

# Hyung Jin Chang

LECTURER

Intelligent Robotics Laboratory, School of Computer Science,  
University of Birmingham, Edgbaston, Birmingham B15 2TT, UK

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## Academic Qualification

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### Ph.D.

ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

- Thesis title: *Attentional Sampling for Efficient Visual Computing*

Seoul National University

2006 - 2013

### B.Eng

ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

- Thesis title: *Robot Behaviour Learning Model based on Motivation and Hierarchical Emotion*
- Bronze medal awarded in Electronics Fair of SNU, 2004

Seoul National University

2001 - 2006

## Employment

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### Turing Fellow

Alan Turing Institute

Oct 2021 - Present

### Lecturer

INTELLIGENT ROBOTICS LAB. AT THE SCHOOL OF COMPUTER SCIENCE

University of Birmingham

Jan 2018 - Present

### Research associate (Post-Doc)

GAZE FOLLOWING IN MULTI-CUE DEEP NEURAL NETWORKS

- This research was funded by the **Samsung Global Research Outreach (GRO)**. The goal of this project is estimating 3D gaze information from third-person view using RGBD camera through a deep neural network pipeline combining multi-cue data and providing a new 3D gaze dataset with eye tracking ground truth information.

Imperial College London

Oct 2016 - Dec 2017

### Research associate (Post-Doc)

HUMAN ACTION RECOGNITION VIA DEEP CONVOLUTIONAL NETWORK

- This research was funded by the **Samsung Electronics Co., Ltd.** The goal of this project is developing algorithms for recognising predefined human action classes from RGB video input through a deep convolutional neural network framework.

Imperial College London

Oct 2016 - Sep 2017

### Research associate (Post-Doc)

WHAT YOU SAY IS WHAT YOU DID (WYSIWYD)

- This research was funded by the **EU FP7 project WYSIWYD** under Grant 612139. This project created a new transparency in human robot interaction (HRI) by allowing robots to both understand their own actions and those of humans, and to interpret and communicate these in human compatible intentional terms expressed as a language-like communication channel.
- My contribution to this project is enabling a robot to learn its own body schema and kinematic structure through visual data, and find correspondences between self body structures to others.

Imperial College London

June 2014 - Dec 2016

### Research associate (Post-Doc)

HAND POSTURE RECOGNITION IN ARBITRARY VIEW FROM SINGLE RGBD FRAME

- This research was funded by **Samsung Advanced Institute of Technology**. The goal of the project was developing a comprehensive method for real-time hand posture recognition in arbitrary view from single frame RGBD data.
- I developed a new hand posture estimation method based on a newly proposed latent regression forest method, and presented the method to CVPR as oral.

Imperial College London

June 2013 - May 2014

## Research Grants (Awarded in total £624,836.60; 7 as PI and 1 as Co-I) .

“My research interests span diverse machine learning methods (from statistical pattern recognition to the deep convolutional neural network), computer vision and robotics, with interest in human-robot interaction, real-time human body/hand pose recognition, eye gaze estimation, 6D object pose estimation, visual object tracking, human activity recognition, and user modelling.”

Sep 2021 - PI [UoB contribution of £340,464.93 out of £3.4M], Jan 2024 self-supervised learning for restoration of invisible parts in images	Ministry of Science and ICT, Korean Government
Sep 2021 - PI [£11,309.62 ], Aug 2022 Research and Development Program for ICT and Broadcasting	Ministry of Science and ICT, Korean Government
May 2021 - PI [£31,507.31], Apr 2022 Efficient Quantization Techniques for Deep Learning in Embedded System	Ministry of Science and ICT, Korean Government
July 2020 - PI [£35,644.58 ], Dec 2021 Deep Semantic Graph Neural Network for Latent Knowledge Representation and Learning	Ministry of Trade, Industry and Energy, Korean Government
Aug 2019 - PI [£90,000], Jul 2020 Vision-based In-Vehicle Passenger Monitoring System	Hyundai Motor Company
Mar 2019 - PI [£19,970], Mar 2020 Building a Large-Scale Natural Gaze Data Collection System for Appearance-Based Gaze Estimation in the Wild	Royal Society Research Grant
Apr 2019 - PI [£51,040.00], Sep 2020 Image based Cervical Dystonia Diagnosis	Wellcome Trust ISSF: Digital Health Pilot Grant
Jan 2020 - Co-I [£24,930.16 ], Dec 2021 Babymind: Computational Models of Sensorimotor Learning and Control	Ministry of Science and ICT, Korean Government
2018 GPU Grant Program, Awarded GeForce Titan Xp [£1,000]	NVIDIA Corporation
Oct 2016 - Co-PI [\$100,000], Sep 2017 “Gaze Following in Multi-Cue Deep Neural Networks” The GRO program is Samsung’s prestige academic research collaboration platform. The annual call for proposals is open to the world’s leading universities and is highly competitive.	Samsung Global Research Outreach (GRO)
2016 Participated in writing a proposal [£65,000], “Human Action Recognition via Deep Convolutional Network”	Samsung Electronics Co.,Ltd.
Jun 2016 Young Researchers Travel Grant [\$600],	CVPR 2016

## Teaching (Fellow of the Higher Education Academy)

### LECTURE

Spr 2022 Module Lead, Robot Vision	University of Birmingham
Spr 2022 Teaching team, Computer Vision & Imaging	University of Birmingham
Aut 2021 Teaching team, Programming for Data Science/AI Programming	University of Birmingham
Spr 2021 Module Lead, Computer Vision & Imaging	University of Birmingham
Spr 2021 Module Lead, Robot Vision	University of Birmingham
Spr 2020 Module Lead, Robot Vision	University of Birmingham
Spr 2019 Module Lead, Robot Vision	University of Birmingham

