



# DAEHYUN JI

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## EDUCATION

<b>Ph.D.(Joint M.S. and Ph.D.) in Electrical Engineering</b>   <i>Robotics And Control</i> POSTECH (Pohang University of Science and Technology)	Mar. 2003 – Aug 2009 Pohang, South Korea
<b>B.S. in Electrical Engineering</b>   <i>EECS</i> Kyungbook National University	Mar. 1996 – Feb. 2002 Daegu, South Korea

## WORK EXPERIENCE

<b>Project Lead/Research Master</b> AI & SW Center, Samsung Advanced Institute of Technology (SAIT) <ul style="list-style-type: none"><li>Project Lead of the SAIT Autonomous Driving Team (Team Member: 40)</li><li>IVI/ADAS/Autonomous Driving Solution</li><li>EV, E/E Architecture</li><li>AI, Computer Vision, Robotics</li></ul>	Sep. 2020 – Current Suwon, South Korea
<b>Visiting Researcher</b> Mila - Quebec AI Institute <ul style="list-style-type: none"><li>Artificial Intelligence Research with Prof. Yoshua Bengio, Simon Lacoste-Julien</li><li>AI based Autonomous Driving</li></ul>	Jan. 2019 – Feb. 2020 Montreal, Quebec, Canada
<b>Tech Lead/Principle Engineer</b> A-Project Team, System LSI Business, Samsung Electronics <ul style="list-style-type: none"><li>Automotive Vision Team Lead (Member: 15)</li><li>ADAS SoC Solution</li></ul>	Sep. 2018 – Aug. 2020 Hwaseong, South Korea
<b>Project Lead/Research Master</b> SW Solution Lab, Samsung Advanced Institute of Technology (SAIT) <ul style="list-style-type: none"><li>Project Lead of the SAIT Autonomous Driving Team (Team Member: 23)</li><li>AI Based Autonomous Driving Platform (Research Master)</li><li>AI, Computer Vision, Robotics (Individual Contributor)</li></ul>	Sep. 2015 – Aug. 2018 Suwon, South Korea
<b>Tech Lead/Senior SW Engineer</b> Mobile communication Division, Digital Media and Communications, Samsung Electronics <ul style="list-style-type: none"><li>Samsung Galaxy 1-6 (Individual Contributor, Tech Lead)</li><li>System SW ( Kernel / Device Driver / Framework / Application )</li></ul>	Sep. 2009 – Aug. 2015 Suwon, South Korea

## HONORS AND AWARDS

<b>Distinguished Engineer Award, DS Division, Samsung Electronics</b> ADAS / L4 Autonomous Driving	2022 Hwaseong, South Korea
<b>Boundless Search for Breakthroughs Award, SAIT, Samsung Electronics</b> Autonomous Driving	2022 Suwon, South Korea
<b>Gold Award, Samsung Best Paper</b> Uncertainty-aware Knowledge Distillation for Realtime Scene Segmentation	2018 Suwon, South Korea
<b>Samsung Future Creator Award</b> Autonomous Driving Platform	2018 Hwaseong, South Korea

<b>Bronze Award, Samsung Best Paper</b>	2017
Selective Knowledge Distillation for Real-Time Object Detection	Suwon, South Korea
<b>Leaders the world's top 100 technologies in 2025</b>	2017
NAEK	Seoul, South Korea
<b>Best Reviewer</b>	2011
ICROS	Seoul, South Korea

#### TEACHING EXPERIENCE

<b>Matlab Language (6 Months Teaching/Observing)</b>	Fall 2003
POSTECH (Pohang University of Science and Technology)	Pohang, South Korea
<b>Robotics Experiment (6 Months Teaching/Observing)</b>	Fall 2005
POSTECH (Pohang University of Science and Technology)	Pohang, South Korea

