Call for Workshop Proposals

26th IEEE International Conference on Intelligent Transportation Systems

The 26th edition of the IEEE International Conference on Intelligent Transportation Systems (ITSC 2023) is the annual flagship conference sponsored by the IEEE Intelligent Transportation Systems Society (ITSS). This event hosts an attractive agenda of technical contributions, keynote presentations, tutorials, special sessions, and workshops on topics related to the field of Intelligent Transportation Systems (ITS). The conference aims to gather researchers and practitioners working in this field towards sharing, discussing, and opening new paths in the theory, analysis, simulation, data-based modelling, experimentation, deployment, and case studies embracing transportation and mobility at their core. In particular, ITSC 2023 builds upon its motto to invite and encourage prospective authors to present results, findings, perspectives, and developments related to the implementation and deployment of ITS applications that consider human interaction at the core of their design.

ITSC 2023 solicits proposals for half-day and full-day workshops covering topics relevant to the field of intelligent transportation systems and its applications. Interested organizers are invited to submit their tutorial proposals in the topic areas listed in the Call for Papers of the conference (https://2023.ieee-itsc.org/call-for-paper/call-for-papers/).

The proposal for a workshop should include title; contents of the workshop; a list of topics of interest; website; details of the organizers; a list of potential contributors with their affiliations, contact e-mails, and abstracts; information about the target audience and expected attendance; invited speakers; and materials needed to implement the workshop. Proposals must be submitted electronically by following the instructions available in the conference website (https://2023.ieee-itsc.org/). The deadline is March 1st, 2023.

Disclaimer 1: any workshop proposal that is incomplete and/or is not submitted by following this form will not be evaluated for its inclusion in the program of the conference.

Disclaimer 2: The proposal should describe how the workshop will be organized to encourage an active interaction between presenters and attendance.

Disclaimer 3: Attendance at workshops will be subject to an additional fee, in addition to the Conference registration fee. Thus, all workshop session participants (including organizers and presenters) will be required to pay a workshop attendance fee due to the venue hire cost and catering costs.

Disclaimer 4: unless otherwise imposed by organizational constraints, workshops will be held on September 24th, 2023.

Further enquiries can be forwarded to: contact@2023.ieee-itsc.org
Workshop Proposal

• Title:

Building reliable datasets for Autonomous Vehicles

• Contents:

  o **Motivation and objectives.**
    This workshop aims to delve into the various motivations driving the development of reliable datasets for autonomous vehicles, including safety, performance, legal and regulatory compliance, and testing and validation. Reliable datasets play a crucial role in ensuring the safety of passengers, pedestrians, and other road users by providing accurate data to the vehicle's sensors. Furthermore, the data quality significantly impacts the vehicle's performance, enabling it to make better decisions and operate more efficiently. In addition, legal and regulatory requirements necessitate collecting and storing data on the vehicle's operations. Finally, reliable datasets are vital for testing and validating the performance of autonomous vehicles by simulating a range of scenarios to assess their ability to respond to different situations. Ultimately, developing reliable datasets is fundamental to the safe and effective deployment of autonomous vehicles. The workshop will bring together leading experts in the field to share their knowledge and insights on hardware and software methods and techniques used in the construction of these datasets. This event represents a unique opportunity for attendees to expand their understanding of the subject matter and gain practical insights from the experiences of industry and academic leaders.

The objectives of such a workshop would include:
• Increasing understanding of the technical challenges involved in collecting and processing data for autonomous driving, including hardware, synchronization, calibration, and software tools.
• Identifying best practices and standards for data collection and annotation, to ensure that datasets are of high quality and can be used effectively for training and evaluating autonomous driving systems.
• Facilitating collaboration and sharing of resources among researchers and practitioners working in the field.
• Providing a forum for discussing the latest advances and emerging trends in autonomous driving data collection and processing.
• Providing an opportunity for attendees to network and establish connections with others in the field.
Relevance to the ITS community.
Our workshop about data for autonomous driving would be highly relevant to the ITS (Intelligent Transportation Systems) community for several reasons:

1. Autonomous driving is a key technology for the development of intelligent transportation systems, and accurate and reliable datasets are essential for the development and evaluation of autonomous driving systems.
2. The ITS community is focused on the development of technologies and systems that improve safety, efficiency, and sustainability in transportation, and autonomous driving has the potential to significantly contribute to these goals.
3. As autonomous driving technology is still in the development phase, the ability to share and learn from high-quality datasets is important for the advancement of the technology.
4. This workshop would provide a platform for researchers and practitioners in the ITS community to share their knowledge and experience, identify best practices and standards, and collaborate on new research and development projects.
5. It would also provide an opportunity for ITS community members to stay up-to-date on the latest advances and trends in autonomous driving data collection and processing, and to network with other experts in the field.

