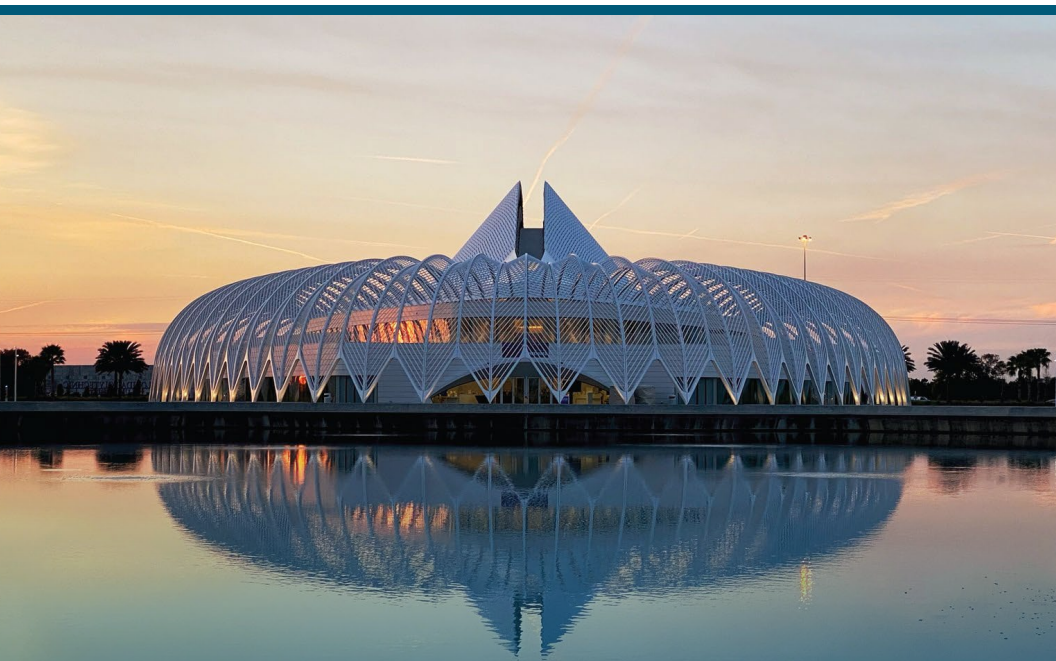


IEEE ICCVE 2022

International Conference on Connected Vehicles and Expo

March 7-9, 2022

Hybrid Conference // Florida Polytechnic University, Lakeland, Florida, USA



ICCVE 2022 CONFERENCE PROGRAM

SPONSORS AND ORGANIZERS

Please visit website for
more information!
iccve2022.org



IEEE

IEEE
INSTRUMENTATION
& MEASUREMENT
SOCIETY®



Table of Contents

Welcome to IEEE ICCVE 2022	2
Welcome to IEEE ICCVE 2022 - America	3
Welcome to IEEE ICCVE - China	4
Welcome to IEEE ICCVE 2022 - Germany	5
Welcome to IEEE ICCVE 2022 - India	6
Organizing Committee.....	7
Conference Sponsors.....	8
Local Sponsors.....	9
Keynote Speakers	
Keynote Speaker - Mark de la Vergne	10
Keynote Speaker - Claudia Braun.....	11
Keynote Speaker - Greg Brannon.....	12
Keynote Speaker - Ananth Prasad.....	13
Keynote Speaker - Mary Joyce	14
Keynote Speaker - Alexander Kraus	15
Keynote Speaker - Racquel Asa & Robert Davis	16
Panel - How Does the Future of CAV Look Like?	17
Tutorial Speakers & Workshop Presenters	
Tutorial Speaker - Daniel Watzenig.....	18
Tutorial Speaker - Raivo Sell, Ph.D.....	19
PolyVerif Workshop	20
Tutorial Speaker - Zsolt Szalay & Zoltan Hamar	21
Tutorial Speaker - Charlie Cheng & Joachim Taiber	22
Industry Panel - How Do Global OEM's Adapt to Regulatory Challenges Utilizing Cyberphysical Test Infrastructure?	23
Industry Program.....	24
SunTrax Event.....	25
Day At-a-Glance: Monday, March 7, 2022 - Virtual.....	26
Day At-a-Glance: Tuesday, March 8, 2022 - Hybrid.....	27
Day At-a-Glance: Wednesday, March 9, 2022 - Hybrid.....	28
Technical Program: Tuesday, March 8, 2022.....	29
Technical Program: Wednesday, March 9, 2022	33
Florida Polytechnic University, Innovation Science and Technology (IST) Building	35
COVID-19 Health Protocols	36

Welcome to IEEE ICCVE 2022

Dear Participants of IEEE ICCVE 2022,

It is my greatest pleasure to welcome you to this thought leading international conference at a time where the whole transportation industry is facing a major transition phase triggered by electrification and digitalization which has a significant impact both on the vehicle as well as the infrastructure side. We experienced through COVID-19, that supply chains are very vulnerable - in particular, the growing demand of microchips in vehicles and backends through complex data processing needs is challenging the OEM's to deliver their products to the end consumer in time. Standardization of system architectures and data communication protocols are essential to enable the future of mobility. We will address this topic in multiple presentations, panels, and keynote talks. We are very thankful to the IEEE volunteers but also our authors that helped to make this conference a reality under very difficult circumstances. We also want to thank our sponsors that contributed to implement the program. This conference concept is very special as we integrate multiple satellite locations with an anchor location. Through hybrid participation, both on-site and online, we allow the flexibility to engage academic and industry experts worldwide. We hope that we can create a spark for the creation of a sustainable global expert community that will have a true impact to bring the right innovation and standards to our transportation ecosystem as it is reaching its readiness towards mass adoption of zero-emission and automated driving.

Best Regards,

Prof. Dr. Joachim G. Taiber

Global Chair IEEE ICCVE 2022



Welcome to IEEE ICCVE 2022 - America

Dear Participants of the IEEE ICCVE 2022 American Program,

On behalf of the conference committee and Florida Polytechnic University (Poly), I would like to welcome you to IEEE ICCVE, the world's first Global Hybrid Conference. What exactly is a Global Hybrid Conference? The model consists of an anchor location with satellites which run a physical as well as virtual program. However, unlike most conferences, the satellites have the autonomy to build their own program with no requirement to be intimately connected with the anchor. All the participants at all the locations gain access to the accumulated program of the conference. The objective of this somewhat more decentralized structure is encourage innovation and energy while leveraging the value of the global conference. For IEEE ICCVE 2021, the anchor location is Florida Polytechnic University (Poly). Poly is also the home of the Advanced Mobility Institute which has pioneered an open-source autonomous validation and verification system (www.avvc.net). In addition to Florida Poly, the conference will concurrently run satellite programs in China, India, and Germany.

