

uve Resilience in Cities as like

# DREMES

The Dynamic Research Enterprise for Multidisciplinary Engineering Sciences **ZJU-UIUC Joint Research Center** 



#### CIRCLE Distinguished Lecture Series

Dr. Tony Han

#### Autonomous driving defines the future of urban transportation

ABSTRACT: Why do human-beings need driverless cars? Why is autonomous driving happening today? When will driverless cars be available in anytime and anywhere? What challenges and difficulties are we still facing in order to achieve such prospect? Autonomous driving is not only the integration of artificial intelligence, but also a social and economic subversion and upgrading, benefiting all around the globe. The technology has been attracting the most innovative technical talents, the visionary investors, the big-name companies, and the scientists with great mind and entrepreneurship around the world to be part of this technological revolution. Currently, the R&D and commercialization of driverless cars are best implemented in the United States and China. The two counties are developing the most advanced self-driving technologies that will revolutionize the automobile, transform human transportation systems, and reshape the relationship between human and nature. The technology of autonomous driving is highly complex, and what we want to achieve is not only to use machines to drive, but also to make driving more reliable and stable than men. Autonomous driving is not a rigid imitation of human driving behaviors. Scientists perceive it as: in order to have people or things move from point A to point B safely, efficiently, comfortably and economically, what driverless car should be like? Exploring mega application of deep learning in autonomous driving, WeRide is dedicated to design and develop a universal autonomous driving technology platform. Empowered by the platform, self-driving car can operate on open roads in the cities at any time and any road condition. It is capable of self-learning and self-improving, in order to adapt to the constant change of vehicles and transportation in the future, making autonomous driving available to everyone. The platform is named as WeRide One, a universal autonomous driving technology platform. WeRide is a world leading company to invest in the research and development of autonomous driving technology and the commercialization of driverless cars. In this lecture, Dr. Tony HAN, the founder, and CEO of WeRide, will analyze the social, economic, technological progress and challenges behind the arrival of the wave of autonomous driving, sharing the best-in-class solutions, as well as WeRide's latest achievements in commercialization of autonomous driving cars around the globe.

Bio: Tony HAN is Founder & CEO of WeRide, a global leading autonomous driving technology company. Tony is specialized in computer vision, machine learning and speech recognition. He is one of the top scientists to pioneer self-driving technology development and commercialization. Before establishing WeRide, he was a tenured professor of electrical & computer engineering at the University of Missouri (MU). In 2016, Tony served as the chief scientist of Baidu's Autonomous Driving Division, leading the perception, simulation, sensor and hardware teams. He was also an early contributor to deep learning-based speech recognition system DeepSpeech2, which was named in Top 10 Breakthrough Technologies of 2016 by MIT Technology Review. Since 2007, 11 research projects hosted by Tony have received funding for a total amount of more than \$7 million. The team led by Tony has won many international computer vision contest awards, including the 2nd place in the ImageNet International Object Detection Competition in 2013 (the first in the US); the 1st in the International Face Expression Recognition and Analysis Competition in 2011, the second place in non-specific identification; 2012 International Computer Vision The Pascal Grand Challenge 2010 in action classification tied for first place; the 2012 and 2009 Pascal Grand Challenge 2009 in object detection ranked third. He is an invited reviewer of several international authoritative magazines, including the international top journal IEEE Transactions on Pattern Analysis and Machine Intelligence, International Journal on Computer Vision, IEEE Transactions on Circuits and Systems for Video Technology (T-CSVT), IEEE Transactions on Multimedia, Computer Vision and Image Understanding, IEEE Transactions on Image Processing. As an executive member, he participated in organizing the top three professional conferences in the world: IEEE International Conference on Computer Vision (ICCV), IEEE Conference on Computer Vision and Pattern Recognition (CVPR), European Conference on Computer Vision (ECCV); and he was invited to chair the international multimedia authority conference in 2013 and 2014 as the president of the chapter: IEEE International Conference on Multimedia and Expo. In addition, Tony is also the deputy editor of the international professional journal Journal of Multimedia, and an expert from the National Natural Science Foundation of China (NSF).

