



# SAE 2023 汽车智能与网联技术

INTELLIGENT AND CONNECTED VEHICLES SYMPOSIUM

# 国际学术会议

## 2023 年 9 月 22-23 日 江西 南昌

September 22~23 Nanchang, Jiangxi





# RoboSense LiDAR

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## 指导单位

**GUIDING AUTHORITY** 



## 主办单位

HOSTS





(水) 南昌智能新能源汽车研究院

## 协办单位

CO-HOSTS

江铃汽车集团有限公司

Jiangling Motors Group Co.,Ltd.

江西省汽车产业科技创新联合体

Jiangxi Automobile Industry Science and Technology Innovation Consortium

南昌市汽车制造产业联合会

Nanchang Automobile Manufacturing Industry Federation

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### **HOST INTRODUCTION**



SAE International is a global association committed to advancing mobility knowledge and solutions for the benefit of humanity. By engaging nearly 200,000 engineers, technical experts and volunteers, we connect and educate mobility professionals to enable safe, clean, and accessible mobility solutions. We act on two priorities: encouraging a lifetime of learning for mobility engineering professionals and setting the standards for industry engineering. We strive for a better world through the work of our philanthropic SAE Foundation, including award-winning programs like A World In Motion® and the Collegiate Design Series<sup>TM</sup>.

SAE International, as one of the world's largest standard development organizations in the mobility industries, we provide society and the global mobility engineering community with:

- Neutral forums that convene to address society's mobility needsw
- · The most reliable and comprehensive collection of engineering resources that advance mobility
- STEM education and professional development programs that inspire and build mobility's current and future workforce
- Consensus-based standards that advance quality, safety and innovation
- · A global community whose collective wisdom makes mobility safe, clean and accessible



Nanchang Automotive Institute of Intelligence & New Energy, Tongji University (NAIINE) was established by Tongji University and Nanchang Municipal government in November 2019. It is a new type of private and non-enterprise R&D institution in the nature of science and technology sector. Relying on the discipline and talent advantages of Tongji University, the policy support of Jiangxi Province, Nanchang City and Xiaolan Development Zone, as well as the industrial advantages of JMCG, NAIINE has built an integration innovation institute of talent introduction and training, technology research and development, enterprise incubation, and industrial services. NAIINE focuses on innovative research and development in the fields of intelligent and connected vehicles, powertrain systems, and big data, while incubating a number of technology-based industrialization companies in frontier fields such as new energy powertrain, intelligent driving, and new materials.

## 主办单位介绍



SAE International 是一家全球性的学会组织,致力于推动造福人类的航空航天、汽车、商用车及工程农用机械行业知识与解决方案的发展。为了实现安全、清洁、便捷的交通运输解决方案,SAE在全球建立了拥有 20 万名工程师、技术专家及志愿者的网络平台,并不断培养行业专业人才。我们工作的两大优先事项是:激励航空航天、汽车、商用车及工程农用机械行业工程专业人才的终身学习,并为行业工程设定标准。我们通过慈善机构 SAE 基金会的工作努力创造一个更美好的世界,包括 A World in Motion(运动中的世界)和 Collegiate Design Series(大学生设计系列)等项目。

SAE International,作为目前全球最大的航空航天、汽车、商用车及工程农用机械行业的标准制定组织之一,始终致力于:

- 搭建中立平台,促进解决社会的出行需求
- 提供全球最可靠、最全面的工程资源,促进行业发展
- · 通过 STEM 教育与职业发展项目,激发与培养行业现有与未来劳动力
- 通过共识的标准,提高产品质量、安全性和创新性
- 搭建全球性的社区,通过集体智慧让出行更安全、更清洁、更便捷



(同济大学) 南昌智能新能源汽车研究院(以下简称"研究院")成立于 2019 年 11 月,是由同济大学与南昌市政府签约成立的科技类民办非企业性质的新型研发机构。研究院依托于同济大学的学科和人才优势,江西省、南昌市、小蓝经开区的政策支持,以及江铃汽车集团的产业优势,建成集人才引培、技术研发、企业孵化、产业服务于一体的同济大学校地合作的新型汽车创新研发机构。研究院重点围绕智能网联、动力系统、大数据等领域开展创新研发,同时在新能源动力、智能驾驶、新材料等前沿领域孵化多家科技型产业化公司。

## 会议组委会

### **ORGANIZING** COMMITTEE

#### 大会主席

Chair

能璐 同济大学 汽车学院 副院长

XIONG Lu Vice Dean, School of Automotive Studies, Tongji University

执行主席

**Executive Chair** 

同济大学 汽车学院 教授 黄岩军

HUANG Yanjun Professor, School of Automotive Studies, Tongji University

副主席

Vice Chairs

浙大城市学院 教授 白傑

Professor, Hangzhou City University **BAI** Jie

邓伟文 北京航空航天大学 教授

DENG Weiwen Professor, Beihang University

分会主席

**Session Chairs** 

智能座舱与人机交互技术

Smart Cockpit and Human-Computer Interaction

同济大学 马钩 MA Jun Tongji University

王金湘 东南大学

WANG Jinxiang Southeast University

汽车芯片和计算平台关键技术

Vehicle Chips and Computing Platforms

芯砺智能科技有限公司 陈超卓

CHEN Chaozhuo Chiplite

朱元 同济大学 Tongji University ZHU Yuan

智能网联汽车测评技术

Intelligent Connected Vehicle Evaluation

章新杰 吉林大学 ZHANG Xinjie Jilin University

陈君毅 同济大学 Tongji University CHEN Junyi

车路云协同与网联技术

Vehicle-Road-Cloud Collaboration and Connected Technology

张健 东南大学

Southeast University ZHANG Jian 陈齐平 华东交通大学

**CHEN Qiping** East China Jiaotong University 陈广 同济大学 研究员

CHEN Guang Researcher, Tongji University

同济大学 交通运输工程学院 教授 胡笳 Professor, College of Transportation HU Jia

Engineering, Tongji University

环境感知与传感融合技术

**Environmental Perception and Sensor Fusion** 

法雷奥中国 顾剑民 **GU Jianmin** Valeo China 田炜 同济大学 TIAN Wei Tongji University

智能底盘线控技术

Intelligent Control of X-by-Wire Chassis

华东交通大学 曾德全

ZENG Dequan East China Jiaotong University

冷搏 同济大学 LENG Bo Tongji University

智能决策与协同控制技术

Intelligent Decision-Making and Collaborative Control

张辉 北京航空航天大学 ZHANG Hui Beihang University

唐辰 同济大学 TANG Chen Tongji University



## **EVENT-**AT-A-GLANCE

#### 9月22日 September 22

## SAE 2023 汽车智能与网联技术国际学术会议

Intelligent and Connected Vehicles Symposium

9:00~9:15 **欢迎致辞** Welcome Address

9:15~11:00 **主旨演讲** Keynote Speech

> 11:15~12:00 **圆桌讨论** Panel

12:00~13:30 午餐 Lunch

智能座舱、感知与控制	汽车芯片、网联与测试
Intelligent Cockpit, Perception and Control	Vehicle Chips, Connecting and Testing
13:30~17:15	13:30~17:15
<b>技术演讲</b> Technical Speech	<b>技术演讲</b> Technical Speech