#### PUBLICATION - INTERNATIONAL JOURNAL

- Jinhyuk Choi, Byeongju Lee, Seho Shin, **\*\*Daehyun Ji**, "Fast and Easy Sensor Adaptation with Self-training", IEEE ACCESS, Accepted, 2023
- Dokwan Oh, **Daehyun Ji**, Ohmin Kwon, Yoonsuk Hyun, "Boosting Out-of-Distribution Image Detection With Epistemic Uncertainty", IEEE ACCESS, 10, 109289-109298, 2022
- S.H.Lee, M.J.Park, **\*\*D.H.Ji**, **\*\*O.M.Kwon**, "Stability and dissipativity criteria for neural networks with time-varying delays via an augmented zero equality approach", Neural Network, ,146, 141-150, 2022
- **Daehyun Ji**, Dokwan Oh, Yoonsuk Hyun, Ohmin Kwon, Myeong-Jin Park, "How to Handle Noisy Labels for Robust Learning from Uncertainty", Neural Network, Volume 143, 209-217, November, 2021
- T.H Lee, J.H Park, **D.H Ji**, H.Y Jung, "Leader – following consensus problem of heterogeneous multi – agent systems with nonlinear dynamics using fuzzy disturbance observer", Complexity 19,4, 20-31, 2014
- D.W Lee, W.J Yoo, **D.H Ji**, J.H Park, "Integral control for synchronization of complex dynamical networks with unknown non-identical nodes", Applied Mathematics and Computation 224, 140-149, 2013
- S.C Jeong, **D.H Ji**, J.H Park, S.C Won, "Adaptive synchronization for uncertain chaotic neural networks with mixed time delays using fuzzy disturbance observer", Applied Mathematics and Computation 219 11, 5984-5995, 2013
- S.C Jeong, **D.H Ji**, J.H Park, S.C Won, "Adaptive synchronization for uncertain complex dynamical network using fuzzy disturbance observer", Nonlinear Dynamics 71,1-2, 223-234, 2013
- **D.H Ji**, J. H. Koo, W. J. Yoo, Ju H. Park, "Precise tracking control of piezoelectric actuators based on a hysteresis observer", Nonlinear Dynamics 70,3,1969-1976, 2012
- Tae H. Lee, Ju H. Park, **D.H Ji**, H.Y.Jung, "Decentralized guaranteed cost dynamic control for synchronization of a complex dynamical network with randomly switching topology", Applied Mathematics and Computation 219,3,996-1010, 2012
- S. Lakshmanan, Ju H. Park , **D.H Ji**, H.Y. Jung , G. Nagamani, "State estimation of neural networks with time-varying delays and Markovian jumping parameter based on passivity theory", Nonlinear Dynamics 70,2,1421-1434, 2012
- **D.H Ji**, S.C.Jeong, J.H. Park,S.C. Won, "Robust adaptive backstepping synchronization for a class of uncertain chaotic systems using fuzzy disturbance observer", Nonlinear Dynamics 69, 3, 1125-1130, 2012