### GUEST LECTURE

Spr 2022 Guest Lecturer, Current Topics in Data Science & AI & ML	University of Birmingham
Spr 2021 Guest Lecturer, Current Topics in Data Science & AI & ML	University of Birmingham
Win 2020 Guest Lecturer, Computer Vision Research	Gachon University

### TEACHING ASSISTANT

Spr 2010 Teaching Assistant, Linear System Theory (graduate course)	Seoul National University
Fall 2009 Teaching Assistant, Convex Optimization (graduate course)	Seoul National University
Spr 2009 Teaching Assistant, Statistical Learning Theory (graduate course)	Seoul National University
Fall 2008 Teaching Assistant, Strategy for Management of Technology (graduate course)	Seoul National University
Spr 2007 Teaching Assistant, Signal and System (undergraduate course)	Seoul National University
Fall 2006 Teaching Assistant, Circuits and Electronics Laboratory (undergraduate courses)	Seoul National University

## Professional Activity

### ACADEMIC EVENT

2022	<b>Workshop organizer</b> , GAZE 2022: The 4 <sup>th</sup> International Workshop on Gaze Estimation and Prediction in the Wild	<i>CVPR 2022 Workshop</i>
2021	<b>Workshop organizer &amp; VOT-LT2021 Challenge Caretaker</b> , VOT Challenge 2021	<i>ICCV 2021 Workshop</i>
2021	<b>Workshop organizer</b> , GAZE 2021: The 3 <sup>rd</sup> International Workshop on Gaze Estimation and Prediction in the Wild	<i>CVPR 2021 Workshop</i>
2020	<b>Workshop organizer</b> , OpenEyes: Eye Gaze in AR, VR, and in the Wild	<i>ECCV 2020 Workshop</i>
2019	<b>Workshop organizer</b> , Gaze Estimation and Prediction in the Wild (GAZE 2019)	<i>ICCV 2019 Workshop</i>
2019	<b>Technical program committee</b> , 5TH International Workshop on Observing and Understanding Hands in Action (HANDS 2019)	<i>ICCV 2019 Workshop</i>
2016	<b>Technical program committee</b> , IEEE CVPR 2016 Workshop on observing and understanding hands in action (HANDS 2016)	<i>CVPR 2016 Workshop</i>

## JOURNAL EDITOR

2020	<b>Guest Editor</b> , Special Issue on Recent Advances in Modeling, Methodology and Applications of Action Recognition and Detection	<i>Computer Vision and Image Understanding (CVIU)</i>
2018-present	<b>Associate Editor</b> ,	<i>ETRI Journal (ISSN 1225-6463)</i>

## CONFERENCE

2021	<b>Area Chair</b> ,	<i>AAAI 2021</i>
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## MENTORING

2020	<b>Doctoral Consortium Mentor</b> , WACV 2020 Doctoral Consortium	<i>WACV 2020</i>
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## Peer-Review Activities

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### Journal

IEEE TPAMI, IEEE TCSVT, IEEE TIE, IEEE TCST, IEEE SENSORS, MVA, PATTERN RECOGNITION, IEEE RA-L, FRONTIER

### Conference

CVPR (2022/2021/2020/2019/2018/2017), ICCV (2021/2019/2017), ECCV (2020/2018), ICML (2021), BMVC (2021/2020/2019/2018/2017), WACV (2020/2019), NEURIPS (2021/2020/2019), AAI (2021/2019), IROS (2020/2019/2018/2017/2016/2015), ICRA (2021/2020/2017/2016), IEEE ICCSIT 2011, IVCNZ 2012, ICPR 2012

## Honours & Awards

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2018	<b>The College's Paper of the Month accolade</b> , University of Birmingham	<i>Birmingham, UK</i>
2017	<b>Outstanding Reviewer</b> , BMVC	<i>London, UK</i>
2013	<b>Best Paper Award</b> , CVPR Workshop on Mobile Vision	<i>Portland, US</i>
2012	<b>Doctoral Consortium</b> , IEEE Computer Vision and Pattern Recognition (CVPR)	<i>Providence, US</i>
2012	<b>Excellent research Award</b> , Seoul National University Brain Korea 21	<i>Seoul, S.Korea</i>
2011	<b>Best Paper Award</b> , Information and Control Symposium (ICS)	<i>Seoul, S.Korea</i>
2009	<b>Silver Prize</b> , Samsung Techwin Research Center Conference (CoST-ReC 2009)	<i>S.Korea</i>
2006	<b>Best Paper Award</b> , Information and Control Symposium (ICS)	<i>Seoul, S.Korea</i>
2006	<b>Outstanding Student Scholarship</b> , Seoul National University	<i>Seoul, S.Korea</i>
2004	<b>Bronze Medal</b> , Seoul National University Electronics Fair	<i>Seoul, S.Korea</i>
2002-2004	<b>Departmental Scholarship</b> , Seoul National University	<i>Seoul, S.Korea</i>