#### 9月23日 September 23

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智能座舱、感知与控制 Intelligent Cockpit, Perception and Control	汽车芯片、网联与测试 Vehicle Chips, Connecting and Testing	
9:00~11:50 <b>技术演讲</b> Technical Speech	9:00~11:50 <b>技术演讲</b> Technical Speech	
11:50~12:20 中国智能网联汽车行业系列评选活动颁奖 & 优秀论文颁奖 Award for China Intelligent Connected Vehicle Industry & Award for Outstanding Papers		
12:20~13:30 午餐 Lunch		

13:30~16:30 13:30~16:30 技术演讲 Technical Speech 技术演讲 Technical Speech

#### 9月23日 September 23

#### 论文宣讲

Paper Presentation

8:45~11:30

0.45*11.50			
<b>会议室1</b> ROOM1	会议室2 ROOM2	会议 ROO	·
环境感知与传感融合技术 Environmental Perception and	环境感知与传感融合技术 Environmental Perception and Sensor Fusion	智能决策与协同控制技术 Intelligent Decision-Making and Collaborative Control	车路云协同与车联网技术 Vehicle-Road-Cloud Collaboration and Connected Technology
Sensor Fusion	智能线控底盘技术 Intelligent Control of X-by-Wire Chassis	智能网联汽车测评技术 Intelligent Connected Vehicle Evaluation	

# **TECHNICAL** PROGRAM

MAIN VENUE	INTELLIGENT AND CONNECTED VEHICLES SYMPOSIUM  Moderator: XIONG Lu Vice Dean, School of Automotive Studies, Tongji University				
	Welcome Address				
9:00	Science and Technology Department of Jiangxi Province				
~ 9:15	LOU Diming President, Nanchang Automotive Institute of Intelligence & New Energy				
9.15	<b>LI Xiaojun</b> Deputy General Manager, JMCG				
	Billy XU General Manager, China, SAE Internationa				
	Keynote Speech				
9:15	Testing and Evaluation of Autonomous Vehicle YU Zhuoping Professor, Tongji University; Director of the National Intelligent New Energy Vehicle Collaborative Innovation Center				
9:45	Key Technologies and Engineering Applications of New Energy Vehicles Big Bata Platform WANG Zhenpo Professor, Beijing University of Technology				
10:15	Infineon Intelligent Cockpit Solution  QIU Rongbin Technical Director of Intelligent Networking Business Unit, Infineon Technology				
10:45	Overview of SAE Driving Automation Systems Standards  Christopher Bartholomew DENSO Standardization Lead; Chair of the SAE On-Road Automated Driving (ORAD) Committee				
11:00	Tea Break				
11:15	Panel Automated Vehicle: Autonomous Driving (AD) VS Vehicle-Infrastructure Cooperated Autonomous Driving (VICAD) Moderator: CHEN Chaozhuo CSO, Chiplego				
~ 12:00	<b>GU Jianmin</b> CTO of Valeo China	BAI Jie Professor Hangzhou City University			
12.00	DING Huajie	Professor, Hangzhou City University <b>ZHU Xichan</b>			
	Founder and CEO of Shanghai Xunxu Al Technology Co., Ltd	Professor, Tongji University			
12:00	Lunch				

# 会议日程

### 9月22日

主
会场

## 汽车智能与网联技术国际学术会议

主持人: 熊璐 同济大学 汽车学院 副院长

	欢迎致辞
9:00	江西省科技厅领导
~	<b>楼狄明</b> 南昌智能新能源汽车研究院 院长
9:15	李小军 江铃汽车集团有限公司 副总经理
	徐秉良 SAE International 中国区总经理
	主旨演讲
9:15	自动驾驶汽车测试与评价 余 <b>卓平</b> 同济大学 教授、国家智能型新能源汽车协同创新中心主任
9:45	新能源汽车大数据平台建设关键技术及工程应用 <b>王震坡</b> 北京理工大学 教授
10:15	英飞凌智能座舱解决方案 邱荣斌 英飞凌科技 (中国) 有限公司 智能网联业务单元技术负责人
10:45	SAE 驾驶自动化系统标准概述 Christopher Bartholomew 电装公司标准化负责人、SAE 道路自动驾驶标准委员会主席
11:00	茶歇
11:15	圆桌辩论:自动驾驶 "单车智能 VS 网联智能" 主持人: 陈超卓 芯砺智能 首席战略官
12:00	顾剑民       白傑         法雷奥中国 首席技术官       浙大城市学院 教授         丁华杰       朱西产         上海寻序人工智能科技有限公司       同济大学 教授         创始人& 首席执行官       同济大学 教授
12:00	午餐