- J.H. Koo, **D.H Ji**, Ju. H. Park, "An improved robust delay-dependent stability criterion for genetic regulatory networks with interval time delays", Communications in Nonlinear Science and Numerical Simulation 17, 8, 3399-3405, 2012
- Tae H. Lee, Ju H. Park, **D.H Ji**, O.M. Kwon, S.M. Lee, "Guaranteed cost synchronization of a complex dynamical network via dynamic feedback control", Applied Mathematics and Computation 219, 3, 996-1010, 2012
- S.M. Lee, Ju H Park, **D.H Ji**, S.C. Won, "A robust model predictive control for LPV systems using relaxation matrices", IET Control Theory and Applications, 1,6, 1567-1573, 2007
- **D.H Ji**, S.C. Jeong, S.M. Lee, J.H. Park, S.C. Won, "Adaptive lag synchronization for uncertain complex dynamical network with delayed coupling", Applied Mathematics and Computation 218,9, 4872-4880, 2012
- **D.H Ji**, D.W. Lee, J.H. Koo, S.C. Won, S.M. Lee, Ju.H. Park, "Synchronization of neutral complex dynamical networks with coupling time varying delays", Nonlinear Dynamics, 65,349-358, 2011
- **D.H Ji**, J.H. Koo, S.C. Won, S.M. Lee, Ju.H. Park, " $H_\infty$  synchronization of nonlinear Bloch equations via dynamic feedback control approach". Chin. Phys. B, 20, 7, 070502, 2011
- S.M. Lee, **D.H Ji**, O.M. Kwon, Ju.H. Park, "Robust  $H_\infty$  filtering for a class of discrete-time nonlinear systems", Applied Mathematics and Computation 217, 7991-7999, 2011
- **D.H Ji**, J.H. Koo, S.C. Won, S.M. Lee, Ju.H. Park, "Passivity-based control for Hopfield neural networks using convex representation", Applied Mathematics and Computation, 217,13,1, 6168-6175, 2011
- J.H. Koo, **D.H Ji**, S.C. Won, "Synchronization of singular complex dynamical networks with time-varying delays", Applied Mathematics and Computation, 217, 3916-3923, 2010
- **D.H Ji**, Ju H. Park, S.M. Lee, J.H. Koo, S.C. Won, "Synchronization criterion for Lur'e systems via delayed PD controller", J Optim Theory Appl, 147, 2, 298-317, 2010
- W.J. Yoo, **D.H Ji**, S.C. Won, "Adaptive fuzzy synchronization of different chaotic systems with stochastic unknown parameters", Modern Physics Letters B, 24,10,979-994, 2010
- W.J. Yoo, **D.H Ji**, S.C. Won, "Synchronization of two different non-autonomous chaotic systems using fuzzy disturbance observer", Physics Letters A, 374 Pages 1354-1361, 1, 2010
- **D.H Ji**, Ju H. Park, W.J. Yoo, S.C. Won and S.M. Lee, "Synchronization criterion for Lur'e type complex dynamical networks with time-varying delay", Physics Letters A, 374,10, 1218-1227, 22 Feb, 2010
- S.M. Lee, S.J. Choi, **D.H Ji**, Ju H. Park and S.C. Won, "Synchronization for chaotic Lur'e systems with sector restricted non-linearities via delayed feedback control", Nonlinear Dynamics, 59, 277-288, 2010
- **D.H Ji**, Ju H. Park, W.J. Yoo and S.C. Won, "Robust Memory State Feedback Model Predictive Control for Discrete-Time Uncertain State Delayed Systems", Applied Mathematics and Computation, 215, 2035-2044, 2009
- Ju H. Park, **D.H Ji**, S.C. Won, S.M. Lee, S.J. Choi, "H infinity control of Lur'e systems with sector and slope restricted nonlinearities, Physics Letters A, 373, 3734-3740, 2009
- Ju H. Park, **D.H Ji**, S.C. Won, S.M. Lee, "Adaptive H infinity synchronization of unified chaotic systems, Modern physics letter B, 23, p.1-13, 2009
- **D.H Ji**, Ju H. Park, S.C. Won, "Master slave synchronization of Lur'e systems with sector and slope restricted nonlinearities", Physics Letter A, 373, 11, 1044-1050, 2009

- Ju H. Park, **D.H Ji**, S.C Won, S.M. Lee, "H infinity synchronization of time delay chaotic systems", Applied Mathematics and Computation, 204,170-177, 2008
- S.M. Lee, **D.H Ji**, Ju H. Park, S.C Won "H infinity synchronization of chaotic systems via dynamic feedback approach", Physics Letter A, 372, 27,4905-4912, 2008

#### PUBLICATION - INTERNATIONAL CONFERENCE

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Nayeon Kim, Moonsub Byeon, **\*\*Daehyun Ji**, Dokwan Oh, "D-3DLD: Depth-aware Voxel Space Mapping for Monocular 3D Lane Detection with Uncertainty", ICASSP, 2023, Submitted.