Topics of interest.

1. **Data collection**: Techniques for collecting high-quality sensor data (e.g., lidar, radar, camera, GPS, IMU) from autonomous vehicles, including hardware specifications, synchronization, and calibration methods.
2. **Annotation and labelling**: Best practices for annotating and labelling autonomous driving datasets, including object detection, semantic segmentation, and scene understanding.
3. **Quality assurance**: Methods for ensuring the quality and consistency of autonomous driving datasets, including data validation and statistical analysis.
4. **Dataset management**: Techniques for managing and organizing large autonomous driving datasets, including data storage, backup, and distribution.
5. **Tooling**: Software tools and frameworks for processing and analysing autonomous driving datasets, including data visualization, pre-processing, and data augmentation.
6. **Dataset benchmarking**: Evaluation metrics and benchmark datasets for comparing the performance of autonomous driving systems.
7. **Privacy and security**: Approaches to protecting the privacy and security of autonomous driving datasets, including data anonymization and encryption.
8. **Explainability and interpretability**: Techniques for understanding and interpreting the decisions made by autonomous driving systems, including model explainability and interpretability.
9. **New trends and challenges**: Discussion of new trends and challenges in the field of autonomous driving datasets such as multi-modal, multi-object and multi-vehicle datasets, and how to effectively use them for training and evaluating autonomous driving systems.
Dedicated website.

Format: Full day
- 08:15 am - 08:30 am: Opening
- 08:30 am - 10:15 am: Three presentations (30 to 40 minutes each)
- 10:15 am - 10:30 am: Coffee break
- 10:30 am - 11:30 am: Two presentations
- 11:30 am - 12:00 am: Panel discussion
- 12:00 am - 01:00 pm: Lunch break
- 01:00 pm - 03:00 pm: Three presentations
- 03:00 pm - 03:30 pm: Coffee break
- 03:30 pm - 04:30 pm: Didactic dataset inspection

Organizers (names, affiliations, emails, and short bio):
- Dr. Julie Stephany Berrio Perez
  - Research Associate
  - Australian Centre for Field Robotics (The University of Sydney)
  - Julie.berrioperez@sydney.edu.au
  - Bio: received the B.S. degree in Mechatronics Engineering in 2009 from Universidad Autonoma de Occidente, Cali, Colombia, a M.E. degree in 2012 from the Universidad del Valle, Cali, Colombia and Ph.D. degree in 2021 from the University of Sydney, Sydney, Australia. Her research interest includes semantic mapping, long-term map maintenance, machine learning and point cloud processing.

- Dr. Stewart Worrall
  - Senior Research Fellow
  - Australian Centre for Field Robotics (The University of Sydney)
  - Stewart.worrall@sydney.edu.au
  - Bio: received the Ph.D. from the University of Sydney, Australia, in 2009. He is currently a Senior Research Fellow with the Australian Centre for Field Robotics (ACFR), University of Sydney. His research is focused on the study and application of technology for vehicle automation and improving safety. He is currently the group leader of the Intelligent Transportation Systems group at the ACFR.

- Dr. Mao Shan
  - Research Fellow
  - Australian Centre for Field Robotics (The University of Sydney)
  - Mao.shan@sydney.edu.au
  - Bio: Mao Shan received the B.S. degree in electrical engineering from the Shaanxi University of Science and Technology, Xi’an, China, in 2006, and the M.S. degree in automation and manufacturing systems and Ph.D. degree from the University of Sydney, Australia, in 2009 and 2014, respectively. He is currently a Research Fellow with the Australian Centre for Field Robotics, the University of Sydney. His research interests include autonomous systems, localisation, and tracking algorithms and applications.
- Dr. Sepehr Ghasemi Dehkordi
  - Portfolio leader – Next generation transport systems
  - National Transport Research Organisation - Australian Road Research Board (ARRB)
  - Sepehr.Ghasemi@arrb.com.au
  - Bio: Sepehr Dehkordi is a senior technology leader at the Australian Road Research Board (ARRB). He has a PhD in Control and Automation Engineering and conducts interdisciplinary research in control theory, robotics, transportation, mobility & AI. Previously, Sepehr was a Research Associate at the Centre for Accident Research and Road Safety-Queensland (CARRS-Q), working on various safety aspects of automated vehicles. He was involved in one of the first public automated vehicle demonstrations driven on public roads in Australia. In 2021, Sepehr joined R&D team to lead research, definition and development of sensor fusion, computer vision and machine learning algorithms to create situational awareness solutions. Sepehr’s efforts in Intelligent Transportation System (ITS) and autonomous system development were recognised, and he was nominated for Young Professional National Award in 2019 by ITS-Australia association.

