# Kyungtae (KT) Han

Sr. Principal Scientist, Toyota Motor North America
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## SUMMARY

Researcher with 15+ years of experience advancing state-of-art technology in industry research labs. Led Digital Twin Roadmap at Toyota Motor North America and developed advanced system and technology at Intel Labs. Published over 50 papers in premier peer-reviewed journals and conference proceedings, and filed over 50 patent applications worldwide. Serve as the reviewer for many journals and IEEE/ACM conferences. Achievements were acknowledged by 7 awards.

## EMPLOYMENT

**Toyota Motor North America R&D, InfoTech Labs, Mountain View, CA**

| | |
|---|---:|
| *Senior Principal Researcher* (Supervisor: Dr. Prashant Tiwari & Dr. John Kenney) | *2021 - Present* |
| *Principal Researcher* (Supervisor: Dr. Prashant Tiwari) | *2018 - 2021* |

**Locix Inc., San Bruno, CA**

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|---|---:|
| *Director* | *2015 - 2018* |

**Intel Corp., Intel Labs, Hillsboro, OR**

| | |
|---|---:|
| *Senior Researcher* | *2010 - 2015* |
| *Researcher* | *2006 - 2010* |

## EDUCATION

**Ph.D. in Electrical and Computer Engineering** *2006*
*The University of Texas at Austin*, Austin, Texas
Advisor: Dr. Brian L. Evans

**M.S. in Electrical and Engineering** *1998*
*Seoul National University*, Seoul, Korea
Advisor: Dr. Wonyong Sung

**B.S. in Information Engineering** *1996*
*Korea University*, Sejong, Korea

## PUBLICATIONS

### *Journal Articles*

[J46] Ziran Wang, Rohit Gupta, Kyungtae Han, Akila Ganlath, Nejib Ammar, and Prashant Tiwari. Mobility digital twin: Concept, architecture, case study, and future challenges. *IEEE Internet of Things Journal*, 2022

[J45] Xuanpeng Zhao, Xishun Liao, Guoyuan Wu, Matthew J. Barth, Ziran Wang, Kyungtae Han, and Prashant Tiwari. Co-simulation platform for modeling and evaluating connected and automated vehicles in mixed traffic. *SAE International Journal of Connected and Automated Vehicles*, 2022 (Accepted)

[J44] Yanbing Wang, Ziran Wang, Kyungtae Han, Prashant Tiwari, and Daniel Work. Gaussian process-based personalized adaptive cruise control. *IEEE Intelligent Transportation Systems Transactions*, 2022 (Accepted)

**[J43]** Shili Sheng, Erfan Pakdamania, Kyungtae Han, Ziran Wang, John Lenneman, David Parker, and Lu Feng. Planning for automated vehicles with human trust. *Transactions on Cyber-Physical Systems*, 2021 (Submitted)

**[J42]** Yongkang Liu, Ziran Wang, Kyungtae Han, Zhenyu Shou, Prashant Tiwari, and John Hansen. Vision-cloud data fusion for adas: A lane change prediction case study. *IEEE Transactions on Intelligent Vehicles*, 7(2):210–220, June 2022. doi: 10.1109/TIV.2021.3100465

**[J41]** Ziran Wang, Kyungtae Han, and Prashant Tiwari. Digital twin-assisted cooperative driving at non-signalized intersections. *IEEE Transactions on Intelligent Vehicles*, 7(2):198–209, June 2022. doi: 10.1109/TIV.2021.3100465

**[J40]** Xishun Liao, Xuanpeng Zhao, Ziran Wang, Kyungtae Han, Prashant Tiwari, Matthew J. Barth, and Guoyuan Wu. Game theory-based ramp merging for mixed traffic with unity-sumo co-simulation. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, pages 1–12, 2021b. doi: 10.1109/TSMC.2021.3131431

**[J39]** Xishun Liao, Ziran Wang, Xuanpeng Zhao, Kyungtae Han, Prashant Tiwari, Matthew J. Barth, and Guoyuan Wu. Cooperative ramp merging design and field implementation: A digital twin approach based on vehicle-to-cloud communication. *IEEE Transactions on Intelligent Transportation Systems*, pages 1–11, 2021