Jaewoo Lee, Daeul Park, Dongwook Lee, **\*\*Daehyun Ji**, "Huge Gap between synthetic and Real Data: Semi-supervised 360° Depth Estimation with Multiple Fisheye cameras", ICASSP, 2022.

\*Dokwan Oh, **\*Daehyun Ji**, Cheolhun Jang, Yoonsuk Hyun, Hong S. Bae, Sung Ju Hwang, "Segmenting 2K-Videos at 36.5 FPS with 24.3 GFLOPs: Accurate and Lightweight Realtime Semantic Segmentation Networks", ICRA, 2020.

J.H. Koo, S.M.Lee, **D.H Ji**, S.C. Won, "Guaranteed cost LPV controller design for a class of chaos synchrnoization", ACC, 2011.

S.C. Jeong, S.M.Lee, **D.H Ji**, S.C. Won, " Robust Model Predictive Control for LPV systems with delayed state using relaxation matrices", ACC, 2011.

**D.H Ji**, W.J. Yoo, S.M. Lee, Ju H. Park and S.C. Won, "Robust model predictive control for uncertain singular systems with state delay", SICE-ICCAS, 2009.

W.J. Yoo, **D.H Ji**, C.J. Choi, Ju H. Park and S.C. Won, "A constrained robust model predictive control using modified fuzzy disturbance observer for continuous time systems with polytopic uncertainty", SICE-ICCAS, 2009

**Daehyun Ji**, Sangchul Won, Woojong Yoo and Juhyun Park "The synchronization of Lur'e chaotic systems and application in secure communications", ISET 2009.

W.J. Yoo, **D.H Ji**, and S.C. Won, "Robust Synchronization of Uncertain Chaotic Systems based on Fuzzy Disturbance Observer," MIC 2009.

Jahoo Koo, Seungjoon Choi, **Daehyun Ji** and Sangchul Won, "Nonlinear Observer Based Trajectory Tracking Control for a Wheeled Mobile Robot", SICE Annual Conference, 2008.

**Daehyun Ji**, Woojong Yoo, Sangsu Yeh and Sangchul Won, "Robust Model Predictive Control for Uncertain State Delayed System Using Polytope Dependent Lyapunov Function," SICE Annual Conference ,2007.

Woojong Yoo, Youngsoo Kim, Sehoon Kim, **Daehyun Ji**, Dowan Kim, Jooman Kim and Sangchul Won, "Development of bending gap measurement and position control technique for unmanned slab crane," SICE, 2007.

Woojong Yoo, **Daehyun Ji** and Sangchul Won, "A new fuzzy stabilizer with tuning parameters," SICE Annual Conference , 2007.

Sangsu Yeh, **Daehyun Ji**, Woojong Yoo and Sangchul Won, "Efficient Fuzzy-MPC for Nonlinear systems : rule rejection", SICE ICCAS, 2006.

**Daehyun Ji**, Woojong Yoo, Sangmoon Lee and Sangchul Won, "Dynamic output feedback H infinity receding horizon controller design for uncertain discrete-time system with parameter dependent Lyapunov function", ICICS, 2005.

Woojong Yoo, **Daehyun Ji**, Sangmoon Lee and Sangchul Won, "Output feedback model predictive control for Wiener model with parameter dependent Lyapunov function", ICCAS, 2005.

**Daehyun Ji**, Sangmoon Lee, Sangun Kim, Sunjang Kim and Sangchul Won, "Development of Optimal Control System for Air Separation Unit", ICCAS, 2004.

