

## **1. Title of the Workshop**

**2<sup>nd</sup> Workshop on Secure connected vehicles: digital twin, UAVs, and smart transportation**

## **2. Format (the joint workshops are a full-day workshop)**

Full-day

## **3. Organizers (full names, complete addresses, phone numbers, and email addresses)**

Madhusudan Singh (Long Island University)

1 University Plaza, Brooklyn, New York, USA-11201

Tel.: +1- (814) 737-8930

Email: [Madhusudan.Singh@liu.edu](mailto:Madhusudan.Singh@liu.edu)

Dhananjay Singh (Penn State University)

201 Old Main, University Park, PA, USA-16802

Tel.: +1 (541) 851-6277

Email: [dsingh@psu.edu](mailto:dsingh@psu.edu)

Kei Sakaguchi (Institute of Science Tokyo)

2-12-1-S3-6, Ookayama, Meguro-ku, Tokyo, Japan 152-8550

TEL: +81-3-5734-2860

Email: [sakaguchi@mobile.ee.titech.ac.jp](mailto:sakaguchi@mobile.ee.titech.ac.jp)

Ziran Wang (Purdue University)

HAMP G133, 550 Stadium Mall Drive, West Lafayette, Indiana 47907

TEL: +1(765)-494-2154

Email: [ziran@purdue.edu](mailto:ziran@purdue.edu)

Tao Yu (Institute of Science Tokyo)

2-12-1-S3-6, Ookayama, Meguro-ku, Tokyo, Japan 152-8550

TEL: +81-3-5734-2860

Email: [yutao@mobile.ee.titech.ac.jp](mailto:yutao@mobile.ee.titech.ac.jp)

Mihai Kocsis (FZI Forschungszentrum Informatik Karlsruhe)  
Address: Haid-und-Neu-Straße 10–14 76131 Karlsruhe, Germany  
TEL: +49 721 9654-439  
Email: [kocsis@fzi.de](mailto:kocsis@fzi.de)

Abhijit Sarkar (Virginia Tech Transportation Institute)  
Address: 3500 Transportation Research Plaza, Blacksburg, Virginia, 24060, USA  
TEL: +1-540231528  
Email: [asarkar@vtti.vt.edu](mailto:asarkar@vtti.vt.edu)

Marc-Rene Zofka (FZI Forschungszentrum Informatik Karlsruhe)  
Address: Haid-und-Neu-Straße 10–14 76131 Karlsruhe, Germany  
TEL: +49 721 9654-366  
Email: [zofka@fzi.de](mailto:zofka@fzi.de)

Tobis Fleck (FZI Forschungszentrum Informatik Karlsruhe)  
Address: Haid-und-Neu-Straße 10–14 76131 Karlsruhe, Germany  
TEL: +49 721 9654-216  
Email: [tobias.fleck@fzi.de](mailto:tobias.fleck@fzi.de)

Marius J. Zöllner (FZI Forschungszentrum Informatik Karlsruhe)  
Address: Haid-und-Neu-Straße 10–14 76131 Karlsruhe, Germany  
TEL: +49 721 9654-202  
Email: [zoellner@fzi.de](mailto:zoellner@fzi.de)

Raoul Zöllner (Heilbronn University)  
Address: Max Planck Str. 39, 74081, Heilbronn, Germany  
TEL: +4971315046682  
Email: [zoellner@hs-heilbronn.de](mailto:zoellner@hs-heilbronn.de)

#### **4. Abstract (maximum of 300 words)**

Autonomous vehicles unmanned aerial vehicles (UAVs), and digital twin technologies are just a few of the developments that have changed the mobility landscape due to the quick development of linked vehicles and smart transportation networks. These developments hold the possibility of hitherto unheard-of levels of sustainability, safety,

and efficiency in transportation. They do, however, also pose serious difficulties in maintaining privacy, security, and resistance to cyber-physical attacks.

With an emphasis on three new pillars—digital twin technology, UAV integration, and the larger smart transportation ecosystem—this session explores the crucial elements of protecting connected cars and smart transportation networks. In order to enable proactive security measures, participants will investigate how digital twins might be used to model, track, and forecast vehicle behavior and vulnerabilities. The integration of UAVs into transportation networks will also be covered in the event, along with privacy issues, secure communication protocols, and real-time threat mitigation techniques.