**[J38]** Ziran Wang, Xishun Liao, Chao Wang, David Oswald, Guoyuan Wu, Kanok Boriboonsomsin, Matthew J. Barth, Kyungtae Han, BaekGyu Kim, and Prashant Tiwari. Driver behavior modeling using game engine and real vehicle: A learning-based approach. *IEEE Transactions on Intelligent Vehicles*, 5(4): 738–749, 2020b. doi: 10.1109/TIV.2020.2991948

**[J37]** Ziran Wang, Xishun Liao, Chao Wang, David Oswald, Guoyuan Wu, Kanok Boriboonsomsin, Matthew J. Barth, Kyungtae Han, BaekGyu Kim, and Prashant Tiwari. Cooperative ramp merging system: Agent-based modeling and simulation using game engine. *SAE International Journal of Connected and Automated Vehicles*, May 2019 (**Best Paper Award**). doi: doi.org/10.4271/12-02-02-0008

**[J36]** Kyungtae Han and Brian L. Evans. Optimum wordlength search using sensitivity information. *EURASIP Journal on Advances in Signal Processing*, 2006, Dec. 2006

### Conference Proceedings

**[C35]** Noveen Sachdeva, Ziran Wang, Kyungtae Han, Rohit Gupta, and Julian McAuley. Gapformer: Fast autoregressive transformers meet rnns for personalized adaptive cruise control. In *IEEE International Conference on Intelligent Transportation Systems (ITSC)*, Oct. 2022 (Accepted)

**[C34]** Shili Sheng, Erfan Pakdamanian, Kyungtae Han, Ziran Wang, and Lu Feng. A study on learning and simulating personalized car-following driving style. In *IEEE International Conference on Intelligent Transportation Systems (ITSC)*, Oct. 2022 (Accepted)

**[C33]** Zhouqiao Zhao, Ziran Wang, Kyungtae Han, Rohit Gupta, Prashant Tiwari, Guoyuan Wu, and Matthew J. Barth. Personalized car following for autonomous driving with inverse reinforcement learning. In *IEEE International Conference on Robotics and Automation (ICRA)*, May 2022b

**[C32]** Xishun Liao, Ziran Wang, Zhouqiao Zhao, Kyungtae Han, Prashant Tiwari, Matthew J. Barth, and Guoyuan Wu. Online lane-change prediction using personalized driving data: A hierarchical learning-based approach. In *IEEE International Conference on Robotics and Automation (ICRA)*, May 2022

**[C31]** Xuanpeng Zhao, Xishun Liao, Ziran Wang, Kyungtae Han, Prashant Tiwari, Matthew J. Barth, and Guoyuan Wu. Co-simulation platform for modeling and evaluating connected and automated vehicles in mixed traffic. In *TRB Annual Meeting*, Jan. 2022a

[**C30**] Ziran Wang, Kyungtae Han, and Prashant Tiwari. Digital twin simulation of connected and automated vehicles with the unity game engine. In *IEEE International Conference on Digital Twin and Parallel Intelligence*, 2021 (**Best Application Award**)

[**C29**] Yanbing Wang, Ziran Wang, Kyungtae Han, Prashant Tiwari, and Daniel Work. Personalized adaptive cruise control via gaussian process regression. In *2021 IEEE International Intelligent Transportation Systems and Conference (ITSC)*, pages 1496–1502, 2021a

[**C28**] Shili Sheng, Erfan Pakdamanian, Ziran Wang, Kyungtae Han, John Lenneman, and Lu Feng. Trust-based route planning for autonomous vehicles. In *Proceedings of the ACM/IEEE 12th International Conference on Cyber-Physical Systems*, ICCPS'21, pages 1–10, New York, NY, USA, 2021