CIRCLE: The Center for Infrastructure Resilience in Cities as Livable Environments is one of three research themes supported by the joint Dynamic Research Enterprise for Multidisciplinary Engineering Sciences (DREMES), established between the University of Illinois at Urbana-Champaign (UIUC) and Zhejiang University (ZJU). The CIRCLE Distinguished Lecture Series is intended to provide opportunities for faculty and students to meet and interact with internationally renowned experts in the field.

To register send an email to circle@intl.zju.edu.cn or scan the QR code. Registration is free.



20 July 2022 on 🔁 zoom at 8AM CDT - 9PM Beijing Time



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韩旭博士



#### CIRCLE 杰出讲座系列 无人驾驶定义未来城市交通

**摘要:**人类为什么需要无人驾驶?为什么无人驾驶会在今天发生?人们什么时候可以随时随地使用无人驾 驶车?实现这个美好的愿景,我们还面临哪些挑战和困难?

无人驾驶不仅仅是人工智能的集大成,更是一次社会和经济的颠覆与升级,它将普惠全球,因此吸引了全世界最有才华的技术专家、最具眼光的投资人、最具影响力的企业和最富理想的科学家创业者,他们一一投身到这次技术革命当中。目前,在全世界范围内,无人驾驶的技术和商业化落地做得最好的是中美两国,在这两地,正孕育着颠覆汽车、改变人类交通运输系统、重塑人与自然关系的最领先的无人驾驶技术。

,在这两地,正学有有颠覆八半、战变大突交通运输系统、重空大与百然关系的最领先的尤大驾驶技术。 无人驾驶技术极为复杂,我们不仅要利用机器实现驾驶行为,更要做得比人类司机更加可靠和稳定。无人 驾驶并不是刻板地模仿人类,科学家们把它理解为:把人或者物安全、高效、舒适、经济地从A点移动到B 点,我们需要一辆什么样的自动驾驶车? 文远知行WeRide在探索深度学习在无人驾驶的超级应用,致力 于设计并开发一个通用的自动驾驶技术平台,实现在城市开放道路全场景、全天候的无人驾驶,并且具备 不断学习、自我成长的能力,适应未来不断变化的汽车形态和交通模式,实现人人可用的无人驾驶。我们 把这个平台命名为——WeRide One 文远知行自动驾驶通用技术平台。

文远知行是全球率先投入到无人驾驶技术研发和商业化的头部自动驾驶企业,在本次公开课中,文远知行 创始人兼CEO韩旭博士将和大家剖析无人驾驶浪潮到来背后的社会、经济、技术的进步和挑战,分享文远 知行全球领先的解决方案,以及在全球范围开展商业化落地的最新成果。

简介:韩旭,文远知行WeRide创始人兼CEO。文远知行WeRide是全球领先的L4级自动驾驶科技公司。 韩旭致力于计算机视觉和机器学习技术的研发,是率先投入无人驾驶技术研发及商业化的顶级科学家之一 。在创立文远知行WeRide前,韩旭为美国密苏里大学博士生导师、终身教授。韩旭在2016年担任百度自 动驾驶事业部的首席科学家,带领感知、仿真、传感、硬件团队。他参与领导开发的DeepSpeech2(语 音识别系统)被MIT Tech Review(麻省理工科技评论)评为2016十大技术突破之一。 韩旭主持的多个研究项目中,有11个获得资助,总金额超过七百万美元。他曾领导团队获得多项国际计算 机视觉大赛大奖。包括2013 年 ImageNet国际物体检测大赛第二名(美国第一名);2011 年国际人脸表 情识别与分析大赛特定人识别第一名,非特定人识别第二名;2012 年国际计算机视觉动作识别大赛第一 名;2012 年及 2009 年国际物体检测大赛综合第三名。韩旭是多个国际权威杂志的受邀审稿人,还担任 国际专业杂志 Journal of Multimedia 的副主编,美国国家自然科学基金(NSF)评审委员会专家。

CIRCLE: 宜居城市基础设施韧性中心是伊利诺伊大学厄巴纳–香槟分校 (UIUC) 格兰杰工程学院和浙江 大学 (ZJU) 建立的三个联合研究中心之一。 CIRCLE 杰出讲座系列旨在为教师和学生提供与该领域国 际知名专家会面和互动的机会。

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