# **TECHNICAL** PROGRAM

PARALLEL VENUE	INTELLIGENT COCKPIT, PERCEPTION AND CONTROL	VEHICLE CHIPS, CONNECTING AND TESTING
13:30	Key Technologies and Development Trends of Intelligent Electric Chassis ZHENG Ling Professor, Chongqing University	Research on the Eco-driving Control of Electric Vehicles Based on Vehicle-Infrastructure Integration  ZHANG Jian Professor, School of Transportation, Southeast University
14:00	Key Actuators of By-Wire Chassis and Their Industrialization ZHAO Xinyu Prospective R&D Manager, Shanghai Tongyu Automotive Technology Co., LTD.	Application of Vissim in the Simulation Test of Intelligent Connected & Autonomous Vehicles  XU Feng Solution Specialist Lead, PTV Software Technology (Shanghai) Co. Ltd.
14:30	Pure Solid State Scanning LiDAR Enabling Passenger Car Intelligent Driving Stav Shvartz Vice President of Business Development, Opsys Technologies	Construction and Reflection on the Public Service Platform for Presentation Title OnSite Automatic Driving Simulation Testing TIAN Ye Associate Professor, Tongji University
15:00	Strategic Thinking on Perceptual Control in the Era of Electronic Intelligence  SUN Xing Senior Manager of Intelligent Cockpit Interconnection System, Pan Asia Technical Automotive Center	Human-Machine Interaction Optimization and Testing in the Intelligent Connected Vehicle Environment  LYU Nengchao Professor, Wuhan University of Technology
15:30	Tea Break	
15:45	Symbiotic Empowerment: Reflections on the Red Flag Intelligent Cockpit  HUI Shu Senior Director of Intelligent Product Development Department at FAW Intelligent Connected Development Institute	Development of Intelligent Vechicle in the New Era - Intelligent Software and Intelligent Chips HU Mianzhou Embedded Software Senior Manager, Xpeng
16:15	<b>ECARX Automated Parking YUN Yixiao</b> X-Domain Perception Algorithm (Supervisor), ECARX	Creating Efficient, Reliable, and Easy-To-Use Intelligent Driving Computing Chips and Solutions CHEN Zhongmin CTO of Beijing Novauto Technology Co., Ltd.
16:45	Autonomous Formation Obstacle Avoidance and Multi-Vehicle Cooperative Control of Unmanned Vehicles PI Dawei Professor, Nanjing University of Science and Technology	Sensor Simulation and Synthetic Data Generation Based on ASAM OpenX ZHANG Anchun 51Sim R&D Director, Wanwu Jingxiang (Beijing) Computer Systems Co., Ltd

# 会议日程

## 9月22日

分 论坛	智能座舱、感知与控制	汽车芯片、网联与测试
13:30	智能电动底盘关键技术及其发展趋势 郑玲 重庆大学 教授	基于车路一体化的电动车辆生态驾驶管控研究 <b>张健</b> 东南大学 交通学院 教授
14:00	线控底盘关键执行器及其产业化 赵欣宇 上海同驭汽车科技有限公司 前瞻研发部经理	Vissim在智能网联无人自驾仿真测试中的应用 <b>许峰</b> 霹图卫软件科技 (上海) 有限公司 技术负责人
14:30	<b>纯固态扫描激光雷达实现乘用车智能驾驶 Stav Shvartz</b> Opsys Technologies 业务发展副总裁	OnSite自动驾驶仿真测试公共服务平台建设与思考 田野 同济大学 副教授
15:00	电智时代智能座舱感知控制的策略思考 <b>孙星</b> 泛亚智能软件中心 智能座舱显示互联高级经理	智能网联汽车环境下的人机交互优化与测试 <b>吕能超</b> 武汉理工大学 教授
15:30	茶歇	
15:45	共生赋能·红旗智能座舱的思考 回姝 一汽研发总院智能网联开发院 智享产品开发高级主任	新时代智能汽车发展——智能软件与智能芯片 胡绵洲 小鹏汽车 嵌入式软件高级经理
16:15	ECARX自动泊车技术简介 云一宵 亿咖通 (上海) 科技有限公司 域融合感知算法负责人	打造高效、可靠、易用的智能驾驶计算芯片与解决方案 陈忠民 北京超星未来科技有限公司 首席技术官
16:45	<b>无人车编队自主避障及多车协同控制</b> <b>皮大伟</b> 南京理工大学 教授	基于OpenX标准的感知仿真和合成数据生成 <b>张安春</b> 万物镜像(北京)计算机系统有限公司 51Sim研发负责人

# **TECHNICAL** PROGRAM

PARALLEL VENUE	INTELLIGENT COCKPIT, PERCEPTION AND CONTROL	VEHICLE CHIPS, CONNECTING AND TESTING
9:00	Research Achievements and Technical Development Trends of Vehicle Control by Wire Braking SHAN Fengwu General Manager of Jiangxi JMC Group New Energy Vehicle Co., Ltd	Multi Pillar Verification Practice of Intelligent Driving System CHEN Yin Chief Engineer of Intelligent Driving, Beijing Automotive Research Institute Co., Ltd
9:30	The Development Trend of Intelligent Chassis Technology and the Introduction of Application Cases in Jiangxi Province ZENG Dequan Deputy Director of East China Jiaotong University / CTO of Jiangxi Tongling Automotive Technology Co. LTD	Ground Vehicle Transportation Solutions for Future Cities  CAO Kai CTO, Dongfeng USharing Technology Co.,Ltd
10:00	JMC Practice and Reflection on the Development of Intelligent Driving LIU Weidong Director of Intelligent Driving, JMC	Application of Al Technologies on the V2X-based Autonomous Driving SHENG Kai Professor, Xidian University
10:30	Tea Break	
10:50	Human-Centric & Socially Interactive Mobility WANG Wenshuo Professor, Beijing Institute of Technology	Compliance Response and Reflection on Automotive Cyber Security in the Background of Electric and Intelligence  ZHUO Kaimin Head of Intelligent Connected Vehicle Testing, CATARC Automotive inspection center(Wuhan) Co., Ltd
11:20	Vehicle Voice Interaction under Large Model Empowerment CAI Yong Chief Engineer, Hozon New Energy Automobile Co., Ltd	Multi-dimensional Data Forwarding for VANETs and Infrastructure Network Integration CAO Yue Professor, School of Cyber Science and Engineering; Head of Department of Cyberspace Security, Wuhan University
11:50	Award for China Intelligent Connected Vehicle Industry Award for Outstanding Papers	
12:20	Lunch	