[**C27**] Xishun Liao, Ziran Wang, Xuanpeng Zhao, Kyungtae Han, Prashant Tiwari, Matthew J. Barth, and Guoyuan Wu. A game theory based ramp merging strategy for connected and automated vehicles in the mixed traffic: A unity-SUMO integrated platform. In *Transportation Research Board (TRB) 100th Annual Meeting*, Jan. 2021a

[**C26**] Ziran Wang, Kyungtae Han, and Prashant Tiwari. Motion estimation of connected and automated vehicles under communication delay and packet loss of V2X communications. In *SAE World Congress*, April 2021b

[**C25**] Ziran Wang, Kyungtae Han, and Prashant Tiwari. Augmented reality-based advanced driver-assistance system for connected vehicles. In *IEEE Internation Conference on Systems, Man, and Cybernetics*, Oct. 2020a

[**C24**] Jianyu Su, Peter A. Beling, Rui Guo, and Kyungtae Han. Graph convolution networks for probabilistic modeling of driving acceleration. In *2020 IEEE 23rd Intelligent Transportation Systems Conference*, ITSC'20, Sept. 2020

[**C23**] Zhenyu Shou, Ziran Wang, Kyungtae Han, Yongkang Liu, Prashant Tiwari, and Xuan Di. Long-term prediction of lane change maneuver through a multilayer perceptron. In *31st IEEE Intelligent Vehicles Symposium*, IV'20, Oct. 2020

[**C22**] Yongkang Liu, Ziran Wang, Kyungtae Han, Zhenyu Shou, Prashant Tiwari, and John Hansen. Sensor fusion of camera and cloud digital twin information for intelligent vehicles. In *31st IEEE Intelligent Vehicles Symposium*, IV'20, Oct. 2020

[**C21**] Ziran Wang, Xishun Liao, Xuanpeng Zhao, Kyungtae Han, Prashant Tiwari, Mattew J. Barth, and Guoyuan Wu. A digital twin paradigm: Vehicle-to-cloud based advanced driver assistance systems paper. In *IEEE Vehicular Technology Conference Spring*, May 2020c

[**C20**] Xishun Liao, David Oswald, Ziran Wang, Guoyuan Wu, Kanok Boriboonsomsin, Mattew J. Barth, Kyungtae Han, Baekgyu Kim, and Prashant Tiwari. Cooperative ramp merging with vehicle-to-cloud communications: A field experiment. In *Transportation Research Board 99th Annual Meeting*, Jan. 2020

[**C19**] Xinyue Kan, Akila Ganlath, Seyhan Ucar, Kyungtae Han, Prashant Tiwari, and Konstantinos Karydis. Edge assisted misbehavior detection for platoons. In *IEEE Vehicular Network Conference*, pages 48–51, Dec. 2019

[**C18**] Shili Sheng, Erfan Pakdamanian, Kyungtae Han, BaekGyu Kim, Prashant Tiwari, Inki Kim, and Lu Feng. A case study of trust on autonomous driving. In *2019 IEEE Intelligent Transportation Systems Conference*, pages 4368–4373, Oct 2019

[**C17**] Ziran Wang, Kyungtae Han, Baekgyu Kim, Guoyuan Wu, and Matthew J. Barth. Lookup table-based consensus algorithm for real-time longitudinal motion control of connected and automated vehicles. In *2019 American Control Conference*, ACC'19, pages 5298–5303, July 2019

[**C16**] Ian Jones and Kyungtae Han. Probabilistic modeling of vehicle acceleration and state propagation with long short-term memory neural networks. In *2019 IEEE Intelligent Vehicles Symposium (IV)*,

pages 2236–2242, June 2019. doi: 10.1109/IVS.2019.8814063

[**C15**] Hiromitsu Kobayashi, Kyungtae Han, and BaekGyu Kim. Vehicle-to-vehicle message sender identification for co-operative driver assistance systems. In *IEEE 89th Vehicular Technology Conference (VTC2019-Spring)*, April 2019

[**C14**] Seogoo Lee, Dongwook Lee, Kyungtae Han, Emily Shriver, Lizy K. John, and Andreas Gerstlauer. Statistical quality modeling of approximate hardware. In *2016 17th International Symposium on Quality Electronic Design (ISQED)*, pages 163–168, March 2016. doi: 10.1109/ISQED.2016.7479194