- Potential contributors to the workshop (names, affiliations, contact information, abstracts (if available):
  - Prof. Alexander Carballo (TBC)
    - Institute of Innovation for Future Society Mobility Research at University of Nagoya
    - Email: alexander@g.sp.m.is.nagoya-u.ac.jp
    - Bio: Prof. Carballo received his bachelor’s degree in computer engineering from Costa Rica Institute of Technology in 1996. He worked as lecturer for the undergraduate program of the Department of Computer Science at Costa Rica Institute of Technology from 1996 to 2006. In 2006 he joined the Intelligent Robot Laboratory at University of Tsukuba as research student, where he obtained the Doctor of Engineering degree in Computer Science in 2011. He worked at the Research and Development department of Hokuyo Automatic Co. Ltd. from 2011 until 2017. He is currently appointed as designated Associate Professor at Nagoya University. His research interests include machine learning, autonomous vehicles, robot navigation, machine perception and sensor fusion.
  - Prof. Fisher Yu (Confirmed)
    - Assistant Professor, ETH Zürich
    - Email: fisheryu@ethz.ch
    - Bio: Prof. Yu obtained his Ph.D. degree from Princeton University and became a postdoctoral researcher at UC Berkeley afterwards. He direct the Visual Intelligence and Systems (cv.ethz.ch) Group in the Computer Vision Lab. His goal is to build perceptual systems capable of performing
complex tasks in complex environments. His research is at the junction of machine learning, computer vision, and robotics. He currently works on closing the loop between vision and action.

- Prof. Huijing Zhao and Yancheng Pan (Confirmed)
  - Professor, Peking University
  - Email: zhaohj@pku.edu.cn, panyancheng@pku.edu.cn
  - Bio: Huijing Zhao received B.S. degree in computer science from Peking University in 1991. She obtained M.E. degree in 1996 and Ph.D. degree in 1999 in civil engineering from the University of Tokyo, Japan. From 1999 to 2007, she was a postdoctoral researcher and visiting associate professor at the Center for Space Information Science, University of Tokyo. In 2007, she joined Peking University as a tenure-track professor at the School of Electronics Engineering and Computer Science. She became an associate professor with tenure on 2013 and was promoted to full professor on 2020. She is now a full professor at the School of Artificial Intelligence, Peking University. She has research interest in several areas in connection with intelligent vehicle and mobile robot, such as machine perception, behavior learning and motion planning, and she has special interests on the studies through real world data collection. She has co-authored more than 100 research papers published in refereed journals and topic level conferences. She serves as the PIs of a number of national and bi-national projects, and broad collaborations with industry. She is a co-chair of the IEEE RAS Technical Committee AGV-ITS. She serves as an associate editor of the IEEE Trans. on Intelligent Vehicle since 2016, and also at the conferences such as IROS17,21-22, IV17-22, ITSC18-22.

- Prof. Jiaqi Ma (Confirmed)
  - Associate Professor, University of California
  - Email: jiaqima@ucla.edu
  - Bio: Professor Jiaqi Ma is an Associate Professor at the UCLA Samueli School of Engineering and Associate Director of UCLA Institute of Transportation Studies. Prior to that, he was Assistant/Associate Professor and Academic Director of the University of Cincinnati Advanced Transportation Collaborative, Project Manager and Research Scientist with Leidos working at the Federal Highway Administration Turner-Fairbank Highway Research Center, and a contractor researcher at the Virginia Transportation Research Council of the Virginia Department of Transportation (DOT). He has led and managed many research projects worth of a total value of more than $20 million funded by U.S. DOT, NSF, state DOTs, and other federal/state/local programs covering areas of smart transportation systems, such as vehicle-highway automation, Intelligent Transportation Systems (ITS), connected vehicles, shared mobility, and large-scale smart system modeling and simulation, and artificial intelligence and advanced computing applications in transportation. He is Editor in Chief of the IEEE Open Journal of Intelligent
Transportation Systems, and Associate Editor of Nature Scientific Reports, Journal of Intelligent Transportation Systems, and ASCE Open. He is Member of the Transportation Research Board (TRB) Standing Committee on Vehicle-Highway Automation, Member of TRB Standing Committee on Artificial Intelligence and Advanced Computing Applications, Member of American Society of Civil Engineers (ASCE) Connected & Autonomous Vehicles Impacts Committee, publication board member of IEEE ITS Society, Co-Chair of the IEEE ITS Society Technical Committee on Smart Mobility and Transportation 5.0.