## PATENT

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LEE Wonju, KOO Jahoo, Dongwook Lee, Jaewoo Lee, Dae Hyun Ji, "Method and apparatus for determining object position", US 11525688/16135160, 2022

PARK Yonggonjong, JANG Cheolhun, Dae Hyun Ji, "Method and apparatus with estimation of distance between pedestrian and camera", US 17518762

Ji Dae-Hyun, Won-Ju Lee, Cheol-Hun Jang, Do-kwan Oh, Yoon-suk Hyun, "Method and apparatus for determining road line", US 11294392/16524377, 2022

Yoon-suk Hyun, Cheol-Hun Jang, Ja-Hoo Koo, Ji Dae-Hyun, "Method and apparatus for determining driving information", US 11200432/16508931, 2021

JANG Cheolhun, OH Dokwan, Dae Hyun Ji, "Image processing method and apparatus with neural network adjustment", US 17368917, 2021

Jaewoo Lee, Yoon-suk Hyun, Ja-Hoo Koo, Cheol-Hun Jang, Ji Dae-Hyun, "Apparatus and method for converting image", US 11062153/16531859, 2021

Jaewoo Lee, JANG Cheolhun, Dongwook Lee, LEE Wonju, Dae Hyun Ji, HYUN Yoonsuk, "Method and apparatus for recognizing object", US 10885787/16014078, 2021

Dae Hyun Ji, OH Dokwan, KOO Jahoo, Dongwook Lee, LEE Wonju, Jaewoo Lee, JANG Cheolhun, HYUN Yoonsuk, "Method and apparatus with linearity detection", US 10853667/16166504, 2020

KOO Jahoo, Dae Hyun Ji, HYUN Yoonsuk, "Data processing method based on neural network, training method of neural network, and apparatuses thereof", US 16553466, 2020

Dae Hyun Ji, OH Dokwan, Dongwook Lee, Jaewoo Lee, JANG Cheolhun, "Method and apparatus for controlling vision sensor for autonomous vehicle", US 10657387/15472517, 2020

Ji Daehyun, "Input method and electronic device using pen input device", US 10649552/16297859, 2020

Do-kwan OH, Cheol-Hun Jang, Ji Dae-Hyun, "Method of outputting prediction result using neural network, method of generating neural network, and apparatus therefor", US 16660228, 2020

LEE Wonju, Jaewoo Lee, Dae Hyun Ji, "Method and apparatus of detecting object of interest", US 10599930/15992234, 2020

Won-Ju Lee, Se-ho Shin, Dong-Wook Lee, Ji Dae-Hyun, "Training data generating method for image processing, image processing method, and devices thereof", US 16514661, 2020

OH Dokwan, Dae Hyun Ji, "Apparatus and method for generating training data to train neural network determining information associated with road included in image", US 10579058/15704282, 2020

Jaewoo Lee, KOO Jahoo, Dongwook Lee, LEE Wonju, Dae Hyun Ji, "Method and apparatus with vehicular longitudinal velocity control", US 16046138, 2020

KOO Jahoo, Dongwook Lee, Jaewoo Lee, Dae Hyun Ji, "Method and apparatus for maintaining a lane", US 16145700, 2019

HYUN Yoonsuk, Jaewoo Lee, JANG Cheolhun, Dae Hyun JI, "Vehicle movement prediction method and apparatus", US 15992240, 2019

Dongwook Lee, KOO Jahoo, Jaewoo Lee, Dae Hyun JI, "Apparatus and method for changing route of vehicle based on emergency vehicle", US 15996931, 2019

Dae Hyun JI, "Terminal and method for processing multi-point input", US 9477398/14027454, 2016

Kyung-Chun Moon, Joon-Woo Kim, JI Dae-Hyun, "Method and apparatus for controlling alarm operation in a terminal", US 9405560/13954567, 2016

KIM Hyung-Gyu, JI Dae-Hyun, Joon-Woo Kim, "Method arranging user interface objects in touch screen portable terminal and apparatus thereof", US 9182876/13657280, 2015

## SKILLS

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**Languages:** Korean, English

**Programming:** C, C++ (ROS), Python, Pytorch, Caffe, MATLAB

**Document Creation:** Microsoft Office Suite, LaTeX, Markdown