# 会议日程

## 9月23日

分论坛	智能座舱、感知与控制	汽车芯片、网联与测试
9:00	整车线控制动研究成果及技术发展趋势 单丰武 江西江铃集团新能源汽车有限公司 总经理	智能驾驶系统多支柱验证实践 陈音 北京汽车研究总院有限公司智能网联中心 智能驾驶专业总师
9:30	智能底盘技术发展趋势浅谈及江西本土应用案例介绍 曾德全 华东交通大学 副所长、 江西同铃汽车科技有限公司 首席技术官	面向未来城市的地面车辆交通解决方案 曹恺 东风悦享科技有限公司 首席技术官
10:00	<b>江铃智能驾驶开发实践与思考 刘卫东</b> 江铃汽车股份有限公司 智能驾驶总监	<b>人工智能技术应用与车路协同智能驾驶 盛凯</b> 西安电子科技大学 教授
10:30	茶歇	
10:50	从"以人为中心"到"社会型交互"车辆的智能 决策 王文硕 北京理工大学 教授	电动智能时代下汽车信息安全合规应对与思考 卓凯敏 中汽研汽车检验中心(武汉)有限公司 智能网联汽车测试负责人
11:20	大模型赋能下的车载语音交互 蔡勇 合众新能源汽车股份有限公司 开发总工程师	基于数据多维融合的车联网与基础设施网络协同路由协议研究 曹越 武汉大学 国家网络安全学院 教授、网络空间安全系主任
11:50	中国智能网联汽车行业系列评选活动颁 优秀论文颁奖	奖
12:20	午餐	

# **TECHNICAL** PROGRAM

PARALLEL VENUE	INTELLIGENT COCKPIT, PERCEPTION AND CONTROL	VEHICLE CHIPS, CONNECTING AND TESTING	
13:30	Autonomous Driving Location and Perception Technology for Full Scenarios  ZHANG Dan Director of Localization and Perception Department, UISEE Technologies (Beijing) Ltd.	Thinking on the Industrialization of Intelligent Connecting Vehicles under the Construction of 'Double Intelligence'  ZHANG Ying Senior Expert in Vehicle Road Collaboration, Great Wall Motors	
14:00	Enhanced C-V2X Use Cases by Sensor Fusion Perception Freddie ZHANG Head of Innovation Management China, Continental Holding (China) Co., Ltd	Test, Evaluation and Acceptance Criteria for SOTIF of Control Systems of Intelligent Vehicles  BAI Xianxu Professor, Hefei University of Technology	
14:30	Technology of Perception, Decision and Planning for Parking Scene WAN Kailin Manager of the Intelligent Research Institute, Chongqing Changan Automobile Co., Ltd	Exploring the New Future of Intelligent and Connection through the Integration of Computing and Networking  WAN Xi Director of V2X, China Mobile Shanghai Industrial Research Institute	
15:00	Key Technologies and Applications of Intelligent Driving with Visual 3D Understanding as the Core DU Dalong CTO; Co-Founder, PhiGent Robotics	Integrated V2X and Cloud-based Connected Autonomous Driving  DUAN Xuting Associate Professor, Department of Transportation, Beihang University	
15:30	Key Technologies and Development Trends of Intelligent Automotive Electronics and Electrical Architecture  LIU Qin System Integration Director, JMC	Intelligent Driving Hardware in the Loop Simulation Platform for the Education Industry XU Jiang Executive Dean, Changshu Institute of Technology	
16:00	Vehicle Learning Based Self Evolution Control Method and Its Application ZHOU Quan Assistant Professor, University of Birmingham		
16:30	End		

# 会议日程

### 9月23日

分 论坛	智能座舱、感知与控制	汽车芯片、网联与测试
13:30	面向全场景的自动驾驶定位与感知技术 张丹 驭势科技(北京)有限公司 定位与感知部总监	<b>双智建设下智能网联汽车产业化思考 张瀛</b> 长城汽车 车路协同资深专家
14:00	融合感知赋能车路协同的多场景实践 张联成 大陆投资(中国)有限公司 中国区创新合作总监	智能网联汽车控制系统预期功能安全测试评价 与接受准则 <b>白先旭</b> 合肥工业大学 车辆工程系教授
14:30	面向泊车场景的感知、决策与规划技术 万凯林 重庆长安汽车股份有限公司 智能化研究院经理	"算网一体"探索智能网联新未来 万曦 中国移动上海产业研究院 车联网团队总监
15:00	以视觉3D理解为核心的智能驾驶关键技术及应用 都大龙 北京鉴智科技有限公司 首席技术官、联合创始人	<b>车路云一体化网联自动驾驶</b> <b>段续庭</b> 北京航空航天大学 交通运输系副教授
15:30	智能汽车电子电气架构关键技术及发展趋势 刘钦 江铃汽车股份有限公司 系统集成总监	面向教育行业的智能驾驶硬件在环仿真平台 徐江 常熟理工学院 智能网联研究院 执行院长
16:00	<b>车辆学习型自进化控制方法及应用</b> <b>周泉</b> 英国伯明翰大学 助理教授	
16:30	会议结束	

# PAPER PRESENTATION

ROOM1	ROOM 2	ROOM 3		
Environmental Perception	Environmental Perception and Sensor Fusion	Intelligent Decision-Making and Collaborative Control	Vehicle-Road-Cloud Collaboration and Connected Technology	
and Sensor Fusion	Intelligent Control of X-by- Wire Chassis	Intelligent Connected Vehicle Evaluation		

ROOM	M1
	mental Perception and Sensor Fusion GU Jianmin Valeo China TIAN Wei Tongji University
8:45	23CETP-0061  Day-to-night Image Translation With local Controllable Vehicle Light Effect for Data Synthesis in Autonomous Driving SHI Wenxiu Z-ONE Technology co., Ltd.
9:00	23CETP-0055  A Sequential Method for Automotive Millimeter-wave Radar Self-Calibration Based on Optimization PAN Song Shanghai Geometrical Perception and Learning Co., Ltd
9:15	23CETP-0058  CMM: LiDAR-Visual Fusion with Cross-Modality Module for Large-Scale Place Recognition  XUE Shijie Tongji University
9:30	23CETP-0062  Synthetic Data for 2D Road Marking Detection in Autonomous Driving  BIE Xiaofang Z-ONE Technology co., Ltd.
9:45	23CETP-0087 Research on Vulnerable Road User Detection Algorithm based on Improved Deep Learning YI Zhenxing Chongqing Jiaotong University
10:00	23CETP-0059  Deep 4D Automotive Radar-Camera Fusion Odometry with Cross-Modal Transformer Fusion  LU Shouyi Tongji University
10:15	23CETP-0049 A Novel LiDAR Anchor Constraint Method for Localization in Challenging Scenarios SHEN Xiangxiang Tongji University
10:30	23CETP-0054  A Method for Generating Occupancy Grid Maps Based on 4D Millimeter-wave Radar Point Cloud Characteristics LIU Chang Shanghai Geometrical Perception and Learning Co,Ltd
10:45	23CETP-0047 An Novelty Multitarget-Multisensor Tracking Algorithm with Out of Sequence Measurements for Automated Driving System on Highway Condition ZHONG Xu Tongji University
11:00	23CETP-0048 An Road Boundary Detection Algorithm Based on Radar that Can Improve Multiple-Target Tracking Performance for Autonomous Vehicles on Highway Condition ZHONG Xu Tongji University