Best Regards,

Dr. Rahul Razdan

General Co-Chair Americas/Global Hybrid Platform IEEE ICCVE 2022



Welcome to IEEE ICCVE - China

Dear Participants of the IEEE ICCVE 2022 Chinese Program,

It is my greatest pleasure to welcome you to the Chinese program of this thought leading international conference at a time where the whole transportation industry is facing a major transition phase triggered by electrification and digitalization which has a significant impact both on the vehicle as well as the infrastructure side. We experienced through COVID-19, that supply chains are very vulnerable - in particular, the growing demand of microchips in vehicles and backends through complex data processing needs is challenging the OEM's to deliver their products to the end consumer in time. Standardization of system architectures, data communication protocols, but also charging systems for electrified vehicles are essential to enable the future of mobility. China takes a very important role in this through engaging in international working groups. This new hybrid and multi-location conference concept allows us to connect to thought leading experts in different parts of the world, and we are very happy that multiple Chinese locations are engaging with us.

We want to thank our sponsors that contributed to implement the program. Through hybrid participation, both on-site and online, we allow the flexibility to engage academic and industry experts worldwide. We hope that we can create a spark for the creation of a sustainable global expert community that will have a true impact to bring the right innovation and standards to our transportation ecosystem as it is reaching its readiness towards mass adoption of zero-emission and automated driving.

Best Regards,

Donna Kahrs

Global Co-Chair Europe and Asia IEEE ICCVE 2022



Welcome to IEEE ICCVE 2022 - Germany

Dear Participants of the IEEE ICCVE 2022 German Program,

It is my greatest pleasure to welcome you this new type of conference platform. The automotive industry is facing significant changes through the electrification of the powertrain and use of artificial intelligence which have an impact both on vehicle system architectures as well as supporting infrastructure. Through COVID-19, we witness how vulnerable supply chains react leading to a worldwide chip crisis that is still ongoing, and through war activities in Europe, additional logistical issues arrive. The standardization of vehicle system architectures and data exchange protocols are critical to the success of mobility. However, especially important are the standardization of test procedures and test infrastructure in context of the upcoming market introduction of autonomous vehicle systems as well as the standardization of charging infrastructure to support the market expansion of emission free electrified vehicles. Through the hybrid organization of a distributed conference, we enable participants across key markets to talk about important technology topics on an expert level. From Germany, we will connect across the Atlantic to Florida but also to China. I wish you all the best in networking and engaging in interesting discussions across technological and geographical boundaries.

Best Regards,

Donna Kahrs

Global Co-Chair Europe and Asia IEEE ICCVE 2022



Welcome to IEEE ICCVE 2022 - India

Dear Participants of the IEEE ICCVE 2022 Indian Program,

On behalf of the conference committee, I would like to welcome you to IEEE ICCVE Pune. Pune is a well-established automotive and IT center with a diverse range of Indian and international businesses. This Pune Satellite workshop will provide participants with the chance to explore automotive applications and automotive validation, verification, and certification technology in a face-to-face setting. PolyVerif, an open-source autonomous validation research framework, will be presented at the workshop. In addition, there will be keynotes by luminaries such as Niels De Boer, Program Director for the Center of Excellence for Testing and Research of Autonomous Vehicles at Nanyang Technology University and Dr. Dilip Kumar, COO at MooVita.

Best Regards,

Rajeev Kaushal

Global Co-Chair India IEEE ICCVE 2022



Organizing Committee

General Chair:

Joachim Taiber, *ITIC (International Transportation Innovation Center)*

General Co-Chair Europe/Asia:

Dongfu Kahrs, *Kahrs International*

General Co-Chair Americas/Global Hybrid Platform:

Dr. Rahul Razdan, *Florida Polytechnic University*

Global Technical Program Co-Chairs:

Robert Shorten, *Imperial College London*

Ronnie Chowdhury, *Clemson University*

Xi Zhang, *Shanghai Jiao Tong University*

Shuai Zhao, *The China Automotive Technology & Research Center (CATARC)*

Publication Chair:

Yongqiang Wang, *Clemson University*

China Specific Technical Program Co-Chairs:

Chengbin Ma, *Shanghai Jiao Tong University*

Yin Huilin, *Tonjin University*

Marketing and Publicity Chair:

Lee Stogner, *Vincula Group*

Industry Co-Chairs:

Lee Stogner, *Vincula Group*

Ronald Grosse, *Bertrandt*

Reinhard Pfliegl, *Austrian Association for Advanced Propulsion Systems*

Dr. Gunnar Graefe, *3D Mapping Solutions*

Sean Kelley, *Mannik Smith Group*

Tutorial Co-Chair

Raivo Sell, *TaITech*

Conference Management:

Conference Catalysts, LLC

Conference Sponsors



IEEE

**IEEE
INSTRUMENTATION
& MEASUREMENT
SOCIETY®**



Technical Sponsors



**FLORIDA POLYTECHNIC
UNIVERSITY**



Global Sponsors

Silver



Bronze



Local Sponsors

Gold



SunTrax Event Sponsor

Jacobs

Keynote Speaker - Mark de la Vergne

*March 8, 2022 | 08:45 - 09:15 EST
Room: 1067/1068*



Mark de la Vergne
VP Project Development, CAVNUE

How Does the Future of Connected, Automated and Electrified Driving Look Like from an Infrastructure Perspective?

Speaker Bio:

Mark de la Vergne is the VP of Project Development at Cavnue. Prior to joining Cavnue, he served as Detroit Mayor Duggan's Chief of Mobility Innovation where he established the nationwide blueprint for delivering resident-centered mobility innovation. De la Vergne led the development of a number of major initiatives, including launching a regional fare pass with a mobile option, implementing a number of public private partnerships with private mobility companies, and assisting with the growth of micro mobility across the city. Previously, he led the national transportation planning practice of a boutique consulting firm, working with city leaders across the country to improve mobility and accessibility. De la Vergne has a B.S. in Engineering from the University of Pennsylvania.

Keynote Speaker - Claudia Braun

*March 8, 2022 | 09:15 - 09:45 EST
Room: 1067/1068*



Claudia Braun

Audi, Verification & Validation Management
Autonomous Driving

The Challenges for L3/L4 Certification from an OEM Perspective

The automotive industry is moving towards the introduction of highly automated and fully autonomous driving and this requires adequate regulatory frameworks to manage the operational risk and to enable virtual homologation during the lifecycle of a vehicle. Claudia's presentation will provide an overview from an OEM perspective where the challenges are that need to be tackled.

Speaker Bio:

Claudia is responsible for the verification and validation management autonomous driving at Audi. Prior to this role she worked as VP Associate Software Quality in the Artemis Project which was set up as a blue print for future agile development of cars through the Volkswagen Group. She also served as associate in software quality at Audi and gained experience as software development engineer at Continental Engineering Services and as lead development engineer at BMW in the domain of driver monitoring. She is educated in biophysics at the University of Regensburg and she has a PhD from the Ludwig Maximilians University Munich in computer tomographics and image processing.

Keynote Speaker - Greg Brannon

*March 8, 2022 | 14:00 - 14:30 EST
Room: 1067/1068*



Greg Brannon
Director Automotive AAA

How the American Automobile Association test and Validates ADAS Systems from a Consumer Perspective

The “driver” in Advanced Driver Assistance Systems is the most important component responsible for any benefits that the safety systems provide. AAA will share details about its testing of ADAS and consumer feedback about how these systems work and what needs to be improved to increase effectiveness.

