltry sum, it is worth noting that these figures fail to encompass significant improvements in employee safety and crew quality of life. OR & AA is currently working on additional critical projects, and BNSF believes the OR & AA team’s successes thus far are small when compared with its great potential.

Come join the Operations Research and Advanced Analytics team at BNSF Railway!

Our group of 25+ PhDs use advanced modeling, statistical analysis, algorithm design, and optimization techniques to drive innovation, productivity, and growth.

To learn more about our internship and job opportunities, please visit bit.ly/2OxSiiW
The INFORMS Committee on diversity, equity and inclusion (DEI) was recently founded to help support diverse and inclusive participation within INFORMS membership and within the OR/MS/analytics profession.

The DEI has several immediate goals RAS members can support as the DEI works to enhance the INFORMS organization including 1) Identifying policy innovations to better support diversity and inclusion, 2) enhancing the role that diversity and inclusion play within INFORMS, and 3) developing a research agenda in diversity and inclusion that is rooted in OR & analytics models and methods.

One of the DEI Committee’s ongoing activities is to collect data related to the current diversity within INFORMS subgroups including gender, age, race and ethnicity, member type (student, regular) and level of education. The DEI Committee has used this data to create ‘dashboard’-type reports on diversity-related characteristics of sections, societies, committees and other groups within INFORMS. The dashboard for the RAS group is given below:

As can be observed by our section dashboard, many members have not provided all data, and the DEI Committee requests that members update their member profiles to include this information. This can be done at https://www.informs.org/my-INFORMS under the select profile option, and under Bio by clicking add, selecting Update My Profile, and editing personal information.

Visit the DEI website to see ways that you can get involved at http://connect.informs.org/diversity/home or contact the DEI Committee Chair Michael Johnson at michael.johnson@umb.edu. The DEI website contains a useful library of both academic and popular press articles on recent trends in diversity and inclusion research, and a discussion thread for diversity related topics.
Let’s all also take the time to think about ways in which RAS can continue to encourage diversity within our own community. Please feel free to reach out to me personally if you have questions, concerns, or ideas about how RAS can engage in and support diversity efforts.

**BNSF Leads in Positive Train Control Implementation**

*BNSF Railway*

Positive Train Control is a system of GPS, WiFi and high-band radio technologies that work together to prevent train-to-train collisions, derailments caused by excessive speed, unauthorized incursions by trains onto sections of track where maintenance activities are taking place or the movement of a train through a track switch left in the wrong position. Congress mandated the installation and implementation of PTC in 2008 along all Class I main lines where hazardous materials are hauled as well as any lines with passenger rail services.

BNSF completed installation of PTC infrastructure on all our required subdivisions at the end of 2017, covering more than 11,500 route miles and 80 percent of our freight volume, per the federal mandate. We run more than a thousand trains daily with PTC as we test operating in revenue service across our entire mandated territory.

BNSF is leading the North American freight rail industry with PTC interoperability. We are actively working with each of the approximately 30 railroads with which we need to be interoperable to identify their needs and how we can be of help. This assistance ranges from technical, operation and regulatory advice to a variety of services such as back office hosting and crew training.

BNSF will invest approximately $2 billion in PTC implementation. We have operated more than 1.7 million trains with PTC (as of September 2018) and continue to test and refine this highly complex system that must work as designed to support safe and efficient train operations.

These metrics represent where BNSF stands in some key areas as of September 30, 2018. They are derived from BNSF’s quarterly PTC progress report to the Federal Railroad Administration (FRA).

- More than 21,000 employees trained to operate and maintain PTC trains
- 100 percent locomotives equipped with PTC technology (5,000 locomotives)
- 100 percent route miles of PTC infrastructure installed (11,500+ route miles)
- 100 percent PTC radio towers installed (6,000+ radio towers)
Dear RAS members and friends,

Firstly, thank all for your continued and involved support of the RAS organization. RAS operates solely on the generosity of its financial sponsors and volunteer leaders. The growth of activities we have seen in the past year would not be possible without your support. A tremendous amount of volunteer work goes on behind the scenes to create the RAS activities we enjoy at the INFORMS annual meeting.

I would like to explicitly thank the outgoing 2018 officer committee Kamalesh Somani (CSX), Roochi Mishra (BNSF), Nathaniel Richmond (BNSF) and Steven Harrod (Technical University of Denmark), as well as session chairs Andy Yoon (NS), Yashar Khayati (BNSF) and Masoumeh Taslimi (CSX). We thank Mike Gorman (University of Dayton) for heading the problem solving competition this year. With the assistance of problem owners Wilco Tielman (ProRail) and Pieter-Jan Fioole (Netherlands Railways) this year’s competition saw a great increase in the number of entrants over the last few years. We thank Steven Harrod (Technical University of Denmark) for leading the paper competition. As in prior years, it was efficiently facilitated by himself and a team of expert judges.

Due to popular demand, we again supported our two newest activities: the interactive session and the poster session. The 2018 interactive session was organized by Kamalesh Somani (CSX) and was able to be attended by five of the major North American rail groups (Amtrak, BNSF, CSX, NS, UP). The 2018 poster session was organized by Andy Yoon (NS) and this year it included an award for best student poster. The RAS roundtable was organized by Mike Gorman (University of Dayton) and myself. We were able to recruit expert speakers in the area of horsepower-hours for this event from BNSF, CSX, KCS, and NS.

This year we added a new volunteer position which will be held exclusively by student members. The RAS student officer position will act as liaison officers to the student community to help us better serve students and get them engaged in RAS activities. The 2018 RAS student officers were Stan Chang and Zhoutong Jiang (University of Illinois). Let’s take time during this year’s conference to thank all of our sponsors and volunteer leaders. Hopefully I captured the majority of our volunteers, and apologize if I left someone out!