## Publications

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### JOURNAL

<b>2022</b>	Nora Horanyi, Kedi Xia, Kwang Moo Yi, Abhishake Kumar Bojja, Ales Leonardis, Hyung Jin Chang, <b>Repurposing Existing Deep Networks for Caption and Aesthetic-Guided Image Cropping</b> . <i>Pattern Recognition (PR)</i> , vol. 126, pp.108485, ISSN: 0031-3203, DOI: <a href="https://doi.org/10.1016/j.patcog.2021.108485">https://doi.org/10.1016/j.patcog.2021.108485</a>
<b>2021</b>	Xi Jia, Alexander Thorley, Wei Chen, Huaqi Qiu, Linlin Shen, Iain B Styles, Hyung Jin Chang, Ales Leonardis, Antonio de Marvao, Declan P. O'Regan, Daniel Rueckert, Jinming Duan, <b>Learning a Model-Driven Variational Network for Deformable Image Registration</b> . <i>IEEE Transactions on Medical Imaging (TMI)</i> , pp. 1-14, Print ISSN: 0278-0062, Online ISSN: 1558-254X
<b>2021</b>	Hyeon Cho, Taehoon Kim, Hyung Jin Chang, Wonjun Hwang, <b>Self-Supervised Spatio-Temporal Representation Learning using Variable Playback Speed Prediction</b> . <i>IEEE Access</i> , vol. 9, pp. 79562-79571, 2021, doi: 10.1109/ACCESS.2021.3084840.

- 2021 Kyuewang Lee, Hyung Jin Chang, Jongwon Choi, Byeongho Heo, Aleš Leonardis, Jin Young Choi,  
**Motion-aware Ensemble of Three-mode Trackers for Unmanned Aerial Vehicles.**  
*Machine Vision and Applications (MVA)*, 32, 54 (2021). <https://doi.org/10.1007/s00138-021-01181-x>
- 2020 Yixing Gao, Hyung Jin Chang, Yiannis Demiris,  
**User Modelling Using Multimodal Information for Personalised Dressing Assistance.**  
*IEEE Access*, vol. 8, pages 45700-45717, September, 2020, DOI: 10.1109/ACCESS.2020.2978207
- 2018 Hyung Jin Chang, Yiannis Demiris,  
**Highly Articulated Kinematic Structure Estimation combining Motion and Skeleton Information.**  
*IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, vol. 40, issue 9, pages 2165-2179, September, 2018, DOI: 10.1109/TPAMI.2017.2748579.
- 2018 Hyung Jin Chang, Tobias Fischer, Maxime Petit, Martina Zambelli and Yiannis Demiris,  
**Learning Kinematic Structure Correspondences Using Multi-Order Similarities.**  
*IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, vol. 40, issue 12, pages 2920-2934, December, 2018, DOI: 10.1109/TPAMI.2017.2777486.
- 2017 Danhang Tang, Hyung Jin Chang\*, Alykhan Tejani, Tae-Kyun Kim,  
**Latent Regression Forest: Structured Estimation of 3D Hand Poses,**  
*IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, vol. 39, no. 7, pages 1374-1387, July 1, 2017.(\* indicates corresponding author)
- 2017 T. Fischer\*, C. Moulin-Frier\*, M. Petit, G. Pointeau, J.-Y. Puigbo, U. Pattacini, S. C. Low, D. Camilleri, P. Nguyen, M. Hoffmann, H. J. Chang, M. Zambelli, A.-L. Mealiar, A. Damianou, G. Metta, T. J. Prescott, Y. Demiris, P. F. Dominey, P. F. M. J. Verschure,  
**DAC-h3: A Proactive Robot Cognitive Architecture to Acquire and Express Knowledge About the World and the Self,**  
*IEEE Transactions on Cognitive and Developmental Systems (TCDS)*, September, 2017, DOI: 10.1109/TCDS.2017.2754143. (\* indicates equal contribution)
- 2016 Hyung Jin Chang\*, Guillermo Garcia-Hernando\*, Danhang Tang, Tae-Kyun Kim,  
**Spatio-Temporal Hough Forest for Efficient Detection-Localisation-Recognition of Fingerwriting in Egocentric Camera,**  
*Computer Vision and Image Understanding (CVIU)*, vol.148, pages 87-96, 2016. (\* indicates equal contribution)
- 2016 Jin Hee Na, Hyung Jin Chang\*,  
**Blockwise Collaborative Representation based Classification via  $L_2$ -norm of Query Data for Accurate Face Recognition,**  
*IET Electronics Letters*, vol.52, no.13, 2016. (\* indicates corresponding author)
- 2015 Kyuhwa Lee\*, Dimitri Ognibene, Hyung Jin Chang\*, Tae-Kyun Kim, Yiannis Demiris,  
**STARE: Spatio-Temporal Attention RElocation for Multiple Structured Activities Detection,**  
*IEEE Transactions on Image Processing (TIP)*, vol.24, no.12, pages 5916-5927, December, 2015. (\* indicates corresponding author)
- 2015 Youngkyoon Jang, Seung-Tak Noh, Hyung Jin Chang, Tae-Kyun Kim, Woontack Woo,  
**3D Finger CAPE: Clicking Action and Position Estimation under Self-Occlusions in Egocentric Viewpoint,**  
*IEEE Transactions on Visualization and Computer Graphics (TVCG)*, vol.21, no.4, 2015
- 2014 Jungchan Cho, Minsik Lee, Hyung Jin Chang, Songhwa Oh,  
**Robust Action Recognition using Local Motion and Group Sparsity,**  
*Pattern Recognition (PR)*, vol.47, pages 1813-1825, 2014
- 2012 Hyung Jin Chang, Dong Sung Song, Pyo Jae Kim, Jin Young Choi,  
**Spatio-temporal Pattern Modeling for Fault Detection and Classification in Semiconductor Manufacturing.**  
*IEEE Transaction on Semiconductor Manufacturing (TSM)*, Vol.25, No 1, February 2012
- 2012 JinMin Choi, Hyung Jin Chang, Yung Jun Yoo, Jin Young Choi,  
**Robust Moving Object Detection against Fast Illumination Change,**  
*Computer Vision and Image Understanding (CVIU)*, pages 179-193, Vol.116, Issue 2, February 2012
- 2011 Hawook Jeong, Hyung Jin Chang, Jin Young Choi,  
**Unsupervised Motion Learning for Abnormal Behavior Detection in Visual Surveillance,**  
*Journal of the Institute of Electronics Engineers of Korea SC*, Vol.48, Issue 5, pages 45-51, September 2011
- 2009 Hyung Jin Chang, Pyo Jae Kim, Dong Sung Song, Jin Young Choi,  
**Optical Image Stabilizing System using Multirate Fuzzy PID Controller for Mobile Device Camera,**  
*IEEE Transactions on Consumer Electronics (TCE)*, Vol.55, No.2, May 2009

