


Invited Talk	<b>Automotive Cybersecurity Analysis and Blockchain Technology</b>	
	<b>Name</b>	Madhusudan Singh, Ph. D.
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### Biography

Dr. Madhusudan Singh received his Bachelor and Master's degree in computer application from VBS Purvanchal University, Jaunpur in 2003 and UP Technical University, Lucknow, in 2006. He did his M. Tech degree in IT with specialization in Software Engineering from IIIT-Allahabad, India in 2008 and Ph.D. degree in Ubiquitous IT from Dongseo University, Busan South Korea in Feb. 2012. After that, he worked as a Senior Engineer (R&D) at Samsung Display, Gyeonggi, South Korea, from March 2012 – March 2016. Since June 2016, he is working as a Research Professor at Yonsei Institute of Convergence Technology, Yonsei University Global Campus Songdo, Incheon, South Korea. He is a member of ACM and IEEE Society and has published more than 35 peer-reviewed papers, two books and 10 patents. His research interest in the field of Automotive Cybersecurity, Intelligent Vehicles, Blockchain Technology, Artificial Intelligence, Wireless Communications, Network Security and Internet of Things.

### Previous Invited/Keynote Speakers /Tutorial Talks

- ❖ Automotive Cyber Security: Perspective, and Challenges, LG Electronics, Seoul Korea, Dec. 2016
- ❖ Blockchain Technology for Intelligent Vehicles, Seamless Transportation Lab, Yonsei University, Nov. 2016.
- ❖ ISO Standard Cyber Security for Information Technology, Seamless Transportation Lab, Yonsei University, Songdo, Incheon South Korea, Sept. 2016
- ❖ Secure IoT based Parking System, MtoV Inc. Pyongtek, Yongin, South Korea, April 2016.
- ❖ Secure Cloud Networks for Self-driving Vehicles, Resense Lab, HUFS, South Korea, Dec. 2015
- ❖ Fast Compression Algorithm for Piece-wise Polynomial Basis Function and Their Applications, The 2nd Samsung Display Symposium, Gyeonggi, Yongin, South Korea Oct 2013.
- ❖ Fast Compression Algorithm for Piece-wise Polynomial Basis Function and Their Applications, The 2nd Samsung Display Symposium, Gyeonggi, Yongin-si, South Korea Oct 2013.
- ❖ Suppressed Image Sticking, The 2nd Samsung Display Symposium, Gyeonggi, Yongin-si, South Korea Oct 2013.
- ❖ Pixel Discordance based Image Compression, The 1st Samsung Display Symposium, Gyeonggi, Yongin-si, South Korea June 2013.
- ❖ Group mechanism based wireless Mesh Networks for Future Internet Services, The 2012 FTRA International Conference on Advance IT, Engineering and Management (AIM 2012), Seoul Korea, March 2012.
- ❖ Wireless Communication: Issues, Challenges and Services, United Group of Institutions, Greater Noida, India, Feb. 12, 2011.
- ❖ Secure Wireless Communication, United Group of Institutions, Allahabad, Feb. 7 & 9, 2011. Developing Future Internet Networks: IPv6 WSN approach, IIIT-Allahabad, September, 2010

## **Talk Summery**

As we know Internet Connected Vehicles are called self-driving autonomous vehicle. These vehicles communicate and share data between vehicle to vehicle (V2V), vehicles to infrastructure (V2I), and within vehicles. In such vehicle communication, they use CALM, DSRC and WAVE channels. In addition, in the internet connected vehicles communication, data security, trust and privacy are the most significant issues. However, the internet connected vehicles are secured through the traditional security mechanism similar to information technology security standards (ISO 27000 and family), but a risk of attacks will reach new levels of interoperability, and the independent decision-making will begin to embed complexity, security loopholes and potential "black swan" events. This type of research needs built-in security and architectural design to protect emerging threats. However, Blockchain technology will break this traditional mechanism for data validation and facilitate a trustworthy environment creation for Internet Connected Vehicles. Blockchain is a secure decentralized distributed ledger. Connected Vehicles with Blockchain can create and maintain a continuously growing data transaction blocks of cryptographically secured data records against fraudulence and tamper. Blockchain can also reduce the cost of data and unpredictability of working edge devices or connecting machines. It simplifies the development of cost-effective data transaction, where anything can be tracked and exchanged, without requiring a central body. This talk mainly focus on following major topics such as:

How can adaption of Blockchain is an incredible promise to build trust without sharing any personal information of vehicle and users?

Secure decentralized and distributed data for Internet Connected Vehicles.

Finally, I would like to discuss how Blockchain technology helps to solve and build trustworthy environment between user-to-user, user to machine and machine to machine.