Speaker Bio:

In his role as the Director of Automotive Engineering for AAA, Greg Brannon oversees all automotive research and testing for the 62-million-member organization. Areas of expertise include electric vehicles, advance driver assistance systems, autonomous vehicles, automotive batteries and fuels. Greg is actively involved in the automotive industry, serving on multiple SAE committees and collaboration with other safety organizations such as Consumer Report and IIHS.

AAA's Automotive Engineering team, spanning both East and West Coasts of the United States, conducts a wide variety of unbiased, independent research projects that inform consumers and influence the industry toward the safer adoption of technology. Most recently, the group's recommendation for common-sense, common naming of advanced vehicle technologies earned endorsement from SAE and NHTSA.

Greg holds a B.S. in Business Management and an MBA from the University of Central Florida along with ASE Master Technician certification. He serves as a student mentor and on the Board of the Foundation for Seminole County Public Schools. In his spare time, he enjoys building, restoring, and racing cars.

Keynote Speaker - Ananth Prasad

*March 9, 2022 | 08:45 - 09:15 EST
Room: 1067/1068*



Ananth Prasad

President Florida Transportation Builders Association and former Secretary of the Florida Department of Transportation

How to Prepare Florida's Infrastructure for CAV's

Presentation on how Public Transportation Agencies can prepare for Connected and Automated Vehicles including infrastructure needs, funding, public-private partnerships and challenges with implementation.

Speaker Bio:

Ananth Prasad currently serves as the President for Florida Transportation Builders' Association (FTBA). FTBA is a trade association comprising of individuals and business firms actively engaged in the construction of transportation systems or in the furnishing materials, equipment, or services for such construction.

With more than 30 years of public and private-sector experience in the transportation industry, including 5 years with HNTB, a national infrastructure solution firm where he recently held the position of National Transportation Practice Leader and 22 years with Florida Department of Transportation (FDOT) where he held the governor-appointed position of Secretary of FDOT from 2011-2015.

In 2021, Prasad was recognized as one of Florida's most influential business leaders by Florida Trend Magazine. Prasad was named to the National Council for Public-Private Partnerships Inaugural Top 10 P3 Transportation Infrastructure Pioneers in 2017. He also received the ARTBA's P3 Entrepreneurs of the Year award and Florida Chamber Foundation's Champion for Florida's Future award in 2015 and was recognized by Engineering News Record Top 25 Newsmaker of the Year in 2013.

Keynote Speaker - Mary Joyce

*March 9, 2022 | 09:15 - 09:45 EST
Room: 1067/1068*



Mary Joyce

Global Vice President & General Manager Critical Systems & Mobility, UL

Intertwined Safety and Security Compliance Frameworks for Avs

Safety performance standards can address the fundamental questions of whether self-driving vehicles will make safe decisions. But separate process standards and frameworks are necessary to assure the public that self-driving vehicles will in fact perform safely and securely as claimed by manufacturers.

Speaker Bio:

Mary Joyce assumed the role of Vice President and General Manager of UL's Mobility and Automotive business in July of 2019.

With over 30 years of international technology and entrepreneurial experience in the transportation sector, Mary leverages her experience and leadership to develop and deliver solutions focusing on safety, security, and sustainability in the Mobility industry, particularly focusing on the ACES transformation.

Prior to joining UL, Joyce was the Vice President of Transportation Testing Services at SGS, a global Testing, Inspection and Certification company. Joyce spent more than 20 years at Automotive OEM's including FCA, Daimler Chrysler and Chrysler Corporation where she served in a variety of management and technical roles. During this time, she was awarded 14 US Patents in the areas of alternate propulsion and electronics.

Mary serves on the Advisory Board of Enertech Capital and holds a Bachelor of Science in Computer Engineering; Master of Science in Electrical Engineering and an MBA, all from Oakland University.

Keynote Speaker - Alexander Kraus

March 9, 2022 | 09:45 - 10:15 EST
Room: 1067/1068



Alexander Kraus

CTO TÜV SÜD Mobility and Chairman of IAMTS

Global AV Regulations and the Way to Scalable Approvals of CAVs

The keynote will provide an overview about status and readiness of global CAV regulations. Based on best practices and practical examples the possibilities but also limitations to achieve type approvals of highly automated vehicles will be introduced. Impulses for a scalable CAV homologation will be presented.

Speaker Bio:

With a MSc in automotive engineering, Alex Kraus has over 18 years' experience in international management and leadership positions. He has lived in Germany, Austria and Singapore and developed an extensive network within the automotive industry, standards development organizations and governmental institutions globally.

As CTO at TÜV SÜD Mobility Division he is a globally responsible executive based at the TÜV SÜD Headquarters in Munich.

Alex is co-Founder and Chairman of the Board at the International Alliance for Mobility Testing and Standardization (iamts), an international initiative among leading organizations to pave the way towards safe and secure automated and connected driving.

He is board member of the Mobility Council at EU Technology Chamber (EUTEC) and also serves as a member of the Corporate Advisory Group (CAG) to the IEEE SA Board of Governors.

Keynote Speaker - Racquel Asa & Robert Davis

March 9, 2022 | 14:00 - 14:30 EST

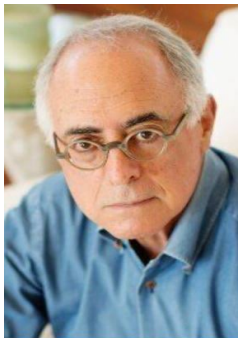
Room: 1067/1068



Racquel Asa

Chief Marketing Officer at Beep Inc. | Electric, Safe, Multi-Passenger Autonomous Mobility Solutions & Networks for Public and Private Sector

Racquel Asa has been at the forefront of every major transportation development and initiative in Florida for the past 10 years, operating as one of the most well-informed sources in the industry. Prior to joining Beep, she worked as an award-winning journalist and anchor for nearly 15 years at television stations in both New York and Florida. Most recently, she was at WFTV in Orlando as the lead Transportation Reporter—covering every significant advancement and enhancement to the state's road infrastructure and growth in the autonomous vehicle industry. It was during her time at WFTV that she covered the launch and growth of Beep, extensively covering the first vehicles launched in Lake Nona. In 2019, Racquel won the Citizen Transportation Advocate of the Year award by the Women in Transportation Central Florida Chapter. The recognition salutes a citizen who is an outspoken supporter of transportation advancement and enhancement in the community. In the same year, her name was entered into Congressional record during Asian American Pacific Islander Heritage month as the nation celebrated and highlighted the accomplishments by Asian Americans who have strengthened our nation. Her advocacy for safer streets and new innovative solutions to improve mobility align with Beep's mission to create a transportation solution that is safe, sustainable, and efficient.