## 论文宣讲

#### 9月23日

会议室1	会议室2	会议室3	
TH: 60 加上/生成品人++-	环境感知与传感融合技术	智能决策与协同控制技术	车路云协同与车联网技术
环境感知与传感融合技术	智能线控底盘技术	智能网联汽车测评技术	

#### 会议室1

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主席: 顾剑民 法雷奥中国 田炜 同济大学

23CETP-0061

8:45 局部车灯效应可控的白天转夜晚图像翻译

石文秀 零束科技有限公司

23CETP-0055

9:00 基于优化的序惯式汽车毫米波雷达水平角自标定方法

潘松 上海几何伙伴智能驾驶有限公司

23CETP-0058

9:15 基于激光与视觉跨模态融合的地点重识别

薛世杰 同济大学

23CETP-0062

9:30 合成数据在自动驾驶2D道路标识检测中的应用

别晓芳 零束科技有限公司

23CETP-0087

9:45 基于改进深度学习的弱势道路使用者检测算法研究

衣振兴 重庆交通大学

23CETP-0059

10:00 使用跨模态 Transformer 融合的深度 4D 雷达-视觉里程计

卢守义 同济大学

23CETP-0049

10:15 一种在富有挑战场景下新颖的激光雷达锚点约束方法

沈翔翔 同济大学

23CETP-0054

10:30 一种基于4D毫米波雷达特性生成占据栅格地图的方法

刘畅 上海几何伙伴公司智能驾驶有限公司

23CETP-0047

10:45 一种高速交通场景下的多源传感器数据融合机制

钟旭 同济大学

23CETP-0048

11:00 高速交通场景下基于毫米波雷达检测的道路边界拟合策略在提升多目标追踪性能上的应用

钟旭 同济大学

# PAPER PRESENTATION

ROOM 2		
	nmental Perception and Sensor Fusion GU Jianmin Valeo China TIAN Wei Tongji University	
8:45	23CETP-0056  Deep-PDANet: Camera-radar Fusion for Depth Estimation in Autonomous Driving Scenarios  Al Wenjin Tongji University	
9:00	23CETP-0060  Data Synthesis Methods for Parking-slot Detection  LI Jian Z-ONE Technology co., Ltd.	
9:15	23CETP-0057  One Robust Loosely Coupled 4D Millimeter-wave Image Radar SLAM Method ZHAO Yingzhong Shanghai Geometrical Perception and Learning Co,Ltd	
9:30	23CETP-0050  Real-time Road Slope Estimation Based on GNSS/INS Fusion System Considering Slope Change CHEN Mengyuan Tongji University	
9:45	23CETP-0052 Synthesizing Data for Autonomous Driving: Multi-Agent Reinforcement Learning meets Augmented Reality GU Kai Z-ONE Technology co., Ltd.	
Chairs:	pent Control of X-by-Wire Chassis ZENG Dequan East China Jiaotong University; Jiangxi Tongling Automotive Technology Co., Ltd TIAN Wei Tongji University	
10:00	23CETP-0073  Research on Liquid Sloshing Model and Braking Dynamics Model of Semi-trailer Vehicle for Transporting Dangerous Cargo for Driving Automation ZHAO Ran Wuhan University of Technology	
10:15	23CETP-0072  Fault Compensation Control for Regenerative Braking of Distributed Drive Electric Vehicle Based on Hierarchical Control  FANG Ting Hefei University of Technology	
10:30	23CETP-0074 Improved PSO Algorithm for Distributed Drive Vehicle In-wheel Motor Paramete Identification BU Lingshan Stellantis China Tech Center	
10:45	23CETP-0075  Multi-Objective Switching Control of Active Suspension based on Forward-Looking Preview HU Yiming East China JiaoTong University	