Prof. Chen Feng and Yiming Li (Confirmed)
- Assistant Professor, NYU Tandon School of Engineering
- Title: V2X-Sim: Multi-agent collaborative perception dataset and benchmark for autonomous driving
- Email: cfeng@nyu.edu, yimingli@nyu.edu
- Bio: Chen Feng is an assistant professor with a joint appointment to Tandon’s Department of Civil and Urban Engineering and Department of Mechanical and Aerospace Engineering. He earned a bachelor’s degree in Geodesy and Geomatics in 2010 from Wuhan University, in China, and then entered the University of Michigan, in Ann Arbor, where he earned an MSE in Construction Engineering and Management (2012), an MSE in Electrical Engineering: Systems (2013), and a Ph.D. in Civil Engineering (2015). Prior to NYU, Chen was a research scientist at the Computer Vision Group at the Mitsubishi Electric Research Laboratories (MERL), where he worked on visual simultaneous localization and mapping (vSLAM) and deep learning for autonomous driving and robotics and invented several patented algorithms. Chen Feng is currently leading a multidisciplinary research group named AI4CE (pronounced as A-I-force), which stands for Automation and Intelligence for Civil Engineering, and aims to advance robot vision and machine learning through multidisciplinary use-inspired research that originates from civil/mechanical engineering domains. Research Interests: Robot Vision and Machine Learning, Photogrammetry and Remote Sensing, Augmented and Virtual Reality, with applications in Civil and Mechanical Engineering.

- Bio: Yiming Li is a PhD student in AI4CE Lab at New York University (NYU) with Dean’s PhD Fellowship and Future Leader Fellowship. During my first PhD year, I have been fortunate to spend time at MARS Lab in Tsinghua University, MediaBrain Group in Shanghai Jiao Tong University (SJTU), and AIR in Tsinghua University. I received my bachelor’s degree in mechanical engineering from Tongji University (TJU) with the highest Honor Academic Star, where I work in Vision4robotics Group. My research lies in the intersection of robotics, computer vision, and
machine learning, whose goal is to promote the robotics autonomy by advancing robot perception and learning capability in complex scenarios. More specifically, my research interests include: (1) computer vision and robotics: collaborative perception, embodied vision, egocentric vision, 3D scene understanding; (2) machine learning: adversarial learning, representation Learning, imitation Learning, multimodal learning, and graph learning; (3) applications: cyber-physical systems, autonomous systems, construction automation, and human-robot interaction.

Prof. Zaiqing Nie and Haibao Yu (Confirmed)

- Research Engineer, Institute for AI Industry Research (AIR), Tsinghua University
- Title: Data-driven Vehicle-infrastructure Cooperative Autonomous Driving
- Email: zaiqing@air.tsinghua.edu.cn, yuhaibao@air.tsinghua.edu.cn
- Bio: Dr. Zaiqing Nie is a Named Professor of Tsinghua University and Principal Researcher of AIR. He graduated with a doctoral degree from Arizona State University in 2004, where his supervisor was Subbarao Kambhampati, previous president of the US Association for the Advancement of Artificial Intelligence. He was previously a graduate from Department of Computer Science and Technology, Tsinghua University. He joined Alibaba Group in October 2017 as Director of AI Lab Beijing R&D Center and Chief Scientist behind Tmall Genie, and he was also on AI Expert Panel under the Ministry of Education. Under Nie’s leadership, the AI team behind Tmall Genie innovated key algorithms of the voice assistant through far-field voice recognition, natural language understanding, personalized recommendation, etc., revolutionizing personal assistant services of the AIoT era. Prior to working at Alibaba, Dr. Nie was the Principal Researcher at Microsoft Research Asia, in charge of the R&D of natural language understanding and entity mining. He also initiated and developed the Microsoft Academic, Human Resources Cube, and the enterprise assistant EDI, and served as the technological head of LUIS, Microsoft’s natural language understanding platform.
Intended audience and expected attendance for the workshop (including a clear statement how interaction between presenters and attendance will be fostered):