## INTERNATIONAL CONFERENCE

- 2022** Tze Ho Elden Tse, Kwang In Kim, Ales Leonardis, Hyung Jin Chang,  
**Collaborative Learning for Hand and Object Reconstruction with Attention-guided Graph Convolution**,  
*IEEE Proc. Computer Vision and Pattern Recognition (CVPR)*, June, 2022.
- 2022** Linfang Zheng, Ales Leonardis, Tze Ho Elden Tse, Nora Horanyi, Wei Zhang, Hua Chen, Hyung Jin Chang,  
**TP-AE: Temporally Primed 6D Object Pose Tracking with Auto-Encoders**,  
*IEEE International Conference on Robotics and Automation (ICRA)*, May, 2022.
- 2022** Jonathan Freer, Kwang Moo Yi, Wei Jiang, Jongwon Choi, Hyung Jin Chang,  
**Novel-View Synthesis of Human Tourist Photos**,  
*Winter Conference on Applications of Computer Vision (WACV)*, January, 2022.
- 2021** Alexander Thorley, Xi Jia, Hyung Jin Chang, Boyang Liu, Karina Bunting, Victoria Stoll, Antonio De Marvao, Declan O'Regan, Georgios Gkoutos, Dipak Kotecha, Jinming Duan,  
**Nesterov Accelerated ADMM for Fast Diffeomorphic Image Registration**,  
*Medical Image Computing and Computer Assisted Interventions (MICCAI)*, 2021.
- 2021** Jongwon Choi, Kwang Moo Yi, Jihoon Kim, Jinho Choo, Byoungjip Kim, Jinyeop Chang, Youngjune Gwon, Hyung Jin Chang,  
**VaB-AL: Incorporating Class Imbalance and Difficulty with Variational Bayes for Active Learning**,  
*IEEE Proc. Computer Vision and Pattern Recognition (CVPR)*, June, 2021.
- 2021** Jiwoong Park, Junho Cho, Hyung Jin Chang, Jin Young Choi,  
**Unsupervised Hyperbolic Representation Learning via Message Passing Auto-Encoders**,  
*IEEE Proc. Computer Vision and Pattern Recognition (CVPR)*, June, 2021.
- 2021** Wei Chen, Xi Jia, Hyung Jin Chang, Jinming Duan, Linlin Shen, Ales Leonardis,  
**FS-Net: Fast Shape-based Network for Category-Level 6D Object Pose Estimation with Decoupled Rotation Mechanism**,  
*IEEE Proc. Computer Vision and Pattern Recognition (CVPR)*, June, 2021.
- 2021** Jaemin Na, Heechul Jung, Hyung Jin Chang, Wonjun Hwang,  
**FixBi: Bridging Domain Spaces for Unsupervised Domain Adaptation**,  
*IEEE Proc. Computer Vision and Pattern Recognition (CVPR)*, June, 2021.
- 2021** Haiyang Chen, Hyung Jin Chang, Andrew Howes,  
**Apparently Irrational Human Decision Making Reflects Rational Information Processing**,  
*AAAI Conference on Artificial Intelligence (AAAI)*, February, 2021.
- 2021** Jongin Lim, Daeho Um, Hyung Jin Chang, Dae Ung Jo, Jin Young Choi,  
**Class-Attentive Diffusion Network for Semi-Supervised Classification**,  
*AAAI Conference on Artificial Intelligence (AAAI)*, February, 2021.
- 2020** John Yang\*, Hyung Jin Chang\*, Seungeui LEE, Nojun Kwak,  
**SeqHAND: RGB-Sequence-Based 3D Hand Pose and Shape Estimation**,  
*European Conference on Computer Vision (ECCV)*, August, 2020. (\* indicates equal contribution)
- 2020** Kwang In Kim, Christian Richardt, Hyung Jin Chang,  
**Combining Task Predictors via Enhancing Joint Predictability**,  
*European Conference on Computer Vision (ECCV)*, August, 2020.
- 2020** Wei Chen, Xi Jia, Hyung Jin Chang, Jinming Duan, Ales Leonardis,  
**G2L-Net: Global to Local Network for Real-time 6D Pose Estimation with Embedding Vector Features**,  
*IEEE Proc. Computer Vision and Pattern Recognition (CVPR)*, June, 2020.
- 2020** Joseph Ramsay, Hyung Jin Chang,  
**Body Pose Sonification for a View-Independent Auditory Aid to Blind Rock Climbers**,  
*IEEE Winter Conference on Applications of Computer Vision (WACV)*, March, 2020.
- 2020** Wei Chen, Jinming Duan, Hector Basevi, Hyung Jin Chang, Ales Leonardis,  
**PPNet: Point Pose Network for Robust 6D Object Pose Estimation**,  
*IEEE Winter Conference on Applications of Computer Vision (WACV)*, March, 2020.
- 2019** Jiwoong Park, Minsik Lee, Hyung Jin Chang, Kyuewang Lee, Jin Young Choi,  
**Symmetric Graph Convolutional Autoencoder for Unsupervised Graph Representation Learning**,  
*IEEE Proc. International Conference on Computer Vision (ICCV)*, October, 2019.