## 论文宣讲

#### 9月23日

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#### 环境感知与传感融合技术

主席: 顾剑民 法雷奥中国 田炜 同济大学

23CETP-0056

8:45 Deep-PDANet: 自动驾驶场景下基于相机-毫米波雷达融合的深度估计算法

艾文瑾 同济大学

23CETP-0060

9:00 用于泊车位检测的数据合成方法研究

李剑 零束科技有限公司

23CETP-0057

9:15 一种松耦合的4D毫米波成像雷达鲁棒SLAM方法

赵映重 上海几何伙伴智能驾驶有限公司

23CETP-0050

9:30 基于GNSS/INS融合系统并考虑坡度变化的实时道路坡度估计

**陈梦源** 同济大学

23CETP-0052

9:45 自动驾驶数据合成: 多智能体强化学习结合增强现实技术

**顾锴** 零束科技有限公司

#### 智能线控底盘技术

主席: 曾德全 华东交通大学、江西同铃汽车科技有限公司 冷搏 同济大学

23CETP-0073

10:00 面向驾驶自动化的危险品半挂运输车液体晃动模型和制动动力学模型研究

赵燃 武汉理工大学

23CETP-0072

10:15 基于分层控制的分布式驱动电动汽车再生制动故障补偿控制

方婷 合肥工业大学

23CETP-0074

10:30 基于改进粒子群算法的分布式驱动电动汽车轮边电机参数辨识

**卜令山** Stellantis中国研发中心

23CETP-0075

10:45 基于前视预瞄的主动悬架多目标切换控制

胡一明 华东交通大学



# PAPER PRESENTATION

ROO	мз
	gent Decision-Making and Collaborative Control ZHANG Hui Beihang University TANG Chen Tongji University
8:45	23CETP-0076  Cooperative Lane Change Control Based on Null-Space-Behavior for a Dual-Column Intelligent Vehicle Platoon YAN Danshu Tongji University
9:00	23CETP-0081 Individualized SAC Tracking Strategies Considering the Characteristics of The Driver WU Mingzhi Nanchang Automotive Institute of Intelligence & New Energy
9:15	23CETP-0080 An Improved Dueling Double Deep Q Network Algorithm and Its Application to the Optimized Path Planning for Unmanned Ground Vehicle HE Zhaonian Xi'an University of Technology
9:30	23CETP-0079 A Rolling Prediction-based Multi-scale Fusion Velocity Prediction Method Considering Road Slope Driving Characteristics HE Siyuan Xi'an Technological University
9:45	23CETP-0078  Artificial Bee Colony Algorithm for Smart Car Path Planning in Complex Terrain  LI Dapeng FAW-VW Co.Ltd, TE department
10:00	23CETP-0082  Output-feedback H∞ Path Tracking Control for Autonomous Vehicle Considering Model Uncertainty and Parameter Perturbation  ZENG Dequan East China Jiaotong University
	e-Road-Cloud Collaboration and Connected Technology ZHANG Jian Southeast University CHEN Qiping East China Jiaotong University
10:15	23CETP-0084 Enhanced Clustering and Comprehensive Scoring Based Driver Behavior Safety Assessment Method SUN Bowen Chongqing Jiaotong University
	jent Connected Vehicle Evaluation ZHANG Xinjie Jilin University CHEN Junyi Tongji University
10:30	23CETP-0066  A Fast Search Method for Edge Hazardous Scenarios Based on Semi-Supervised Anomaly Detection LI Mengyu Institute of Electrical Engineering Chinese Academy of Sciences
10:45	23CETP-0071  Test Concrete Scenarios Extraction of Lane-changing Scenarios Based on China-FOT Naturalistic Driving Data  YIN Qi Tongji University
11:00	23CEPT-0067  Critical Scenarios Based on Graded Hazard Disposal Model of Human Drivers  FANG Xiaowei Tongji University
11:15	23CETP-0070  Digital Twin Test Method for Autonomous Vehicles Based on PanoSim  DUAN Jianyu PanoSim Technology Limited Company



# 论文宣讲

### 9月23日

会议	室 3
	<b>策与协同控制技术</b> <b>线辉</b> 北京航空航天大学 <b>唐辰</b> 同济大学
8:45	23CETP-0076 <b>基于零空间行为的双列编队行驶智能车辆换道协同控制</b> <b>颜丹姝</b> 同济大学
9:00	23CETP-0081 考虑驾驶员特征的个性化SAC跟车策略 吴名芝 南昌智能新能源汽车研究院
9:15	23CETP-0080 <b>一种改进决斗双深度Q网络算法及其在无人地面车辆优化路径规划中的应用</b> <b>何兆年</b> 西安理工大学
9:30	23CETP-0079 <b>考虑坡道行驶特征下基于滚动预测加权的多尺度融合速度预测方法</b> <b>何思源</b> 西安工业大学
9:45	23CETP-0078 <b>基于人工蜂群算法的智能车复杂地域路径规划</b> <b>李大鹏</b> 一汽大众汽车有限公司
10:00	23CETP-0082 考虑模型不确定和参数摄动的自动驾驶汽车输出反馈鲁棒路径跟踪控制 曾德全 华东交通大学
	<b>协同与网联技术</b> <b>6健</b> 东南大学 <b>陈齐平</b> 华东交通大学
10:15	23CETP-0084 <b>基于改进聚类算法与综合评分的驾驶行为安全性评估方法</b> <b>孙博文</b> 重庆交通大学
	<b>联汽车测评技术</b> <b>턃新杰</b> 吉林大学 <b>陈君毅</b> 同济大学
10:30	23CETP-0066 一种基于半监督异常检测的快速边缘危险场景搜索方法 李梦宇 中国科学院电工研究所
10:45	23CETP-0071 基于中国自然驾驶数据集的变道测试具体场景挖掘 殷琪 同济大学
11:00	23CEPT-0067 <b>基于人类驾驶员分级危险处置模型的临界场景研究</b> 方晓蔚 同济大学
11:15	23CETP-0070 PanoSim 赋能基于数字孪生的自动驾驶测试 段建字 浙江天行健智能科技有限公司

# SAE 2023 汽车智能与网联技术国际学术会议 通过双盲同行评审论文列表

以下论文将由 SAE International 正式出版发行,并收录至 EI 检索。 正式出版后可至 SAE Mobilus 数字图书馆查阅:https://saemobilus.sae.org/

正式论文出版编号	投稿编号	论文题目
2023-01-7038	23CETP-0056	Deep-PDANet: Camera-radar Fusion for Depth Estimation in Autonomous Driving Scenarios
2023-01-7039	23CETP-0058	CMM: LiDAR-Visual Fusion with Cross-Modality Module for Large-Scale Place Recognition
2023-01-7040	23CETP-0059	Deep 4D Automotive Radar-Camera Fusion Odometry with Cross-Modal Transformer Fusion
2023-01-7041	23CETP-0047	An Novelty Multitarget-Multisensor Tracking Algorithm with Out of Sequence Measurements for Automated Driving System on Highway Condition
2023-01-7042	23CETP-0048	An Road Boundary Detection Algorithm Based on Radar that Can Improve Multiple-Target Tracking Performance for Autonomous Vehicles on Highway Condition
2023-01-7043	23CETP-0050	Real-time Road Slope Estimation Based on GNSS/INS Fusion System Considering Slope Change
2023-01-7044	23CETP-0055	A Sequential Method for Automotive Millimeter-wave Radar Self-Calibration Based on Optimization
2023-01-7045	23CETP-0061	Day-to-night Image Translation with Local Controllable Vehicle Light Effect for Data Synthesis in Autonomous Driving
2023-01-7046	23CETP-0062	Synthetic Data for 2D Road Marking Detection in Autonomous Driving
2023-01-7047	23CETP-0054	A Method for Generating Occupancy Grid Maps Based on 4DMillimeterwave Radar Point Cloud Characteristics
2023-01-7048	23CETP-0053	Multi-Target Tracking Method Based on Improved Radar and Camera Data Association
2023-01-7049	23CETP-0052	Synthesizing Data for Autonomous Driving: Multi-Agent Reinforcement Learning meets Augmented Reality
2023-01-7050	23CETP-0087	Research on Vulnerable Road User Detection Algorithm based on Improved Deep Learning
2023-01-7051	23CETP-0057	One Robust Loosely Coupled 4D Millimeter-wave ImageRadar SLAM Method
2023-01-7052	23CETP-0060	Data Synthesis Methods for Parking-slot Detection
2023-01-7053	23CETP-0049	A Novel LiDAR Anchor Constraint Method for Localization in Challenging Scenarios