[**C13**] Wei Zuo, Warren Kemmerer, Jong B. Lim, Louis-Nol Pouchet, Andrey Ayupov, Taemin Kim, Kyungtae Han, and Deming Chen. A polyhedral-based systemc modeling and generation framework for effective low-power design space exploration. In *2015 IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, pages 357–364, Nov. 2015 (**Best Paper Award**). doi: 10.1109/ICCAD.2015.7372592

[**C12**] Dongwook Lee, Taemin Kim, Kyungtae Han, Yatin Hoskote, Lizy K. John, and Andreas Gerstlauer. Learning-based power modeling of system-level black-box IPs. In *2015 IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, pages 847–853, Nov. 2015. doi: 10.1109/ICCAD.2015.7372659

[**C11**] Alexander W. Min, Kyungtae Han, DongHo Hong, and Yong-Joon Park. Adaptive touch sampling for energy-efficient mobile platforms. In *2015 IEEE Systems Conference (SysCon) Proceedings*, pages 754–757, April 2015. doi: 10.1109/SYSCON.2015.7116841

[**C10**] Kyungtae Han, Alexander W. Min, Nithyananda S. Jeganathan, and Paul Diefenbaugh. A hybrid display frame buffer architecture for energy efficient display subsystems. In *2013 International Symposium on Low Power Electronics and Design (ISLPED)*, pages 347–353, Sep. 2013. doi: 10.1109/ISLPED.2013.6629321

[**C9**] Kyungtae Han, Zen Fang, Paul Diefenbaugh, Rick Forand, R. R. Iyer, and D. Newell. Using checksum to reduce power consumption of display systems for low-motion content. In *2009 IEEE International Conference on Computer Design*, pages 47–53, Oct. 2009. doi: 10.1109/ICCD.2009.5413176

[**C8**] Kyungtae Han, Keith R. Tinsley, and Jorge Aguilar-Torrentera. Identification of high speed jittered digital interconnects using bicoherence spectra. In *2008 International Caribbean Conference on Devices, Circuits and Systems*, pages 1–4, April 2008. doi: 10.1109/ICCDCS.2008.4542625

[**C7**] Kyungtae Han, A. Olson, and Louis Evans. Automatic floating-point to fixed-point transformations. In *2006 Asilomar Conference on Signals, Systems and Computers*, pages 79–83, Oct. 2006

[**C6**] Kyungtae Han, Brian L. Evans, and Earl E. Swartzlander, Jr. Low-power multipliers with data wordlength reduction. In *2005 Asilomar Conference on Signals, Systems and Computers*, pages 1615–1619, Oct. 2005

[**C5**] Kyungtae Han, Brian L. Evans, and Earl E. Swartzlander, Jr. Data wordlength reduction for low-power signal processing software. In *2004 IEEE Workshop on Signal Processing Systems*, pages 343–348, Oct. 2004. doi: 10.1109/SIPS.2004.1363074

[**C4**] Kyungtae Han and Brian L. Evans. Wordlength optimization with complexity-and-distortion measure and its application to broadband wireless demodulator design. In *2004 IEEE International Conference on Acoustics, Speech, and Signal Processing*, volume 5, pages 343–348, May 2004. doi: 10.1109/ICASSP.2004.1327041

[**C3**] Kyungtae Han, Iksu Eo, Kyungsu Kim, and Hanjin Cho. Numerical word-length optimization for CDMA demodulator. In *2001 IEEE International Symposium on Circuits and Systems*, volume 4, pages 290–293 vol. 4, May 2001. doi: 10.1109/ISCAS.2001.922229

[**C2**] Kyungtae Han, Iksu Eo, Kyungsu Kim, and Hanjin Cho. Bit constraint parameter decision method

for CDMA digital demodulator. In *The 5th CDMA International Conference and Exhibition*, volume 2, pages 583–586, Nov. 2000