Robert Davis

Founder of Seaside

Robert Davis, a partner at Arcadia Land Company, is the developer and co-founder of Seaside, Florida, the first and most celebrated new urban community in the United States. With over 300 homes, a vibrant town center of stores and restaurants, a range of civic facilities, a theater, inns, and a charter school, Seaside is not only wonderful place to live and visit but it is also considered the most successful example of neo-traditional town planning today. Seaside's success has inspired communities around the world and helped launch the movement now known as the new urbanism. Mr. Davis is a graduate of

Antioch College and Harvard Business School and was a Fellow of the American Academy in Rome. He is an experienced developer who has won industry recognition for projects such as Apogee, a townhouse community in Coconut Grove, Miami.

How to Develop Automated Micromobility Solutions for Smart Communities

The keynote will address how automated micromobility solutions can be successfully deployed in smart communities. Racquel has pioneered many deployments of low-speed autonomous shuttles and will share her experience how to get regulatory approval and how to enable safe operation. As an example, she will explain how the potential of automated micromobility has been assessed in the Seaside community of 30A in Florida and will be supported in her remarks by Robert Davis.

Panel - How Does the Future of CAV Look Like?

*March 9, 2022 | 16:00 - 16:45 EST
Room: 1067/1068*

Software defined system architectures, 5G and next generation satellite networks and AI will play an important role to define the future of CAV. But we also need to consider infrastructure implications of mass-adoption of zero-emission vehicles as well as consequences when self-driving technologies become widely available. In the best case we can really improve the safety on the road and reduce CO2 emissions, in the worst case we increase complexity and fail to build interoperable transportation solutions due to a lack of standardization and collaboration between ecosystem stakeholders.

These topics will be specifically addressed in the panel:

Which are the key drivers to the define the future of CAV mobility?

Which infrastructure modifications are essential to enable CAV to get its full potential?

Which standardization activities need to be enforced to prepare for CAV driven transportation?

**Invited to the panel: Lynx, Transtec, Bu-st, Clemson University, Stantec, Mannik Smith
(Moderated by Rahul Razdan)**

Tutorial Speaker - Daniel Watzenig

March 7, 2022 | 08:00 - 9:00 EST
Virtual



Daniel Watzenig

Professor at Graz University of Technology and Head of Electronics Department at Virtual Vehicle Research, Guest Lecturer at Stanford University

Design of a Purely Electric Autonomous Racecar – Autonomy at the Edge

Autonomous racing is an evolving new sport of racing and is an emerging technology that is rapidly increasing. Several events and series have been launched, including the first international autonomous racing series Roborace [1] (already launched in 2015), the Indy Autonomous Challenge (IAC) [2] 2021 as well as student competitions such as Formula Student Driverless. The spirit of autonomous racing is to push the limits of autonomy in terms of performance and precision. By demonstrating safety, security, and reliability of connected and automated vehicles at the edge, i.e., at high speeds, high dynamics, and adverse weather conditions, a huge long-term impact on passenger car autonomy is expected. The mission of autonomous racing is to build trust on this exciting technology. While others focus on autonomy only, Roborace had a clear vision right from the start: Pioneering racing sports by building fully electric, zero-emission, high-performance autonomous racecars while bringing together the traditional racing fanbase, technical nerds, and digital natives.

Now, Roborace is the world's first purely electric motorsport competition of full-size AI-racing robots in a mixed reality where coding teams from different countries all go for the win. Roborace executes events in physical and virtual environments with distributed geography (USA, UK, EU, UAE and further). After completing Season Beta, Roborace blends into the Season One with its own Metaverse, a coherent mixed reality for humans and robots enabling real-time gameplay.

Our tutorial will guide you through the development of the fully electric Metaverse along with the challenges of the autonomous software stack. The hardware design will include mechanical, thermal, and electrical aspects along with the system integration, durability tests, and performance optimization. You will get insights in steer- and brake-by-wire solutions, cooling concepts and the electric powertrain. We will introduce our racing-tailored sensor suite, computing platform, and the AI-enabled software architecture (perception, localization, planning). Finally, we will present our safety and security concepts to ensure safe racing at all times.

[1] <https://en.wikipedia.org/wiki/Roborace> and <https://roborace.com/>

[2] <https://www.indyautonomouschallenge.com/>

Tutorial Speaker - Raivo Sell, Ph.D.

March 7, 2022 | 09:00 - 10:00 EST
Virtual



Raivo Sell, Ph.D.

Professor in Robotics, Mechanical and Industrial Engineering at Tallinn University of Technology (TalTech)

How to Design a Low Speed Zero-Emission AV Shuttle Operated by Autoware (Focus on Simulation Tools)

AV shuttles are Level 4 automated vehicles designed for specific operational design domain (ODD). These vehicles are mostly driving low-speed in limited geographical areas and serving last-mile delivery or public transport line extensions. As with most of the AVs, here safety is the biggest concern. In order to deploy AV shuttles to the service area several safety related steps are needed to carry out. Simulations are one of these, giving a good opportunity to run a number of scenarios and find out edge cases with compromised safety. However, for the proper simulation, a good vehicle and virtual environment models must be created. The virtual copy of a physical system is called a digital twin and can be used for virtual simulations where the simulation results represent to some degree a physical system behavior in the real world.

This tutorial is focusing on presenting practical design and development experience of AV shuttle powered by open-source software Autoware. Making a proper digital twin out of the target environment and running simulations is another main topic and live presentation of the physical vehicle TalTech iseAuto will be demonstrated on the university campus test track.

Agenda:

AV shuttle iseAuto design concept, system architecture, control system and autonomous driving stack - the open source Autoware

Live demonstration of the AV shuttle from TalTech Campus

Digital twin of the shuttle and the environment, simulation set-up and driving scenarios, virtual testing and physical testing correlation

Simulation demonstration of the digital AV shuttle in the digital test environment of SUNTRAX Q&A

Learning outcome of the tutorial session:

Understanding the advantages of an open-source architecture are to design an AV shuttle

Sharing design and implementation challenges of the AV shuttle system, lessons learnt

Understanding how far you can get with simulation and how to validate AV system behavior in virtual and physical test environments

PolyVerif Workshop

March 7, 2022 | 10:00 - 13:00 EST
Virtual



Dr. M. Ilhan Akbas
*Embry-Riddle
Aeronautical University*



Dr. Rahul Razdan
*Florida Polytechnic
University*

PolyVerif Workshop Schedule

10:00 – 10:10 am – Opening remarks from Dr. Rahul Razdan, Chief Executive Officer, Razdan Research Institute

10:10 – 11:00 am – Workshop presentation “Challenges in Autonomous Vehicle Validation and Verification”, Dr. M. Ilhan Akbas, Assistant Professor, Embry-Riddle Aeronautic University

11:00 am – 12:00 pm – “PolyVerif – Autonomous Vehicle Validation and Verification Methodology”, Mahesh Menase and Shivendra Verma, Acclivis technologies

12:00 – 1:00 pm – PolyVerif Demo

PolyVerif is an open-source validation and verification framework for autonomous vehicles. The framework integrates open-source components such as Autoware, Scenic, and LG Simulator within an overall Design for Experiment structure. PolyVerif also provides multiple pathways (drone, ground, etc.) to build digital twin capability into the simulation environment. PolyVerif provides extensive API access to introduce noise models for sensors, GPS, perception, and path planning functions. Sponsored by Florida Polytechnic University, the PolyVerif framework’s objective is to provide a highly functional research platform.