正式论文出版编号	投稿编号	论文题目
2023-01-7054	23CETP-0067	Critical Scenarios Based on Graded Hazard Disposal Model of Human Drivers
2023-01-7055	23CETP-0071	Test Concrete Scenarios Extraction of Lane-changing Scenarios Based on China-FOT Naturalistic Driving Data
2023-01-7056	23CETP-0070	Digital Twin Test Method for Autonomous Vehicles based on PanoSim
2023-01-7057	23CETP-0066	A Fast Search Method for Edge Hazardous Scenarios Based on Semi- Supervised Anomaly Detection
2023-01-7058	23CETP-0074	Improved PSO algorithm for distributed drive vehicle in-wheel motor parameter identification
2023-01-7059	23CETP-0073	Research on Liquid Sloshing Model and Braking Dynamics Model of Semi- trailer Vehicle for Transporting Dangerous Cargo for Driving Automation
2023-01-7060	23CETP-0075	Multi-Objective Switching Control of Active Suspension based on Forward- Looking Preview
2023-01-7061	23CETP-0072	Fault CompensationControl for Regenerative Braking of Distributed Drive Electric Vehicle Based on Hierarchical Control
2023-01-7062	23CETP-0078	Artificial Bee Colony Algorithm for Smart Car Path Planning in Complex Terrain
2023-01-7063	23CETP-0079	A Rolling Prediction-based Multi-scale Fusion Velocity Prediction Method Considering Road Slope Driving Characteristics
2023-01-7064	23CETP-0076	Cooperative Lane Change Control Based on Null-Space-Behavior for a Dual-Column Intelligent Vehicle Platoon
2023-01-7065	23CETP-0080	An Improved Dueling Double Deep Q Network Algorithm and Its Application to the Optimized Path Planning for Unmanned Ground Vehicle
2023-01-7066	23CETP-0081	Individualized SAC tracking strategies considering the characteristics of the driver
2023-01-7067	23CETP-0082	Output-feedback H∞ PathTracking Control for Autonomous Vehicle Considering Model Uncertainty and Parameter Perturbation
2023-01-7068	23CETP-0083	Static Gesture Recognition in The Cabin Based on 3D-TOF and Low Computing Power
2023-01-7069	23CETP-0084	Enhanced Clustering and Comprehensive Scoring Based Driver Behavior Safety Assessment Method

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Umovity Group has a subsidiary in Shanghai, China, "PTV Software Technology (Shanghai) Co. Ltd". This subsidiary provides PTV Vision software, training services, and professional services.



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## Building 9, Block 2, Zhongguan Honghualing Industry Southern District, 1213 Liuxian Avenue, Taoyuan Street, Nanshan District, Shenzhen, China

RoboSense, is a global leader in the LiDAR and perception solutions market. The company provides the market with various Smart LiDAR perception system solutions, harnessed the power of three core technologies: chips, LiDAR hardware, and perception software. Our mission is to make the world safer and smarter by endowing automobiles and robots with perception capabilities superior to human eyes.

As of December 31, 2022, RoboSense has 1,300 employees, headquartered in Shenzhen, with entities established in various regions and countries including Shanghai, Suzhou, Tianjin, Hong Kong, Germany, and the United States. With a customer-centric technology and highly iterative product development strategy, focusing on chip-driven LiDAR hardware and AI perception software technology to create comprehensive solutions, pushing the boundaries of market exploration and leading the industry in large-scale commercialization.

Recipient of prestigious accolades such as the Automotive News PACE Award, AutoSens Award, Audi Innovation Lab Champion, and CES Innovation Awards, RoboSense has established a solid foundation for success in the market. As of 2023 Q1, RoboSense has received 52 design wins from 21 OEMS and Tier1 suppliers, and achieved SOP for 9 vehicle models from 7 customers. RoboSense also served over 2,000 customers in robotics and other non-auto industries, topped the world in terms of the cumulative sales volume. To date, RoboSense has delivered over 100,000 LiDAR units.

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#### 上海市黄浦区南京东路 800 号 20 楼 J 室

Umovity 是 Econolite 和 PTV 的联合品牌,涵盖其产品及服务业务。

Econolite 致力于研发,生产及实施其硬件及软件产品,PTV 的移动交通业务则涉及软件产品的研发及生产。两家公司将继续实现创新,并进一步整合双方的产品。

Umovity 代表了在全球范围内满足交通及出行规划和运营管理机构需求的创新和高效益的技术能力。Umovity 解决方案帮助机构、城市、组织、行业和学术界的决策者和用户能够通过改进移动出行来塑造一个更智能、更安全、更可持续的未来。从硬件到软件再到服务,我们涉及交通规划,仿真,优化,以及智能交通系统的维护,Umovity—结合 Econolite 和PTV 交通业务—致力于成为智能化且可持续移动解决方案的—站式领导者。我们的核心产品及服务涵盖信号机箱,信号控制机,传感器,软件,以及数据及咨询业务。

Umovity 集团在中国上海有设立分公司,霹图卫软件科技(上海)有限公司,负责提供 PTV 交通系列软件、培训和咨询服务。



#### 深圳市速腾聚创科技有限公司

www.robosense.ai

#### 深圳市南山区桃源街道留仙大道 1213 号众冠红花岭工业南区 2 区 9 栋

RoboSense 速腾聚创是激光雷达及感知解决方案市场的全球领导者。RoboSense 通过芯片、激光雷达平台与感知算法三大核心技术闭环,为市场提供具有信息理解能力的智能激光雷达系统,颠覆传统激光雷达硬件纯信息收集的定义,赋予汽车与机器人超越人类眼睛的感知能力,守护智能驾驶的安全

截至 2022 年 12 月 31 日,RoboSense 企业员工超过 1300 人,总部位于深圳,并在其他 多个地区和国家建立实体机构,包括上海、苏州、天津、香港,以及德国、美国等。公司 的技术与产品能力以客户需求为核心,围绕芯片驱动的激光雷达硬件,同时布局人工智能 感知软件技术形成解决方案,推动市场探索应用的边界,引领行业实现大规模商业化。