[**C1**] Seunghyeon Nahm, Kyungtae Han, and Wonyong Sung. A CORDIC-based digital quadrature mixer: comparison with a ROM-based architecture. In *1998 IEEE International Symposium on Circuits and Systems (ISCAS)*, volume 4, pages 385–388, May 1998. doi: 10.1109/ISCAS.1998.698871

## OTHER PUBLICATIONS

### *Book*

[**B1**] Kyungtae Han and Brian L. Evans. *Transforming Floating-Point Algorithms to Fixed-Point Implementations.* VDM Verlag Publishing, June 2009

## PATENTS

[**P52**] Ziran Wang, Rohit Gupta, Kyungtae Han, and Prashant Tiwari. Cloud-based mobility digital twin for human, vehicle, and traffic, U.S. Pat. App. No. 17/744,452 filed on May 13, 2022

[**P51**] Kyungtae Han, BaekGyu Kim, and Ryan Wang. Adjustable blind spot monitor, issued May 10, 2022, US Patent 11328605

[**P50**] Jianyu Su, Kyungtae Han, Rui Guo, and Roger Melen. Systems and methods for providing driving recommendations, issued April 26, 2022, US Patent 11315421

[**P49**] Akila Ganlath, Rohit Gupta, Paul Li, Ziran Wang, Kyungtae Han, and Nejib Ammar. Medical emergency detection in-vehicle caretaker, U.S. Pat. App. No. 17/725,297 filed on April 20, 2022

[**P48**] Ziran Wang, Kyungtae Han, Rohit Gupta, and Prashant Tiwari. Personalized vehicle lane change maneuver prediction, U.S. Pat. App. No. 17/715,011 filed on April 6, 2022

[**P47**] Kyungtae Han, Ahmed Sakr, and Prashant Tiwari. Cloud-assisted virtual vehicular communication, issued March 22, 2022, US Patent 11284234

[**P46**] Ziran Wang, Kyungtae Han, and BaekGyu Kim. Xr-based slot reservation system for connected vehicles traveling through intersections, issued Feb. 22, 2022, US Patent 11257363

[**P45**] Rohit Gupta, Zhouqiao Zhao, Ziran Wang, Kyungtae Han, and Prashant Tiwari. Systems and method for predicting driver visual impairment with artificial intelligence, U.S. Pat. App. No. 17/586,593 filed on Jan. 27, 2022

[**P44**] Kyungtae Han, Ahmed Sakr, and Prashant Tiwari. Digital twin simulation-based vehicular communication planning, issued Jan. 25, 2022, US Patent 11234160

[**P43**] Zhouqiao Zhao, Ziran Wang, Rohit Gupta, Kyungtae Han, and Prashant Tiwari. Personalized adaptive cruise control based on steady-state operation, U.S. Pat. App. No. 17/578,330 filed on Jan. 18, 2022

[**P42**] Yongkang Liu, Ziran Wang, Kyungtae Han, Zhenyu Shou, and Prashant Tiwari. Identifying a specific object in a two-dimensional image of objects, issued Jan. 11, 2022, US patent 11222215

[**P41**] Zhouqiao Zhao, Ziran Wang, Rohit Gupta, Kyungtae Han, and Prashant Tiwari. Personalized vehicle operation for autonomous driving with inverse reinforcement learning, U.S. Pat. App. No. 17/572,486 filed on Jan. 10, 2022

[**P40**] Hiromitsu Kobayashi, Kyungtae Han, BaekGyu Kim, and Ryan Wang. Longitudinal motion control of connected and automated vehicles, issued Jan. 4, 2022, US patent 11214253

[**P39**] Ziran Wang, Zhouqiao Zhao, Rohit Gupta, Kyungtae Han, and Prashant Tiwari. Method and system for personalized car following with transformers, U.S. Pat. App. No. 17/567,504 filed on Jan. 3, 2022

[**P38**] Zhenyu Shou, Kyungtae Han, Ziran Wang, Yongkang Liu, and Prashant Tiwari. Systems and methods for providing guidance to vehicle drivers regarding predicted lane-change behavior of other vehicle drivers, issued Oct. 19, 2021, US patent 11151880