Tutorial Speaker - Zsolt Szalay & Zoltan Hamar

March 7, 2022 | 13:00 - 14:00 EST
Virtual



Zsolt Szalay

Associate Professor at Budapest University of Technology and Economics

Automotive engineer and reputable expert in advanced automotive technologies like connected and highly automated vehicles, IoT telematics and security of vehicle Cyber-Physical Systems. He is Head of Department of Automotive Technologies at the Budapest University of Technology and Economics and Associate Professor as well as the founder and leader of the BME Automated Drive Lab. His main fields of research interest are the testing and validation processes of CAV technologies and automotive cybersecurity. He is Head of Research & Innovation for ZalaZONE, the new Hungarian Automotive Proving Ground, focusing on the testing and validation of

connected, automated and electrified vehicles. Represents Hungary in the EU GEAR2030 and STRIA initiatives for connected and automated vehicle technology deployment.



Zoltan Hamar

Managing Director at Automotive Proving Ground Zala Ltd.

He is the Chief Executive Officer of the Automotive Proving Ground Zala Ltd. He has many years of experience in test engineering at Knorr-Bremse (focus braking systems).

How to Operate A CAV Testbed

The tutorial speakers are the leading figures behind the most modern proving group in Europe called ZalaZONE which is in particular suited for the validation of autonomous vehicle technologies, located in Zalaegerszeg, Hungary. ZalaZONE has been designed to support the testing of vehicles with highly automated and self-driving functions by providing state-of-the-art procedures and technologies to support the execution of vehicle test simulations. ZalaZONE is a true cyberphysical proving ground which means that both virtual and physical testing is possible. What will be explained in more detail is the Scenario-in-the-Loop (SciL) framework which combines the physical and virtual test environment. The mixed reality based SciL methodology of ZalaZONE can be considered among the most advanced methodological frameworks in the domain of scenario-based CAV testing and validation. ZalaZONE is a close to 700 acre proving ground with a development budget of more than 100 mil EUR. It combines tradition and CAV testing modules and also has Smart City features.

Tutorial Speaker - Charlie Cheng & Joachim Taiber

March 7, 2022 | 14:00 - 15:00 EST

Virtual



Charlie Cheng

Consortium Associate – IAMTS (International Alliance for Mobility Testing and Standardization)

Mr. Cheng is a young professional entrepreneur who has spent the majority of his time in Shanghai, China and Michigan, USA. Mr. Cheng attended China's largest international school, Shanghai American School, which first opened its doors in 1912 and later reopened in 1980 on the grounds of the U.S. Consulate. He received an Economics Degree from Michigan State University. Mr. Cheng has represented various multi-national corporations, testing agencies, economic development corporations, smart mobility testbeds and startups in the mobility and intelligent transportation space. Mr. Cheng's role is to support the Technical Leadership Committee and the various technical

sub-committees. He is also a Senior Consortium Product Support Associate of SAE ITC and based in Detroit, Michigan.



Joachim Taiber

Founder & Managing Director – IAMTS (International Alliance for Mobility Testing and Standardization)

Dr. Joachim Taiber worked for more than a decade for BMW Group in leadership positions addressing R&D process optimization in vehicle development, IT innovation, vehicle to infrastructure interaction and vehicle program management. He was instrumental in planning and implementing the Clemson University International Center of Automotive Research (CUICAR) in South Carolina where BMW Group was a major investor. Furthermore, he developed and implemented the International Transportation Innovation Center (ITIC) which is an advanced mobility testbed embedded in South Carolina's largest business park and he founded the International

Alliance for Mobility Testing and Standardization (IAMTS) which is focused on testbed development and operation for highly automated and fully automated driving and which is supported by major automotive standardization and test organizations such as IEEE, SAE and TUEV. He serves as Managing Director of IAMTS.

How to Develop Standardized Methods and Tool Frameworks for CAV Testing and How to Get Certified CAV Testbeds

The International Alliance for Mobility Testing and Standardization (IAMTS) is a global consortium focused on bringing together an advanced mobility ecosystem to help develop a commonly accepted framework of testing scenarios, verification & validation, certification methods, and terminology to be applied to highly and fully automated driving in context of cyberphysical test infrastructure. The IAMTS community develops and shares best practices to ensure consistent, replicable, reliable testing and supports global harmonization of standards and certifications. The tutorial will provide an overview how driving scenarios can be standardized, how a reference tool framework can be developed for CAV testing and how the IAMTS roadmap looks like to get to certified CAV testbeds.

Industry Panel - How Do Global OEM's Adapt to Regulatory Challenges Utilizing Cyberphysical Test Infrastructure?

March 9, 2022 | 11:00 - 12:00 EST

Academic research contributed substantially to improve AI-methods to be applied in verification and validation processes of highly automated and fully automated systems. Universities were pioneering to create cyberphysical testbeds which lead to scenario-in-the-loop methods to be applied to complex traffic scenarios. Regulators are struggling to find scientifically sound methods that can be integrated in regulatory approval processes to protect the end consumer of CAV systems from a safety and security perspective. We want to discuss what OEM's can learn from research partners in the academic environment to overcome regulatory challenges in the approval of CAV systems by developing advanced cyberphysical test infrastructure environments delivering test results that are being accepted by the authorities.

These topics will be specifically addressed in the panel:

Which academic research results influenced V&V of CAV systems?

Examples of research environments of cyberphysical test infrastructures that influenced V&V processes being applied at OEM's

Where are currently limitations of V&V processes where collaboration with research partners is needed, also in context of standardization.

Which are regulatory challenges that OEM's see that need to be addressed by the research community to help regulators standardize type approval processes for CAV's (and related cyberphysical test infrastructure).

Invited to the panel: Mercedes, Audi, UL, TUEV Sued, Imperial College, TU Budapest, Clemson University (moderated by Joachim Taiber)

Industry Program

Room: 1065

Tuesday, March 8, 2022	
10:15 – 11:55	Industry Stream 1 <i>Moderator: Sean Kelley (Mannik Smith)</i> Tilke Retrospect UL
14:35 – 16:15	Industry Stream 2 <i>Moderator: Jan Cantryn (IEEE SA)</i> Bertrandt Bu-st TUEV Sued Muecke Roth & Company
Wednesday, March 9, 2022	
11:00 – 12:00	Industry Panel - How Do Global OEM's Adapt to Regulatory Challenges Utilizing Cyberphysical Test Infrastructure? <i>Moderator: Joachim Taiber (ITIC)</i> Audi Mercedes UL TU Budapest Imperial College London
14:30 – 15:50	Industry Stream 4 <i>Moderator: Ronald Grosse (Bertrandt)</i> Lynx Stantec Mannik Smith

SunTrax Event

March 8, 2022 | 17:00 - 19:15 EST

Florida's Turnpike Enterprise is proud to welcome ICCVE 2022 Conference attendees as they will be the first to tour the all new SunTrax Innovation and Testing Center located in Auburndale, Florida. The following agenda outlines the various sectors that will be showcased throughout the evening.