作为 Automative News PACE Award、AutoSens Award、Audi Innovation Lab Champion 和两届 CES Innovation Award 得主,RoboSense 在市场上已经获得成功的基础:公司产品技术为全球多家汽车整车厂、一级供应商和各种机器人及其他非汽车行业的客户提供服务。截至 2023 年 3 月 31 日,RoboSense 已取得 21 家汽车整车厂及一级供应商的 52 款车型的量产定点订单,已交付超过 10 万台激光雷达,与全球其他激光雷达公司相比,RoboSense 服务的汽车整车厂和一级供应商数量最多、拥有前装量产定点车型最多、开启量产交付车型 SOP 最多。

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#### TOSiい同星

#### Shanghai TOSUN Technology Ltd.

www.tosunai.cn

#### No. 4801 Caoan Road, Jiading District, Shanghai

Since its establishment in 2017, TOSUN Technology has prioritized the development of domestically controlled fundamental toolchain products for automotive electronics, positioning itself as a leading Chinese brand in this industry. TOSUN's primary software, TSMaster, and its associated hardware offer essential features such as embedded code generation, automotive bus analysis, simulation, testing, diagnostics, and calibration. These tools cover the entire range of activities involved in automotive vehicle and component development, testing, production, experimentation, and aftersales support.

There are over 4,000 global enterprise users of the product, including automotive OEMs, component suppliers, chip manufacturers, equipment/service providers, engineering machinery, and industries such as aviation, aerospace, and naval military.

The company's headquarters is located in Tongji University National University Science Park in the Jiading district of Shanghai. Additionally, the company has branch offices in Guangzhou, Beijing, Changchun, Chengdu, Taipei, and Germany (Stuttgart).

### DUVONN

#### Duvonn Electronic Technology Co., Ltd.

www.duvonn.cn

East, 7th Floor, Building 5, Phase 1, Jingang Science and Technology Innovation Park, No.1 Kechuang Road, Qixia District, Nanjing City, Jiangsu Province

Established in 2013, Duvonn Electronic Technology CO., LTD is the first national high-tech enterprise engaged in the research and development, manufacturing, marketing and related technical services of vehicle data protection storage products (crash-protected memory module & vehicle black box). Mastering the core technology of data physical and logical protection, we have independent intellectual property rights, participating in the compilation of relevant national standards, greatly promote the application of data storage products in the auto industry.



#### Shanghai Tongyu Automotive Technology Co., Ltd

www.tongyuauto.com

#### Building 3, No. 3188 Jia'an Road, Jiading District, Shanghai

Shanghai Tongyu Automotive Technology Co., Ltd. is a Tier 1 supplier of automotive intelligent chassis system in China, focusing on the research, development and industrialization of 'Core Technology of New-Generation Wire-Controlled Chassis' and supporting the intelligent transportation. Founded in 2016, Tongyu is a key Tongji University Incubation Enterprise, a National High and New Technology Enterprise, a National Specialized and Innovative 'Little Giant' Enterprise. With its headquarter and R&D center in Shanghai and two manufacturing bases in Jiading District, Shanghai and Yichun, Jiangxi Province, it has built an intelligent manufacturing center with an annual capacity of 1.5 million pcs.

The core team has independently researched and developed the core technology of wire-controlled chassis since 2012, with excellent R&D strength and deep technology accumulation in this filed. The products cover Electro-Hydraulic Braking System (EHB), integrated Electro-Hydraulic Braking System (iEHB), Electric Parking Brake System (EPB), Anti-Lock Braking System (ABS), Electronic Stability Control System (ESC) and other intelligent braking products. Tongyu products has matched more than 100 vehicle models for more than 80 well-known customers, which is one of the few companies worldwide with the mass production capacity of intelligent braking products.

Tongyu's mission is to make vehicle safer, more comfortable and more intelligent.

## 赞助、展商信息

以下企业信息由赞助以及参展公司提供。

#### TOSい同星

#### 上海同星智能科技有限公司

www.tosunai.com

#### 上海市嘉定区曹安公路 4801号6层8层

同星智能成立于 2017 年,一直专注于研发国产自主可控的汽车电子基础工具链产品,也是该领域国产领导品牌。

同星智能的核心软件 TSMaster 及配套硬件设备,具备嵌入式代码生成、汽车总线分析、仿真、测试及诊断、标定等核心功能,覆盖了汽车整车及零部件研发、测试、生产、试验、售后全流程。

全球企业用户超 4000 家,用户覆盖:汽车整车厂、零部件供应商、芯片厂商、设备 / 服务供应商、工程机械、航空航天及舰船军工等领域。

总部位于上海市嘉定区同济大学国家大学科技园,另外在广州、北京、长春、成都、台湾、 斯图加特设有分支机构。

### DUVONN

#### 江苏都万电子科技有限公司

www.duvonn.cn

#### 江苏省南京市栖霞区科创路 1号金港科创园一期 5 栋 7 楼东

江苏都万电子科技有限公司成立于 2013 年,是国内乃至全球第一家从事车载数据防护存储产品研发、生产、销售和相关技术服务的国家级高新技术企业。掌握了数据物理防护与逻辑防护的核心技术,拥有自主知识产权,参与制定国家相关标准,推动了安全存储在汽车领域的应用。



#### 上海同驭汽车科技有限公司

www.tongyuauto.com

#### 上海市嘉定区嘉安公路 3188 号 3 号楼

同驭汽车科技是中国汽车智能底盘系统一级供应商,专注于"新一代线控底盘核心技术"的研发和产业化,为智慧出行保驾护航。同驭汽车成立于 2016 年,是同济大学重点孵化企业、国家高新技术企业、国家专精特新"小巨人"企业,获上海市科技进步一等奖。总部和研发中心设立在上海,拥有上海嘉定、江西宜春两大生产基地,已建成年产能 150 万套的智能制造中心。

同驭汽车核心团队自 2012 年起自主研发线控底盘核心技术,在该领域有着卓越的研发实力和深厚的技术积淀。产品覆盖线控电子液压制动系统 (EHB)、集成式线控电子液压制动系统 (iEHB)、电子驻车制动系统 (EPB)、防抱死制动系统 (ABS) 、电子稳定性控制系统 (ESC) 等智能制动系列产品。同驭已为 80 多家知名客户配套 100 余款车型。是全球极少数具备智能制动产品量产能力的公司之一。

同驭的使命是让汽车更安全、更舒适、更智慧。



## 联系我们

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