**Looking Ahead:** As our industry continues to evolve and the demand for innovative and analytically based solutions increases, RAS looks forward to finding new ways to serve and connect with our community. In 2019 we hope to increase student outreach and involvement, find new ways to communicate between all RAS participating organizations (academic and industrial), increase opportunities for rail related research publications, and support INFORMS diversity initiatives. The 2019 officer committee would love to hear your feedback and recommendations. Let us know how we can support your organizations.

It has been exciting to be part of the flurry of RAS activities in the past few years, and I am looking forward to serving you all as chair in the coming year!

Shantih Spanton

INFORMS RAS Chair Elect, Senior Manager Operations Research

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Meet the 2019 RAS Officers

Steven Harrod, Public Relations Officer

There is a great deal of new blood entering the Railway Applications Section leadership next year. A concerted effort was made by the current leadership to solicit new candidates, and this in fact resulted in a very competitive election. We appreciate those candidates who took the time to write something about themselves and consider these positions. We genuinely wanted to encourage more activism, and to offer members more choices in the direction of the organization.

Aside from incoming Chair Shantih Spanton, who offers her own introduction here in the newsletter, there are three new officers and one “trading up”. We reprint here their biographies and election statements. Photos have been obtained from public profiles, such as LinkedIn.

Vice Chair: Nathaniel Richmond, BNSF

Nathaniel is moving up from his position last year as RAS Secretary.

Bio/Position Statement: I am a member of the Operations Research & Advanced Analytics team at BNSF Railway, and I received my Ph.D. in Applied Mathematical & Computational Sciences from the University of Iowa. In 2017 I served as one of the RAS cluster co-chairs for the INFORMS annual meeting, and in 2018 I served as the RAS Secretary. My time in these position involved much learning and collaboration with other RAS members and INFORMS staff, which I very much enjoyed. I would love to continue my involvement with RAS in 2019 by serving as Vice Chair.

As Vice Chair, I would assist the Chair with all managerial duties and transition into the Chair role in 2020. Many RAS members are unaware of the significant amount of work that goes into managing RAS, and my RAS experience from the past few years will help me navigate these duties. I would like to find creative ways of increasing RAS membership and participation. I believe that early and frequent marketing of our events is key for this goal, as is strategic communication with our network of members. I hope to facilitate in these and other initiatives, and I’m looking forward to another great year in 2019! For my professional experience, please refer to my LinkedIn profile at https://www.linkedin.com/in/nrichmond/.

Secretary: Steve Tyber, GE Transportation

Steve is new to RAS administration.

Bio/Position Statement: Steve Tyber is an operations researcher at GE Transportation. His work in the rail space has primarily focused on developing algorithms in the intermodal and automotive terminal space. Prior to his time at GE Transportation, Steve worked at the GE Global Research Center where he solved problems across multiple industries including transportation, aviation, healthcare, and power.

Over the past two years, Steve has helped judge the RAS problem solving in 2017 and the student paper competition in 2018. He is co-chairing a RAS session on maintenance and will present at this year’s annual INFORMS conference.
Treasurer: Yashar Khayati, BNSF

Yashar is new to RAS administration.

Bio/Position Statement: I am a member of the Operations Research & Advanced Analytics team at BNSF Railway, and I received my Ph.D. in Operations Research from the State University of New York at Buffalo. In 2018, I served as one of the RAS cluster co-chairs for the INFORMS annual meeting. I, with the help of other cluster co-chairs, organized RAS sessions which we tried to include interesting and trending topics in the industry. It was a very good experience to attend the RAS meetings and know about all the aspects of RAS activities.

As Treasurer, I would be responsible for the administration and disbursement of the section funds, prepare reports of the financial condition and annual budget of the section. I will try to ensure the financial stability and transparency of RAS which enables us to create valued services for RAS members. For my professional experience, please refer to my LinkedIn profile at https://www.linkedin.com/in/yasharkhayati/

Public Relations Officer: Qing He, University at Buffalo

Qing is new to RAS administration.

Bio/Position Statement: Dr. Qing He is the Morton C. Frank Associate Professor, affiliated with both Industrial Engineering and Civil Engineering at University at Buffalo (UB), The State University of New York. He obtained his PhD from University of Arizona. Prior to joining UB, he worked as a postdoctoral researcher in IBM T J Watson Research Center in Smarter Transportation projects. Being active in rail transportation, Dr. He’s research interests lie in predictive maintenance of rail tracks with big data analytics. He has served as the leading guest editor of special issue “Big Data in Railway Transportation” in Transportation Research Part C. He has published near 80 research papers and received 7 U.S. patents in both railway and highway transportation. His research has been funded by NSF, USDOT, FRA and FHWA. He has been actively involved in INFORMS RAS activities for the past 7 years.

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Incoming RAS 2019 Officers

Chair: Shanthi Spanton, CSX  
Vice Chair: Nathaniel Richmond, BNSF  
Secretary: Steve Tyber, GE Transportation  
Treasurer: Yashar Khayati, BNSF  
PR Officer: Qing He, University at Buffalo

Business meeting  
Sunday, November 4, 6:00PM  
Continues in the same room as SC28

RAS dinner – SOLD OUT  
Sunday, November 4, 7:20 pm  
The Arrogant Butcher Restaurant  
Please contact Yashar Khayati (Yashar.Khayati@bnsf.com) if you have not already registered, this meal is at capacity and no further seats are available.