The workshop seeks to promote multidisciplinary cooperation and innovation in safe transportation solutions by integrating perspectives from government, business, and academia. Secure V2V and V2X communication, blockchain-based car security, AI-powered threat detection, and regulatory frameworks for intelligent transportation systems are some of the subjects covered. Come experience the future of mobility, where security and technology work together to build a more intelligent and safe transportation system.

## **5. List of Topics**

- Vehicle-to-Everything (V2X) Security
- Privacy-Preserving Vehicular Data Sharing
- Blockchain and AI for Vehicular Security
- Cryptographic Protocols for Automotive Systems
- Applications of digital twins for CAVs and smart transportation
- Wireless communication innovations for CAVs using digital twins
- Advanced simulation technologies for CAVs in digital twins with game engines and mixed-reality
- Multi-modal sensing integration for smart mobility digital twins
- Real-time Data Processing and Edge Computing from Multi Source Data
- AI and Machine Learning Models for Real-time Decision Making in Digital Twins
- Integration of UAVs in Smart Traffic Management and traffic incident management
- Open datasets targeting connected mobility

**6. Tentative List of Presenters (including invited speakers or paper presenters) and A draft schedule (All speakers are expected to be in person)**

| <b>Time</b>          | <b>Topic</b>   | <b>Speaker</b>                                   |
|----------------------|--|--|
| <b>08:45 - 09:00</b> | Introduction and Welcome   | Organizers                                       |
| <b>09:00 - 09:25</b> | Next-Generation Vehicular Communication Networks: Resilience, Twins, and Artificial Intelligence | Walid Saad (Virginia Tech)                       |
| <b>09:25 – 09:50</b> | The Role of Generative AI for Smart Connected Mobility   | Cristian Berger (University of Gothenburg)       |
| <b>09:50 – 10:15</b> | TBD  | Manabu Tsukada (University of Tokyo)             |
| <b>10:15 - 10:30</b> | Coffee Break   |  |
| <b>10:30 – 12:00</b> | 6 Contributed Papers (15" each)  | TBA  |
| <b>12:00 – 13:15</b> | Lunch  |  |
| <b>13:15 – 13:40</b> | Real World Test Labs as Essential Tool for ADAS Development                                      | Michael Frey (Karlsruhe Institute of Technology) |
| <b>13:40 – 14:05</b> | Smart City Transportation Systems for Connected Vehicles and Collision Prediction                | Dhananjay Singh (Penn State University)          |
| <b>14:05 – 14:30</b> | Hybrid autonomous driving enabled by smart mobility digital twin                                 | Kei Sakaguchi (Institute of Science Tokyo)       |
| <b>14:30 – 14:45</b> | Coffee Break   |  |
| <b>14:45 – 16:00</b> | 5 Contributed Papers (15" each)  | TBA  |

|                      |                  |  |
|----------------------|------------------|--|
| <b>16:00 – 16:10</b> | Coffee Break     |  |
| <b>16:10 – 16:50</b> | Panel Discussion | Moderator: Dhanajay Singh, Mihai Kocsis<br>Panelist: TBA |
| <b>16:50 – 17:00</b> | Conclusion       | Organizers   |

## 7. Corresponding Technical Committee in IEEE ITSS

Mihai Kocsis (FZI Forschungszentrum Informatik Karlsruhe)  
Address: Haid-und-Neu-Straße 10–14 76131 Karlsruhe, Germany  
TEL: +49 721 9654-439  
Email: [kocsis@fzi.de](mailto:kocsis@fzi.de)

Tao Yu (Institute of Science Tokyo)  
2-12-1-S3-6, Ookayama, Meguro-ku, Tokyo, Japan 152-8550  
TEL: +81-3-5734-2860  
Email: [yutao@mobile.ee.titech.ac.jp](mailto:yutao@mobile.ee.titech.ac.jp)

Dhananjay Singh (Penn State University)  
201 Old Main, University Park, PA, USA-16802  
Tel.: +1 (541) 851-6277  
Email: [dsingh@psu.edu](mailto:dsingh@psu.edu)