- 2019 Jongin Lim, Hyung Jin Chang, Jin Young Choi,  
**PMnet: Learning of Disentangled Pose and Movement for Unsupervised Motion Retargeting,**  
British Machine Vision Conference (**BMVC**), September, 2019.
- 2019 Kwang In Kim, Hyung Jin Chang,  
**Joint Manifold Diffusion for Combining Predictions on Decoupled Observations,**  
IEEE Proc. Computer Vision and Pattern Recognition (**CVPR**), June, 2019.
- 2018 Tobias Fischer, Hyung Jin Chang, Yiannis Demiris,  
**RT-GENE: Real-Time Eye Gaze Estimation in Natural Environments,**  
European Conference on Computer Vision (**ECCV**), September, 2018.
- 2018 Phuong D.H. Nguyen, Tobias Fischer, Hyung Jin Chang, Ugo Pattacini, Giorgio Metta, Yiannis Demiris,  
**Transferring Visuomotor Learning from Simulation to the Real World for Manipulation Tasks in a Humanoid Robot,**  
IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), October, 2018.
- 2018 Jongwon Choi, Hyung Jin Chang, Tobias Fischer, Sangdoon Yun, Kyuewang Lee, Jiyeoup Jeong, Yiannis Demiris, Jin Young Choi,  
**Context-aware Deep Feature Compression for High-speed Visual Tracking,**  
IEEE Proc. Computer Vision and Pattern Recognition (**CVPR**), June, 2018
- 2017 Ruohan Wang, Antoine Cully\*, Hyung Jin Chang\*, Yiannis Demiris,  
**MAGAN: Margin Adaptation for Generative Adversarial Networks,**  
arXiv:1704.03817 (\* indicates equal contribution)
- 2017 Jongwon Choi, Hyung Jin Chang, Sangdoon Yun, Tobias Fischer, Yiannis Demiris, Jin Young Choi,  
**Attentional Correlation Filter Network for Adaptive Visual Tracking,**  
IEEE Proc. Computer Vision and Pattern Recognition (**CVPR**), July, 2017
- 2017 YoungJoon Yoo, Sangdoon Yun, Hyung Jin Chang, Yiannis Demiris, Jin Young Choi,  
**Variational Autoencoded Regression: High Dimensional Regression of Visual Data on Complex Manifold,**  
IEEE Proc. Computer Vision and Pattern Recognition (**CVPR**), July, 2017
- 2016 Hyung Jin Chang, Tobias Fischer, Maxime Petit, Martina Zambelli, Yiannis Demiris,  
**Kinematic Structure Correspondences via Hypergraph Matching,**  
IEEE Proc. Computer Vision and Pattern Recognition (**CVPR**), June, 2016
- 2016 Jongwon Choi, Hyung Jin Chang, Jiyeoup Jeong, Yiannis Demiris, Jin Young Choi,  
**Attention-Modulated Visual Tracker Inspired by Structuralism Cognitive Model,**  
IEEE Proc. Computer Vision and Pattern Recognition (**CVPR**), June, 2016
- 2016 Yixing Gao, Hyung Jin Chang, Yiannis Demiris,  
**Iterative Path Optimisation for Personalised Dressing Assistance using Vision and Force Information,**  
IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), September, 2016.
- 2016 Guillermo Garcia-Hernando, Hyung Jin Chang, Ismael Serrano, Oscar Deniz, Tae-Kyun Kim,  
**Transition Hough Forest for Trajectory-based Action Recognition,**  
IEEE Winter Conference on Applications of Computer Vision (**WACV**), March, 2016
- 2015 Yixing Gao, Hyung Jin Chang, Yiannis Demiris,  
**User Modelling for Personalised Dressing Assistance by Humanoid Robots,**  
IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), September, 2015.
- 2015 Hyung Jin Chang and Yiannis Demiris,  
**Unsupervised Learning of Complex Articulated Kinematic Structures combining Motion and Skeleton Information,**  
IEEE Proc. Computer Vision and Pattern Recognition (**CVPR**), June, 2015
- 2015 Youngkyoon Jang, Seung-Tak Noh, Hyung Jin Chang, Tae-Kyun Kim, Woontack Woo,  
**3D Finger CAPE: Clicking Action and Position Estimation under Self-Occlusions in Egocentric Viewpoint,**  
IEEE Virtual Reality (**VR**), March, 2015. [full paper, accept rate=13.8%]
- 2014 Danhang Tang, Hyung Jin Chang\*, Alykhan Tejani\*, Tae-Kyun Kim,  
**Latent Regression Forest: Structural Estimation of 3D Articulated Hand Posture,**  
IEEE Proc. Computer Vision and Pattern Recognition (**CVPR**), June, 2014. **Oral** (\* indicates equal contribution)
- 2013 Kwang Yi, Hawook Jeong, Byeongho Heo, Hyung Jin Chang, Jin Young Choi,  
**Initialization-Insensitive Visual Tracking Through Voting with Salient Local Features,**  
International Conference on Computer Vision (**ICCV**), December, 2013