[**P37**] Rui Guo, Sergei Avedisov, Kyungtae Han, Hongsheng Lu, and Prashant Tiwari. Vehicle communication sender identification via hyper-graph matching, U.S. Pat. App. No. 17/478,851 filed on Sept. 17, 2021

[**P36**] Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari. Subconscious big picture macro and split second micro decisions adas, U.S. Pat. App. No. 17/471,100 filed on Sept. 9, 2021

[**P35**] Rohit Gupta, Ziran Wang, Yanging Wang, Kyungtae Han, and Prashant Tiwari. Systems and methods for protecting a vehicle at an intersection, U.S. Pat. App. No. 17/411,831 filed on Aug. 25, 2021

[**P34**] Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari. Driver classification systems and methods for obtaining an insurance rate for a vehicle, U.S. Pat. App. No. 17/410,536 filed on Aug. 24, 2021

[**P33**] Ziran Wang, Kyungtae Han, and Prashant Tiwari. Systems and methods for compensating for driver speed-tracking error, issued Aug. 10, 2021, US patent 11087623

[**P32**] Rohit Gupta, Ziran Wang, Yanbing Wang, Kyungtae Han, and Prashant Tiwari. Student-t process personalized adaptive cruise control, U.S. Pat. App. No. 17/388,488 filed on Jul. 29, 2021

[**P31**] Yanbing Wang, Ziran Wang, Kyungtae Han, Rohit Gupta, and Prashant Tiwari. Systems and methods for personalizing adaptive cruise control in a vehicle, U.S. Pat. App. No. 17/387,045 filed on Jul. 28, 2021

[**P30**] Rohit Gupta, Ziran Wang, Yanbing Wang, Kyungtae Han, and Prashant Tiwari. Vehicular topple risk notification, U.S. Pat. App. No. 17/385,012 filed on July 26, 2021

[**P29**] Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari. Systems and methods to reduce audio distraction for a vehicle driver, U.S. Pat. App. No. 17/333,616 filed on May 28, 2021

[**P28**] Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari. Hybrid deterministic override of probabilistic advanced driving assistance systems (adas), U.S. Pat. App. No. 17/398,666 filed on Apr. 10, 2021

[**P27**] Kyungtae Han, Ziran Wang, Prashant Tiwari, John Lenneman, Esaka Toshinori, Miles Johnson, and Chase Violetta. Determining a setting for a cruise control, U.S. Pat. App. No. 17/216,924 filed on Mar. 30, 2021

[**P26**] Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari. Methods and systems for rideshare implicit needs and explicit needs personalization, U.S. Pat. App. No. 17/217,358 filed on Mar. 30, 2021

[**P25**] Rohit Gupta, Ziran Wang, Kyungtae Han, and Prashant Tiwari. Vehicle guard rail system, U.S. Pat. App. No. 17/206,706 filed on March 19, 2021

[**P24**] Ziran Wang, Kyungtae Han, and Prashant Tiwari. System and method for estimating motion of an automated vehicle for cooperative driving, U.S. Pat. App. No. 17/196,016 filed on March 9, 2021

[**P23**] Ziran Wang, Kyungtae Han, and Prashant Tiwari. System and method for scheduling connected vehicles to cross non-signalized intersections, U.S. Pat. App. No. 17/193,278 filed on March 5, 2021

[**P22**] Hiromitsu Kobayashi, Kyungtae Han, and Xiaowen Jiang. Context system for providing cyber security for connected vehicles, issued Feb. 23, 2021, US patent 10932135

[**P21**] Sergei Avedisov, Ziran Wang, Ahmed Sakr, Kyungtae Han, Rui Guo, and Onur Altintas. Cooperative driving system and method, U.S. Pat. App. No. 17/174,998 filed on February 12, 2021

[**P20**] Ziran Wang, Kyungtae Han, and Prashant Tiwari. Producing, for an autonomous vehicle, a route from an origination to a destination, U.S. Pat. App. No. 17/168,582 filed on February 5, 2021