The workshop would attract a diverse group of attendees with a range of backgrounds and experiences in the field of autonomous driving. The intended audience for our workshop includes:

- Researchers and academics working on autonomous driving and related fields, such as computer vision, machine learning, and robotics.
- Engineers and practitioners working in the automotive and transportation industries, including those involved in the development, testing, and deployment of autonomous driving systems.
- Data scientists and machine learning engineers working on developing and analysing autonomous driving datasets.
- Government officials and policy makers working on transportation and safety regulations related to autonomous driving.

The interaction between presenters and attendees would likely take several forms, including:

- Presentations: Presenters would give talks on their research and work in the field of autonomous driving datasets, highlighting their findings and experiences. Attendees would have the opportunity to ask questions and engage in discussions about the presented material.
- Panels and roundtable discussions: the workshop will include panel discussions sessions where attendees can engage in more informal conversations with experts in the field.
- Interactive session: some of the talks will include a short tutorial about how to use their tools to have access to their data collected.

The workshop would be designed to foster interaction and collaboration between attendees and presenters. The goal is to create an environment where attendees can learn from experts in the field, share their own experiences and knowledge, and establish new connections and collaborations.

Invited speakers (if any):

- Dr. Holger Caesar (Confirmed)
  - Assistant Professor at the Intelligent Vehicles group of TU Delft
  - E-mail: h.caesar@tudelft.nl
  - Bio: Dr. Holger Caesar is an Assistant Professor at the Intelligent Vehicles group of TU Delft in the Netherlands. The Intelligent Vehicles group is led by Prof. Dr. Dariu Gavrila and part of the Cognitive Robotics department. Holger's research interests are in the area of Autonomous Vehicle perception and prediction, with a particular focus on scalability of learning and annotation approaches. Previously Holger was a Principal Research Scientist at an autonomous vehicle company called Motional (formerly nuTonomy). There he started 3 teams with 20+ members that focused on Data Annotation, Autolabeling and Data Mining. Holger also developed the influential autonomous driving datasets nuScenes and
nuPlan and contributed to the commonly used PointPillars baseline for 3d object detection from lidar data.

- **Prof. Kilian Weinberger (Confirmed)**
  - Professor in the Department of Computer Science at Cornell University
  - E-mail: kqw4@cornell.edu
  - Bio: Prof. Weinberger received his Ph.D. from the University of Pennsylvania in Machine Learning under the supervision of Lawrence Saul and his undergraduate degree in Mathematics and Computing from the University of Oxford. During his career he has won several best paper awards at ICML (2004), CVPR (2004, 2017), AISTATS (2005) and KDD (2014, runner-up award). In 2011 he was awarded the Outstanding AAAI Senior Program Chair Award and in 2012 he received an NSF CAREER award. He was elected co-Program Chair for ICML 2016 and for AAAI 2018 and became president elect of the ICML society in 2021. Kilian Weinberger's research focuses on Machine Learning and its applications. In particular, he focuses on learning under resource constraints, metric learning, Gaussian Processes, computer vision and deep learning. Before joining Cornell University, he was an Associate Professor at Washington University in St. Louis and before that he worked as a research scientist at Yahoo! Research in Santa Clara.

- **Materials and equipment needed for the workshop:**
  - Audio-visual equipment such as a projector, screen, speakers and microphone
  - A presentation remote control
  - Power strips, extension cords, and power adapters

- **Contact details of the proposers (email, postal address, etc):**
  - Dr. Julie Stephany Berriop Perez
    - Research Associate
    - Australian Centre for Field Robotics (The University of Sydney)
    - Julie.berrioperez@sydney.edu.au
  - Dr. Stewart Worrall
    - Senior Research Fellow
    - Australian Centre for Field Robotics (The University of Sydney)
    - Stewart.worrall@sydney.edu.au
  - Dr. Mao Shan
    - Research Fellow
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    - Mao.shan@sydney.edu.au
  - Dr. Sepehr Ghasemi Dehkordi
    - Portfolio leader – Next generation transport systems
    - National Transport Research Organisation (NTRO), Australian Road Research Board (ARRB)
    - Sepehr.Ghasemi@arrb.com.au