- 2013 Hyung Jin Chang, Jiyun Kim, Jungchan Cho, Songhwa Oh, Kwang Moo Yi, Jin Young Choi,  
**Action Chart: A Representation for Efficient Recognition of Complex Activities,**  
British Machine Vision Conference (BMVC), September, 2013
- 2013 Tushar Sandhan, Hyung Jin Chang, Jin Young Choi,  
**Abstracted Radon Profiles for Fingerprint Recognition,**  
International Conference on Image Processing (ICIP), September 2013
- 2012 Hyung Jin Chang, Hawook Jeong, Jin Young Choi,  
**Active Attentional Sampling for Speed-up of Background Subtraction,**  
IEEE Proc. Computer Vision and Pattern Recognition (CVPR), June 16-21, 2012
- 2012 Moonsub Byeon, Hyung Jin Chang, Jin Young Choi,  
**Hierarchical Feature Grouping for Multiple Object Segmentation and Tracking,**  
Image and Vision Computing New Zealand (IVCNZ), Nov. 26-28, 2012
- 2011 Hyung Jin Chang, Kwang Moo Yi, Shimin Yin, Soo Wan Kim, Young Min Baek, Ho Seok Ahn, Jin Young Choi,  
**PIL-EYE: Integrated System for Sustainable Development of Intelligent Visual Surveillance Algorithms,**  
IEEE Digital Image Computing: Techniques and Applications (DICTA), December 6-8, 2011. **Oral**
- 2011 Hyung Jin Chang, Myoung Soo Park, Hawook Jeong, Jin Young Choi,  
**Tracking Failure Detection by Imitating Human Visual Perception,**  
IEEE International Conference on Image Processing (ICIP), September 11-14, 2011
- 2011 Hawook Jeong, Hyung Jin Chang, Jin Young Choi,  
**Modeling of Moving Object Trajectory by Spatio-temporal Learning for Abnormal Behavior Detection,**  
IEEE International Conference on Advanced Video and Signal based Surveillance (AVSS), Aug 30 - Sep 2, 2011
- 2009 D. Pokrajac, N. Reljin, N. Pejicic, T. Vance, S. McDaniel, A. Lazarevic, H. J. Chang, J. Y. Choi, R. Mieziako,  
**Detection of Suspicious Activity Using Incremental Outlier Detection Algorithms,**  
SPIE Signal and Data Processing on Small Targets 2009 conference, August, 2009
- 2008 Pyo Jae Kim, Hyung Jin Chang, Jin Young Choi,  
**Fast Incremental Learning for One-class Support Vector Classifier using Sample Margin Information,**  
19th International Conference on Pattern Recognition (ICPR), Tampa, Florida, Dec. 2008. **Oral**
- 2007 Pyo Jae Kim, Hyung Jin Chang, Dong Sung Song, Jin Young Choi,  
**Fast Support Vector Data Description Using K-Means Clustering,** Lecture Notes in Computer Science (LNCS), Vol. 4493,  
Proceeding of the 4th International Symposium on Neural Networks: Advances in Neural Networks, pp. 506-514, June 2007
- 2007 Hyung Jin Chang, Pyo Jae Kim, Jung Hwan Choi, Jin Young Choi,  
**Support Vector Data Description Using Clustering Method,**  
International Technical Conference on Circuits/Systems, Computers and Communications (ITC-CSCC 2007), Vol. 3, pp. 1079-1080, July 2007. **Oral**
- 2007 Ho Seok Ahn, Pyo Jae Kim, Jeong Hwan Choi, Bin Mansoor, S., Woo-Sung Kang, Seok Min Yoon, Jin Hee Na, Young Min Baek, Hyung Jin Chang, Dong Sung Song, Jin Young Choi, Hyeong-Seok Ko,  
**Emotional head robot with behavior decision model and face recognition,**  
Control, Automation and Systems, ICCAS, 2007
- 2007 Hyung Jin Chang, Pyo Jae Kim, Jeong Hwan Choi, Jin Young Choi,  
**Support Vector Data Description using Mean Shift Clustering,**  
Information and Control Symposium (ICS), April, 2007. **Oral**
- 2007 Pyo Jae Kim, Hyung Jin Chang, Dong Sung Song, Jin Young Choi,  
**KMSVDD: Support Vector Data Description using K-means Clustering,**  
Information and Control Symposium (ICS), April, 2007. **Best paper award**

## INTERNATIONAL WORKSHOP

- 2016 Martina Zambelli, Tobias Fischer, Maxime Petit, Hyung Jin Chang, Antoine Cully, Yiannis Demiris,  
**Towards Anchoring Self-Learned Representations to Those of Other Agents,**  
IROS Workshop on Bio-inspired Social Robot Learning in Home Scenarios, September, 2016. **Oral**
- 2016 Yixing Gao, Hyung Jin Chang, Yiannis Demiris,  
**Personalised Assistive Dressing by Humanoid Robots using Multi-modal Information,**  
(IEEE ICRA Workshop on Human-Robot Interfaces for Enhanced Physical Interactions), May, 2016.