**[P19]** Kyungtae Han and Katsumi Nagata. Vehicles and methods identifying a service device in communication with a vehicle, issued Jan. 12, 2021, US patent 10893555

**[P18]** Ziran Wang, Kyungtae Han, and Prashant Tiwari. System and method for connected vehicle lane merge, U.S. Pat. App. No. 17/031,095 filed on September 24, 2020

**[P17]** Zhenyu Shou, Ziran Wang, Kyungtae Han, Yongkang Liu, and Prashant Tiwari. Rest stop recommendation system, U.S. Pat. App. No. 16/998,528 filed on August 20, 2020

**[P16]** Zhenyu Shou, Yongkang Liu, Kyungtae Han, Ziran Wang, and Prashant Tiwari. Systems and methods for long-term prediction of lane change maneuver, U.S. Pat. App. No. 16/897,386 filed on June, 2020

**[P15]** Ziran Wang, Kyungtae Han, and Prashant Tiwari. Ramp merging assistance, U.S. Pat. App. No. 16/781,211 filed on Feb. 4th, 2020

**[P14]** Kyungtae Han and Hiromitsu Kobayashi. Proactive message transmitter identification system, US Application No 16/365,053 filed on March 26, 2019

**[P13]** Ziran Wang, Kyungtae Han, and BaekGyu Kim. Vehicle-to-everything communication-based lane change collision avoidance warning, US Application No 16/295,700 filed on March 7, 2019

**[P12]** Nithyananda Jeganathan, Rajesh Poornachandran, Paul Diefenbaugh, and Kyungtae Han. Techniques for managing system power using deferred graphics rendering, issued Feb. 23, 2016, US patent 9269121

**[P11]** Kyungtae Han, Dongho Hong, Alexander W. Min, Yong joon Park, and Mohamed A. Abdelmoneum. Adaptive touch scanning, issued Jan. 26, 2016, US patent 9244551

**[P10]** Nithyananda Jeganathan, Kyungtae Han, and Paul Diefenbaugh. Data transmission for display partial update, issued Nov. 3, 2015, US patent 9177534

**[P9]** Kyungtae Han, Paul Diefenbaugh, and Sarah Sharp. Polling determination, issued Jun. 16, 2015, US patent 9058422

**[P8]** Kyungtae Han, Paul Diefenbaugh, Sameer Abhinkar, Taemin Kim, and Siva Jeganathan. Hybrid display frame buffer for display subsystem, issued May 12, 2015, US patent 9030482

**[P7]** Siva Jeganathan, Paul Diefenbaugh, Kyungtae Han, Jinjun Liu, and James A. Bish Paul C. Drews. Control of platform power consumption using coordination of platform power management and display power management, issued Oct. 14, 2014, US patent 8862906

**[P6]** Maximino Vasquez, Ravi Ranganathan, Seh Kwa, Todd M. Witter, Kyungtae Han, and Paul S. Diefenbaugh. Techniques for aligning frame data, issued Feb. 4, 2014, US patent 8643658

**[P5]** Kyungtae Han, Guoqing C. Li, and Sumit K. Singh. Display update for a wireless display device, issued Sept. 9, 2013, US patent 8525844

**[P4]** Kyungtae Han and Keith R. Tinsley. Systems and methods for cross-platform radio frequency interference mitigation, issued Oct. 16, 2012, US Patent 8290439

**[P3]** Kyungtae Han and Keith R. Tinsley. High speed digital waveform identification using higher order statistical signal processing, issued Jun. 8, 2010, US Patent 7734434

**[P2]** Ik-Soo Eo, Kyungtae Han, Hae-Bum Jung, and Kyung-Soo Kim. Apparatus for searching multipath in spread spectrum communications system and method, issued Mar. 20, 2007, US Patent 7194018

**[P1]** Kyungtae Han, In-Gi Lim, Ik-Soo Eo, Hye-Ju Seo, Kyung-Soo Kim, Hee-Bum Jung, and Han-Jin Cho. Apparatus and method for separating carrier of multicarrier wireless communication receiver system, issued Oct. 24, 2006, US Patent 7127012