17:00 – 17:15	Buses (2) arrive at SunTrax Admin offices for welcome by Florida's Turnpike Enterprise CEO, Ms. Nicola Liquori. Brief overview of SunTrax's history, construction status and points of interest in evening's tour. Tour Guides board buses, 2 guides per bus Restrooms available
17:15 – 17:18	Travel to Campus Welcome Center
17:18 – 17:20	Bus A & B stop outside of the SunTrax Welcome Center. Attendees remain onboard the buses and receive a 2-minute description of the unique attributes of the Welcome Center before moving to Rotation 1 Sectors
17:20 – 17:22	Travel to Rotation 1
17:22 – 17:37	Rotation 1 Bus A – Technology Bay Tour Bus B - Virtual City Pad Presentation
17:37 – 17:42	Travel to Rotation 2
17:42 – 18:05	Rotation 2 Bus A – Braking & Vibration Lanes Tour Bus B - Urban/Suburban Reconfigurable Facades
18:05 – 18:07	Travel to Rotation 3 Sector Drive-By
18:07 – 18:10	Rotation 3 Sector Drive-By Bus A – Pick-Up / Drop Off Simulator Bus B – Geometry Track
18:10 – 18:13	Travel to Rotation 4
18:13 – 18:35	Rotation 4 Bus A – Virtual City Pad Presentation Bus B - Technology Bay Tour
18:35 – 18:40	Travel to Rotation 5
18:40 – 19:05	Rotation 5 Bus A – Urban/Suburban Reconfigurable Facades Bus B - Braking & Vibration Lanes Tour
19:05 – 19:07	Travel to Rotation 6 Sector Drive-By
19:07 – 19:10	Rotation 6 Sector Drive-By Bus A – Geometry Track Bus B - Pick-Up / Drop Off Simulator
19:10 – 19:15	Tour concludes and travel back to SunTrax Administrative Offices
19:15	Tour Guides disembark buses Restrooms available



Day At-a-Glance: Monday, March 7, 2022 - Virtual

08:00 – 10:00	<p style="text-align: center;">Tutorial – Part 1 - Autonomous Vehicle System Development</p> <p style="text-align: center;">8:00-9:00</p> <p style="text-align: center;">Design of a Purely Electric Autonomous Racecar – Autonomy at the Edge <i>Prof. Daniel Watzenig (Virtual Vehicle Research and TU Graz) and Chip Pankow (Roborace and Arrival)</i></p> <p style="text-align: center;">9:00-10:00</p> <p style="text-align: center;">How to Design a Low Speed Zero-Emission AV Shuttle Operated by Autoware (Focus on Simulation Tools) <i>Prof. Raivo Sell (University of Tallinn) and Dr. Rahul Razdan (Florida Polytechnic University)</i></p>
10:00 – 13:00	<p style="text-align: center;">PolyVerif Workshop – Focus Autonomous Vehicle Verification & Validation</p> <p style="text-align: center;"><i>Dr. M. Ilhan Akbas (Embry-Riddle Aeronautical University) and Dr. Rahul Razdan (Florida Polytechnic University)</i></p>
13:00 – 15:00	<p style="text-align: center;">Tutorial – Part 2 – CAV Testing and Mobility Service Development</p> <p style="text-align: center;">13:00-14:00</p> <p style="text-align: center;">How to Operate a CAV Testbed <i>Zsolt Szalay & Zoltan Hamar (APZ - ZalaZONE)</i></p> <p style="text-align: center;">14:00-15:00</p> <p style="text-align: center;">How to Develop Standardized Methods and Tool Frameworks for CAV Testing and How to Get to Certified CAV Testbeds <i>Charlie Cheng & Joachim Taiber (IAMTS)</i></p>

Day At-a-Glance: Tuesday, March 8, 2022 - Hybrid

07:00 – 17:00	Registration <i>South Lobby</i>			
08:35 – 08:45	Opening Ceremony <i>Room: 1067/1068</i>			
08:45 – 09:15	Keynote Speaker VP Project Development <i>Mark de la Vergne (CAVNUE)</i> <i>Room: 1067/1068</i>			
09:15 – 09:45	Keynote Speaker V & the Challenges for L3/L4 Certification from an OEM Perspective <i>Claudia Braun (Audi, Verification & Validation Autonomous Driving)</i> <i>Room: 1067/1068</i>			
09:45 – 10:15	Networking Break <i>South Lobby</i>			
10:15 – 12:00	Technical Sessions & Industry Stream <i>Rooms: 1065, 1067 & 1068</i>			
12:00 – 14:00	Lunch <i>Room: 1067/1068</i>			
14:00 – 14:30	Keynote Speaker Global AV Regulations <i>Alexander Kraus (CTO TUEV Sued Mobility and Chairman of IAMTS)</i> <i>Room: 1067/1068</i>			
14:30 – 16:15	Technical Sessions & Industry Stream <i>Rooms: 1065, 1067 & 1068</i>			
17:00 – 19:15	SunTrax Event <i>*Pre-Registration Required</i>			

Day At-a-Glance: Wednesday, March 9, 2022 - Hybrid

07:00 – 16:00	Registration <i>South Lobby</i>			
08:30 – 08:45	Welcome from the President of Florida Polytechnic University <i>Room: 1067/1068</i>			
08:45 – 09:15	Keynote Speaker How to Prepare Florida's Infrastructure for CAVs <i>Ananth Prasad (President Florida Transportation Builder Association and former Secretary of the Florida Department of Transportation)</i> <i>Room: 1067/1068</i>			
09:15 – 09:45	Keynote Speaker Intertwined Safety and Security Compliance Frameworks for AVs <i>Mary Joyce (Global Vice President & General Manager Critical Systems & Mobility, UL)</i> <i>Room: 1067/1068</i>			
09:45 – 10:15	Keynote Speaker How the American Automobile Association Test and Validates ADAS Systems from a Consumer Perspective <i>Greg Brannon (Director Automotive AAA)</i> <i>Room: 1067/1068</i>			
10:15 – 10:30	Networking Break <i>South Lobby</i>			
10:30 – 12:00	Technical Sessions & Industry Panel <i>Rooms: 1065, 1067 & 1068</i>			
12:00 – 14:00	Lunch <i>Room: 1067/1068</i>			
14:00 – 14:30	Keynote Speaker How to Develop Automated Micromobility Solutions for Smart Communities <i>Beep</i> <i>Room: 1067/1068</i>			
14:30 – 16:00	Technical Sessions & Industry Stream <i>Rooms: 1065, 1067 & 1068</i>			
16:00 – 16:45	Panel How Does the Future of CAV Look? <i>Razdan Research Institute</i> <i>Rooms: 1067 & 1068</i>			
16:45 – 17:00	Farewell Note from General Chair <i>Joachim Taiber (ITIC)</i> <i>Rooms: 1067 & 1068</i>			

Technical Program: Tuesday, March 8, 2022

10:15 - 11:55

ADAS/AV System Development/Cybersecurity

Session Chair: Jae Lee (Toyota)

Room: 1067

Transnational Testing, Operation and Certification of Automated Driving Systems: Perspective from testEPS and Central System Eureka Projects

Jakob Reckenzaun (Virtual Vehicle Research GmbH)

Luca Csanady (Almotive kft.)