- 2015 Hyung Jin Chang, Guillermo Garcia-Hernando, Danhang Tang, Tae-Kyun Kim,  
**Spatio-Temporal Hough Forest for Efficient Detection-Localisation-Recognition of Fingerwriting in Egocentric Camera,**  
**CVPR Workshop on Observing and understanding hands in action (HANDS 2015),** June, 2015
- 2015 Danhang Tang, Hyung Jin Chang\*, Alykhan Tejani\*, Tae-Kyun Kim,  
**Latent Regression Forest: Structural Estimation of 3D Articulated Hand Posture,**  
**CVPR Workshop on Observing and understanding hands in action (HANDS 2015),** June, 2015. (\* indicates equal contribution)
- 2013 Kwang Moo Yi, Kimin Yun, Soo Wan Kim, Hyung Jin Chang, Hawook Jeoung, Jin Young Choi,  
**Detection of Moving Objects with Non-Stationary Cameras in 5.8ms: Bringing Motion Detection to your Mobile Device,**  
**CVPR Workshop on Mobile Vision,** June 2013. **Best paper award**

## PATENTS

- US Patent** [Granted] Publication date: 12 Apr 2016  
**US9311713 B2** Estimator Training Method and Pose Estimating Method using Depth Image
- US Patent** [Granted] Publication date: 9 Feb 2016  
**US9256958B2** Active Attentional Sampling Method for Accelerating Background Subtraction
- US Patent** [Granted] Publication date: 30 Aug 2011  
**US8009971** Hand-Shake Correction Method and Apparatus of Camera Module for Use in Mobile Device
- US Patent** [Granted] Publication date: 12 Jul 2011  
**US7979143** Apparatus and Method for Proportional-Integral-Derivative Control
- EU Patent** [Granted] Publication date: 21 Apr 2021  
**EP2811424B1** Method and apparatus for training an estimator for estimating a pose of an articulated object
- EU Patent** [Granted] Publication date: 8 Feb 2012  
**EP1936956** Hand-Shake Correction Method and Apparatus of Camera Module for Use in Mobile Device
- EU Patent** [Granted] Publication date: 3 Nov 2010  
**EP1956447** Apparatus and Method for Proportional-Integral-Derivative Control
- CN Patent** [Granted] Publication date: 9 Feb 2011  
**CN101236307 B** Hand-Shake Correction Method and Apparatus of Camera Module for Use in Mobile Device
- CN Patent** [Granted] Publication date: 23 Jun 2010  
**CN101241352 B** Apparatus and Method for Proportional-Integral-Derivative Control
- KR Patent** [Granted] Publication date: 10 Jul 2017  
**1017580640000** Estimator Learning Method and Pose Estimation Method Using a Depth Image
- KR Patent** [Granted] Publication date: 28 Nov 2014  
**10-14688610000** Active Attentional Sampling Method for Accelerating Foreground Detection from Video and Computer-Readable Recording Medium for the same
- KR Patent** [Granted] Publication date: 1 Sep 2014  
**1014384510000** Method of Providing Fast Detection of Moving Objects from Non-stationary Camera Video by Dual-mode SGM, and Computer-readable Recording Medium for the same
- KR Patent** [Granted] Publication date: 1 Sep 2010  
**10-0980603** Fault detection method using sequential one class classifier chain.
- KR Patent** [Granted] Publication date: 24 Oct 2008  
**10-0866213** Proportional-integrate-derivative control apparatus and method (PCT: EU, China)
- KR Patent** [Granted] Publication date: 27 Mar 2008  
**10-0819301** Method and apparatus for optical image stabilizer on mobile camera module (PCT: EU, China)

## Supervision

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### PHD

Oct 2018– Present	<b>Nora Horanyi</b> , Developing Human Eye Gaze Reading in Natural Environments	<i>University of Birmingham</i>
Jan 2020– Present	<b>Linfang Zheng</b> , Object 6D Pose Estimation	<i>University of Birmingham</i>
Jan 2020– Present	<b>Tze Ho Elden Tse</b> , Graph Neural Network based 3D Hand-Object Pose Estimation	<i>University of Birmingham</i>
Sep 2020– Present	<b>Hengfei Wang</b> , 3D Gaze Estimation in the Wild	<i>University of Birmingham</i>
Dec 2020– Present	<b>Esha Dasgupta</b> , Vision-based 3D Human Posture Estimation and Musculoskeletal Regression	<i>University of Birmingham</i>
Mar 2021– Present	<b>Zhongqun Zhang</b> , Hand-object pose estimation	<i>University of Birmingham</i>
September 2021– Present	<b>Jonathan Freer</b> , Novel View Human Scene Synthesis	<i>University of Birmingham</i>

## PHD (CO-SUPERVISION)

Oct 2019– Present	<b>Jinyu Yang (with Prof. Ales Leonardis)</b> , Visual object tracking	<i>University of Birmingham</i>
Oct 2019– Present	<b>Emma Rengers (with Prof. Karen Yeung)</b> , Governance on machine vision	<i>University of Birmingham</i>
Feb 2019– Present	<b>Dalal Aljasem (with Prof. Andrew Howes)</b> ,	<i>University of Birmingham</i>
Feb 2019– Present	<b>Haiyang Chen (with Prof. Andrew Howes)</b> ,	<i>University of Birmingham</i>
Jul 2018– Present	<b>Wei Chen (with Prof. Ales Leonardis)</b> , 6D Object Pose Estimation	<i>University of Birmingham</i>

## MSC THESIS SUPERVISION

2021	<b>Ningtao Lu, Usman Sada, Ali Uzdil, Haoze Feng, Jianqing Liu, Kwok Li, Tong Shen, Andrew Berry,</b>	<i>University of Birmingham</i>
2020	<b>Xingxu Liu, Xing Yu, Haoran Yin, Yan Yan, Han Xiao, Chirag Bhatti, Ertugrul Hadzhaoglu, Jack Foster, Guanjin Wang, Jiun-Rung Tzeng, Tianhao Li, Canjing Li, Xingnan He, Esha Dasgupta, Kaiyuan Cheng,</b>	<i>University of Birmingham</i>
2019	<b>Andreas Papachristodoulou, Crystian Munoz Flores, Goodness Akalazu, Yi Zhang, Godfrey Lui,</b>	<i>University of Birmingham</i>
2018	<b>Joshua Henderson, Vivek Chauhan, Rajdev Singh, Matthew Baker, Yanan Zhou, Fuqiang Jiang, Xiaohui Ren, Matthew Yates,</b>	<i>University of Birmingham</i>