## AWARDS AND HONORS

**Best Application Award**, IEEE Intl. Conference on Digital Twins and Parallel Intelligence *2021*
**Vincent Bendix Automotive Electronics Engineering Award**, SAE International *2020*
**Best Paper Award**, IEEE/ACM Intl. Conference on Computer-Aided Design *2015*
**Intel Achievement Award**, Intel Corp. *2012*
**PC Client Architecture Division Recognition Award**, Intel Corp. *2011*
**Circuit and Systems Research Division Recognition Award**, Intel Corp. *2010*
**Corporate Technology Group Recognition Award**, Intel Corp. *2008*

## PROFESSIONAL ACTIVITIES

### *As an Editor*
Associate editor of IEEE Intelligent Vehicle (IV) *2020 - 2021*

### *As a Reviewer*
Reviewer of IEEE Transactions on Intelligent Transportation Systems (TITS) *2021 - 2022*
Reviewer of Transportation Research Board (TRB) Annual Meeting *2021 - 2022*
Reviewer of IEEE International Intelligent Transportation Systems Conference (ITSC) *2021 - 2022*
Reviewer of Transportation Research Record (TRR) *2020 - 2022*
Reviewer of Journal Accident Analysis and Prevention (AAP) *2019*
Reviewer of IEEE Systems Conference (SysCon) *2016 - 2021*
Reviewer of Military Communications Conference (MILCOM) *2016 - 2019*
Reviewer of IEEE Int'l Conf. on Communications (ICC) *2016 - 2017*
Reviewer of International Conference on Field-Programmable Technology (FPT) *2016*
Reviewer of EURASIP Journal on Advances in Signal Processing *2016*
Reviewer of IEEE Transactions on Computers (TC) *2014*
Reviewer of IEEE Int'l Conf. on Connected Vehicles and Expo (ICCVE) *2013 - 2019*
Reviewer of IEEE Global Communications Conference (GLOBECOM) *2013 - 2016*
Reviewer of ACM/IEEE Design Automation Conference (DAC) *2013 - 2016*
Reviewer of ACM/IEEE Int'l Symposium on Low Power Electronics and Design (ISLPED) *2013*
Reviewer of Workshop on Power-Aware Computing Systems (HotPower) *2012*
Reviewer of IEEE Transactions on Circuits and Systems II (TCAS-II) *2011*
Reviewer of Journal of Intelligent Information Systems (JIIS) *2011*

### *As a Society Member*
Member of Intelligent Transportation Systems Society (ITSS), IEEE *2019 - Present*
Member of Society of Automotive Engineers (SAE) *2018 - Present*
Senior Member of Institute of Electrical and Electronics Engineers (IEEE) *2013 - Present*

### *As a Panelist*
IEEE CEDA Young Professionals Forum *2020*

## INVITED TALKS

**Workshop on Safe Autonomy and Practical AI** *Nov. 2021*
Title: Digital Twin and Cyber-Physical System

**IEEE CEDA Young Professionals Forum** *Dec. 2020*
Title: Emerging Research in Connected and Autonomous Vehicles

**Electronics and Telecom Research Inst.** Daejeon, Korea *Jan. 2012*
Title: Low Power Techniques in Computer Display Sub-system

**Seoul National University of Science and Technology**, Seoul *Jan. 2012*
Title: Low Power Techniques in Computer Display Sub-system

**Performance and Power Monitoring Summit**, Hillsboro, OR *Nov. 2011*
Title: Post-Si Platform Power Modeling

**Software Professionals Conference**, Hillsboro, OR *Oct. 2011*
Title: Software Power Estimation with Simics Virtual Platform

**Platform Power Estimation Workshop**, Hillsboro, OR *Sept. 2011*
Title: Simics-Based Power Modeling Concept

## MENTORED STUDENTS

Zhouqiao Zhao, 2021 summer intern, Ph.D. student in University of California at Riverside
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