Arno Eichberger (Graz University of Technology, Institute of Automotive Engineering)

Alexandre Engelstein (Almotive kft.)

Leander Hörmann (Linz Center of Mechatronics)

Tamas Kiss (Magyar Telekom)

Patrick Luley (JOANNEUM RESEARCH Forschungsgesellschaft mbH)

Matthias Rüther (JOANNEUM RESEARCH Forschungsgesellschaft mbH)

Stefan Schwarz (Bernard Technologies GmbH)

Selim Solmaz (Virtual Vehicle Research GmbH)

Thomas Strasser-Krauss (TOM Robotics GmbH)

Gabor Soos (Magyar Telekom)

Viktor Tihanyi (BME Automated Drive)

Attila Turoczy (AVL Hungary Kft.)

Patrick Weissensteiner (Virtual Vehicle Research GmbH)

Jinwei Zhou (Kontrol GmbH)

Vehicle-in-the-Loop Testing – a Comparative Study for Efficient Validation of ADAS/AD Functions

Christian Schyr (AVL Deutschland GmbH)

Hideo Inoue (Kanagawa Institute of Technology)

Yuji Nakaoka (AVL Japan K.K.)

Eagle Strategy with Local Search for Scenario Based Validation of Autonomous Vehicles

Quentin Goss (Embry-Riddle Aeronautical University)

Mustafa İlhan Akbaş (Embry-Riddle Aeronautical University)

Toward Prioritization of Test Infrastructure Investments for Proving Grounds to Test CAVs

Nils Katzorke (Mercedes-Benz AG)

Using RTK-Based Automated Vehicles to Pre-Mark Temporary Road Marking Patterns for Test Maneuvers of Automated Vehicles

Nils Katzorke (Prague University of Economics and Business)

10:15 - 11:55

Cybersecurity

Session Chair: Klaus Schaaf (DLR)

Room: 1068

Context-Aware Vehicle and Fleet Security Combining a Knowledge Graph and an Object-Oriented Model

Daniel Grimm (Karlsruhe Institute of Technology)

Eric Sax (Karlsruhe Institute of Technology)

Supporting Confidentiality and Integrity on V2V Communications

Elaine Alves Da Rocha Pires (Federal University of Paraná)

Ivan Luiz Pedroso Pires (University of Mato Grosso State)

Luiz Carlos Pessoa Albini (Federal University of Paraná)

A Generative Adversarial Approach for Sybil Attacks Recognition for Vehicular Crowdsensing

Luis Jaimes (Florida Polytechnic University)

Juan Calderon (Universidad Santo Tomas)

Scott Shriver (Florida Polytechnic University)

Antonio Hendricks (Florida Polytechnic University)

Javier Lozada (Florida Polytechnic University)

Sivasundaram Seenith (Bethune Cookman University)

Harish Chintakunta (Florida Polytechnic University)

14:35 - 16:15

Vehicles Sensors

Session Chair: Michael Woon (Retrospect)

Room: 1067

Comparing a Linear Filter with a ML-Based Approach for Modeling Perception Errors of Automated Vehicles

Martin Sigl (BMW AG)

Andreas Lebherz (Graz University of Technology)

Christoph Schütz (BMW AG)

Sebastian Wagner (BMW AG)

Daniel Watzenig (Institute of Automation and Control at Graz University of Technology)

RainbowTag: a Fiducial Marker System with a New Color Segmentation Algorithm

Laszlo Egri (Concordia)

Hamid Nabati (Concordia)

Jia Yuan Yu (Concordia)

Integer Time Series Compression for Holistic Data Analytics in the Context of Vehicle Sensor Data

Christopher Vox (Volkswagen AG)

David Broneske (German Centre for Higher Education Research and Science Studies)

Jan Piewek (Volkswagen AG)

Andreas Udo Sass (Volkswagen AG)

Gunter Saake (Otto-von-Guericke-Universität Magdeburg)

Dynamic Update of Stand-Alone Lidar Model Based on Ray Tracing Using the Nvidia Optix Engine

Relindis Rott (Virtual Vehicle Research GmbH)

Use of Deep Learning Methods for People Counting in Public Transport

Daniel Baumann (Karlsruhe Institute of Technology)

Martin Sommer (Karlsruhe Institute of Technology)

Yannick Schrempf (Karlsruhe Institute of Technology)

Eric Sax (Karlsruhe Institute of Technology)

Open Source Software for Teleoperated Driving

Andreas Schimpe (Institute of Automotive Technology (FTM) at Technical University of Munich (TUM))

Johannes Feiler (Institute of Automotive Technology (FTM) at Technical University of Munich (TUM))

Simon Hoffmann (Institute of Automotive Technology (FTM) at Technical University of Munich (TUM))

Domagoj Majstorović (Institute of Automotive Technology (FTM) at Technical University of Munich (TUM))

Frank Diermeyer (Institute of Automotive Technology (FTM) at Technical University of Munich (TUM))

Safe Corridor: a Trajectory-Based Safety Concept for Teleoperated Road Vehicles

Simon Hoffmann (Technical University of Munich)

Domagoj Majstorović (Technical University of Munich)

Frank Diermeyer (Technical University of Munich)

Development, Verification and KPI Analysis of Infrastructure-Assisted Trajectory Planners

Martin Rudigier (Virtual Vehicle Research GmbH)

Selim Solmaz (Virtual Vehicle Research GmbH)

Georg Nestlinger (Virtual Vehicle Research GmbH)

Kailin Tong (Virtual Vehicle Research GmbH)

A Comparison of Architecture Paradigms for Dynamic Reconfigurable Automotive Networks

Marc Schindewolf (Karlsruhe Institute of Technology)

Hannes Stoll (Karlsruhe Institute of Technology)

Houssem Guissouma (Karlsruhe Institute of Technology)

Andreas Puder (Karlsruhe Institute of Technology)

Andreas Vetter (Mercedes-Benz AG)

Marcel Rumez (Karlsruhe University of Applied Sciences)

Jacqueline Henle (FZI Research Center for Information Technology)

Eric Sax (Karlsruhe Institute of Technology)

Development of a self-Learning Automotive Comfort function: an Adaptive Gesture Control with few-shot-Learning

Marco Stang (Karlsruher Institut für Technologie (KIT))

Simon Stock (Karlsruher Institut für Technologie (KIT))

Simon Müller (Karlsruher Institut für Technologie (KIT))

Eric Sax (Karlsruher Institut für Technologie (KIT))

Wilhelm Stork (Karlsruher Institut für Technologie (KIT))

Technical Program: Wednesday, March 9, 2022

10:30 - 11:50

Cooperative Driving

Session Chair: David Merritt (Transtec)

Room: 1067

Characterizing Minimum Admissible Separation Distances in Heavy Duty Vehicle Platoons

Vivek Sujan (Oak Ridge National Laboratory)

P.T. Jones (Oak Ridge National Laboratory)

Adam Siekmann (Oak Ridge National Laboratory)