## BSC THESIS SUPERVISION

2020-2021	<b>Jonathan Freer, Ioana Raducanu,</b>	<i>University of Birmingham</i>
2019-2020	<b>Vytas Mulevicius, Osanne Gbayere, Jay Upadhyay, Yanjie Su,</b>	<i>University of Birmingham</i>
2018-2019	<b>Joseph Ramsay, Sarah Kember, Csongor Barabasi, Bogdan Crauciun,</b>	<i>University of Birmingham</i>

## BEFORE 2018

Jun 2013–Dec 2017	<b>Supervisor Assistant</b> , Four PhD students and two MSc students. We published one journal paper, six conference papers, and two workshop papers together.	<i>Imperial College London</i>
2008–2013	<b>Supervisor Assistant</b> , Two master students, and three undergraduate students. We published one journal paper and two conference papers together.	<i>Seoul National University</i>

## Invited Presentations

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### INVITED PRESENTATIONS

Dec 2021	<b>Invited talk</b> , Korea Railroad Research Institute	<i>Virtual</i>
Oct 2021	<b>Invited talk</b> , Chonnam University	<i>Virtual</i>
Oct 2021	<b>Invited talk</b> , UKRI TAS Resilience Node	<i>Virtual</i>
Sep 2021	<b>Invited talk</b> , UNIST AI Graduate Seminar for Fall 2021	<i>Seoul, S. Korea</i>
Aug 2021	<b>Invited talk</b> , Seoul National University	<i>Virtual</i>
July 2021	<b>Invited talk</b> , POSTECH Computer Vision Lab	<i>Pohang, S. Korea</i>
July 2021	<b>Invited talk</b> , Korea Electronics Technology Institute	<i>Pangyo, S. Korea</i>
July 2021	<b>Invited speaker</b> , Chung-Ang University AI Graduate School Seminar Series	<i>Virtual</i>
July 2021	<b>Invited talk</b> , Dongguk University	<i>Seoul, S. Korea</i>
Jul 2021	<b>Invited talk</b> , Huawei Noah's Ark Computer Vision Talk Series CV Tech Talk	<i>Virtual</i>
Jun 2021	<b>Tutorial</b> , The 36th International Technical Conference on Circuits/Systems, Computers and Communications (ITC-CSCC)	<i>Virtual</i>
Apr 2021	<b>Invited talk</b> , QUT Centre for Robotics (Queensland University of Technology)	<i>Virtual</i>
Jan 2021	<b>Guest lecturer</b> , 2021 Video Signal Processing/Video Understanding Research Group Winter School	<i>Virtual</i>
Dec 2020	<b>Invited speaker</b> , CHORUS, Jeju	<i>Virtual</i>
Dec 2020	<b>Invited speaker</b> , POSTECH Global Sports AIX Conference	<i>Virtual</i>
2020	<b>Invited speaker</b> , Dongkuk University	<i>Virtual</i>
2019	<b>Invited speaker</b> , CHORUS, Seoul	<i>Seoul, Korea</i>
2019	<b>Invited talk</b> , Huawei International Video Intelligence Forum	<i>Dublin, Ireland</i>
2018	<b>Invited talk</b> , Electronics and Telecommunications Research Institute (ETRI)	<i>Daejeon, S. Korea</i>
2018	<b>Invited talk</b> , Korea Electronics Technology Institute (KETI)	<i>Seoul, S. Korea</i>
2018	<b>Invited talk</b> , Naver Co.,Ltd	<i>Seoul, S. Korea</i>
2018	<b>Invited talk</b> , LG Electronics	<i>Seoul, S. Korea</i>
2018	<b>Invited talk</b> , Samsung Advanced Institute Technology	<i>Suwon, S. Korea</i>
2018	<b>Invited speaker</b> , Korean Conference on Computer Vision (KCCV) 2018	<i>Seoul, S. Korea</i>
2017	<b>Talk</b> , EEE postdoc research symposium @ Imperial College London	<i>London, UK</i>
2016	<b>Invited talk</b> , Hamlyn Centre @ Imperial College London	<i>London, UK</i>
2016	<b>Invited talk</b> , Samsung Electronics Software Center	<i>Seoul, S. Korea</i>
2016	<b>Invited talk</b> , Electronics and Telecommunications Research Institute (ETRI)	<i>Daejeon, S. Korea</i>
2016	<b>Invited speaker of the 1st ARRC Colloquium</b> , KAIST	<i>Daejeon, S. Korea</i>
2015	<b>Invited talk</b> , Seoul National University	<i>Seoul, S. Korea</i>
2015	<b>Invited talk</b> , Hanyang University	<i>Seoul, S. Korea</i>
2015	<b>Invited talk</b> , Dankook University	<i>Jukjeon, S. Korea</i>
2015	<b>Invited talk</b> , VTOUCH Inc.	<i>Seoul, S. Korea</i>
2015	<b>Invited speaker</b> , Computer Science Workshop @ Loughborough University	<i>Loughborough, UK</i>

## Other Activities

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### INTERNATIONAL SCHOOL

11-16 July **International Computer Vision Summer School (ICVSS)**, Registration, Recognition and Reconstruction in Images and Video *Sampieri-Sicily, Italy*

### STUDENT REPRESENTATIVE

Nov. 2009 to Oct. 2010 **Perception and Intelligence Laboratory**, As a representative of laboratory members, I helped the supervisor managing research projects and coordinating laboratory life. *Seoul National University*