Heavy Duty Commercial Vehicle Platooning Benefits for Conventional and Electrified Powertrains

Vivek Sujan (Oak Ridge National Laboratory)

P.T. Jones (Oak Ridge National Laboratory)

Adam Siekmann (Oak Ridge National Laboratory)

Application of Nonlinear Control for Hard Truck Platooning

David Franklin (Southwest Research Institute)

Michiel Ashley (Texas A&M University)

Swaminathan Gopalswamy (Texas A&M University)

Three Connected V2V Applications Based on DSRC Basic Safety Messages

Omkar Dokur (University of South Florida)

Srinivas Katkoori (University of South Florida)

10:30 - 11:50

Traffic Data Management/Autonomous Vehicle Operations

Session Chair: Thomas Guntschnig (AVL)

Room: 1068

A Framework for the Determination of Realistic Usage Profiles for Automated Shuttle Pods

Stephanie Grubmüller (Virtual Vehicle Research GmbH)

Pamela Innerwinkler (Virtual Vehicle Research GmbH)

Integration of Unmanned Aerial Vehicles and LTE: A Scenario-Dependent Analysis

Mumin Ozpolat (Cranfield University)

Saba Al-Rubaye (Cranfield University)

Alex Williamson (Cranfield University)

Antonios Tsourdos (Cranfield University)

Improving Sensing Coverage in Vehicular Crowdsensing Using Location Diversity

Harish Chintakunta (Florida Polytechnic University)

Xin Wang (Florida Polytechnic University)

Luis Jaimes (Florida Polytechnic University)

Perspective-Corrected Extraction of Trajectories from Urban Traffic Camera Using CNN

Julian Strosahl (Elektronische Fahrwerksysteme GmbH)

Joerg Sicherhmann (Elektronische Fahrwerksysteme GmbH)

Maximilian Jesch (Elektronische Fahrwerksysteme GmbH)

David Spieler (University of Applied Sciences Munich)

14:30 - 15:50

Vehicle Safety

Session Chair: Ronnie Chowdhury (Clemson University)

Room: 1067

Spatio-Temporal Clustering of Road Obstacles

Julian Kreibich (Technical University of Munich)

Mario Kuppel (Technical University of Munich)

Automated Vehicle Safety and Deployment: Lessons from Human Crashes

Akhil Shetty (University of California Berkeley)

Hamidreza Tavafoghi (Google)

Alex Kurzhanskiy (University of California Berkeley)

Kameshwar Poola (University of California Berkeley)

Pravin Varaiya (University of California Berkeley)

A Grid-Based Surrogate Safety Measure for Traffic Safety Assessment

Enrico Del Re (Johannes Kepler University Linz)

Pavlo Tkachenko (Johannes Kepler University Linz)

Safety Toolkit for Automated Vehicle Shuttle - Practical Implementation of Digital Twin

Raivo Sell (Tallinn University of Technology)

Ehsan Malayjerdi (Tallinn University of Technology)

Mohsen Malayjerdi (Tallinn University of Technology)

Baris Cem Baykara (Tallinn University of Technology)

14:30 - 15:50

Sustainable Mobility

Session Chair: Jan Cantryn (IEEE SA)

Room: 1068

A Reliable and Simple Method to Estimate the Electric-Vehicle Battery State-of-Health

Vanessa Quintero (Universidad Tecnológica de Panamá)

Claudio Estevez (Universidad de Chile)

Marcos Orchard (Universidad de Chile)

Aramis Pérez (University of Costa Rica)

Jia Yuan Yu (Concordia University)

Xiang Yu (Nanchang Institute of Technology)

EV Ensembles for QoS Based Mitigation of Renewable Production Risk

Stephen Allen (Statkraft Markets)

Robert Shorten (Imperial College London)

A Non-Invasive tyre-Emission Mitigation Strategy for Vehicles with Over-Actuated Traction Control

Robert Shorten (ICL)

A Robust Approach for Inter-Turn Fault Detection of PMSM Used for Autonomous Vehicles

Maliheh Hashemi (Graz University of Technology Dept)

Mohammad Ali Golkani (Graz University of Technology Dept)

Daniel Watzenig (Graz University of Technology Dept)

COVID-19 Health Protocols

Covid 19 Policies and Recommendations

In response to the current COVID-19 pandemic, IEEE ICCVE 2022 has officially moved to a hybrid conference format, where attendees can be either virtual or in-person. For our in-person attendees, we are excited to host a strong in-person experience while implementing protocols that promote awareness and protection. The conference has in place the following procedures and policies.

Before Leaving Home

Be sure to monitor your home country/location's travel requirements to stay current in the event of any restrictions or requirements that may prohibit your ability to travel. If you feel sick, please stay home. We will miss you greatly, but for your recovery, your colleagues' safety, and the health of everyone you may come into contact with, please don't travel.

Mask Wearing and Physical Distancing

Based on [CDC guidelines](#), we ask attendees to wear masks during the conference. Presenters can decide to wear masks or not while presenting their material. The venue will be set up to provide a minimum of 6 feet of distance between presenters and the audience

FPU COVID-19 Policies and Regulations

Please refer to the Florida Polytechnic Website for up-to-date information:

- <https://floridapoly.edu/coronavirus/students.php>
- <https://floridapoly.edu/coronavirus/index.php>

ICCVE will work closely with FPU to promote recommended best practices related to venue cleaning, food handling, and social distancing. FPU asks all people to wear masks inside every building on campus. IEEE ICCVE and FPU will follow all local [Florida](#) and [Polk County](#) ordinances. Hand sanitizer stations will be placed throughout all public areas and meeting space areas of the venue. There are signs throughout the venue encouraging mask wearing, however, the venue will not be policing attendees to wear masks.

What You Can Do to Help Onsite

Follow the [World Health Organization's](#) (WHO) and the [U.S. Centers for Disease Control](#) (CDC) guidelines to prevent the spread of infectious diseases at the event

Discourage physical greetings like handshakes, high fives, fist or elbow bumps, and hugs. Wash your hands frequently with soap and water for 20 seconds or use an alcohol-based hand sanitizer. Maintain social distancing between yourself and anyone who is coughing or sneezing. Avoid touching eyes, nose, and mouth. If you have fever, cough, and difficulty breathing, seek medical care early. Perform a self-check each morning to assess if you are feeling ill or displaying COVID like symptoms. If you are not feeling well, we ask that you remain in your hotel room and attend the conference virtually.

Travel to the U.S. (As of December 6, 2021)

Effective December 6, 2021, all travelers to the U.S. must show proof of full vaccination and a negative COVID-19 test, taken within 1 day, prior to boarding their flight to the U.S. Those traveling by land do not need to provide a negative test. For purposes of entry into the United States, vaccines accepted will include FDA approved or authorized and WHO Emergency Use Listing vaccines. Existing visa policies remain in place. Please check back regularly for the latest information. Please visit the [CDC website](#) for more information on testing and entry requirements regarding international travel.

Attendees agree to these COVID-19 Policies and Recommendations, to abide by all posted safety guidelines, and to release ICCVE from risks associated with attending the ICCVE conference.