Kihwan Kim *Resume*

CURRENT
POSITION
& CONTACT

VP of Engineering
Head of XR and Immersive SW
Samsung Electronics

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SUMMARY AND
AREAS OF
EXPERTISE

Engineering executive with over 20 years of R&D expertise in *Computer vision, Graphics, and Machine learning* fields. Strong research and commercialization records in *on-device AI and 3D Vision for XR, Self-driving car, and robotics* **[Google Scholar]**.

Executive Leadership of managing multi-national and multi-lingual teams. Excel at aligning cross-functional teams for the mass-product commercialization (over 10 million units per year: phones, watch, and various mobile form factors) **[LinkedIn]**.

EDUCATION

Georgia Institute of Technology   Atlanta, Georgia
    Ph.D., M.S. in Computer Science
Yonsei University   Seoul, South Korea
    B.S. in Electrical Engineering

EMPLOYMENT
HISTORY

Corporate Vice President   Suwon, South Korea
    Samsung Electronics   Apr. 2020 – Present
Principal Research Scientist   Santa Clara, California
    NVIDIA   Jan. 2012 – Mar. 2020
Research Associate   Pittsburgh, Pennsylvania
    Disney Research   Jan. 2009 – Aug. 2009
Senior Research Engineer   Seoul, South Korea
    Samsung SDS, IT R&D Center   Mar. 2001 – Aug. 2005
Ubiquitous Task Force   Seoul, South Korea
    Samsung Electronics   Jun. 2003 – Jan. 2004
Avionic Instrumentation Engineer   Suwon, South Korea
    Republic of Korea Air Force   Mar. 1996 – Sep. 1998
Graduate Research Assistant   Atlanta, Georgia
    Georgia Institute of Technology   Aug. 2005 – Dec. 2011

PROFESSIONAL
EXPERTISE

Samsung Electronics   Suwon, Korea

VP, Head of XR and Immersive SW
Responsible for *XR and Avatar SW in Samsung*.

- Avatar commercialization (AR Emoji and applications) for Phones, watch, tablets and TV. Unity-based Avatar SDK for various Samsung services (Knox/Cloud).
- DL-based avatar reenactment commercialization, and R&D for neural rendering.
- XR (AR/VR) Platform and system SW for various form factors.
- On-device 3D Computer vision solutions (SLAM, Hand/Eye/Face tracking, etc.).
- OpenXR and rendering framework for various user scenarios (AR/VR).
- Mobile AR applications (AR Doodle, Bixby Vision, AR Canvas, and AR Emoji Camera) for Galaxy phones, Tablets and watches.

VP, Head of Graphics R&D Group

Responsible for *GPU, Graphics and rendering system optimization*.

- Android rendering framework, Variational Refresh Rate (VRR) (Since S21).
- Game engine, and GPU optimization; adaptive perf, RL-based optimization (SPA).
- Flagship models; Galaxy S20, S21, S22, Note 20, Z Flip 2, Galaxy Z Fold 2, Galaxy Z Fold 3. A/M series, Watch4, and S6/S7/S8 Tablets etc.

VP, Head of Visual Solution Lab

Responsible for *Camera, Computer vision (CV), and Deep learning (DL) SW*.

- DL-based scene recognition solutions for Galaxy phones: Bixby Vision, Single take, Relighting, Video summarization, and AI Filters **[WACV22]**.
- DL-based UDC (Under display camera) imaging SW **[STC Winner 20]**.
- DL-based imaging pipeline for flagship Galaxy phones: SR/NR/HDR, Night-mode, Night portrait, and Nightography **[STC Winner 21]**
- DL-based image synthesis for flagship Galaxy phones: Photo remaster.
- On-device AI taskforce; GPU/DSP/NPU deployment and optimization with vendor specific SDKs (EDEN, SNPE) for Galaxy devices.

NVIDIA Research   Santa Clara, CA USA

Principal Research Scientist

Learning and Perception Research Team

- Led **3D Computer vision group** for inventing algorithms for autonomous driving SDK, robotics SDK, and content creation framework.
  [CVPR18a,b][ECCV18a,b], [CVPR19a,b,c,d], [WACV20][CVPR20a,b,c]
- Led **Sensor-based localization project (autonomous driving)**: mapping and registration of points cloud captured from a Lidar sensor**[3DV15][ECCV18b]**.
- Led **VirtualEye (DARPA)** project: 3D mapping and free view-point video.
- Led **NVIDIA SLAM**(NVSLAM): An umbrella project of a various 3D Vision projects for next generation augmented/virtual reality and autonomous driving:
  **[3DV14/15][EGSR15] [CVPR16a][ICCV17a][ICCV17b][CVPR18][ECCV18a]
  [ARX18a][ARXV19a,b,c,d]**
- Tech-transfer for NVIDIA products: ISAAC SDK (Robotics), SDKs for DrivePX, legacy VisionWorks, internal VR/AR SDKs and various open-source projects.

Mobile Visual Computing Team

- Collaboration with Google/ATAP for **Tango** project (Peanut/Yellowstone).
- Conducted a project for **Driver's gesture recognition system** for Advanced Driver Assistant System (ADAS) using multi-modal sensors and Deep Neural Network (CNN) **[FG15][RADAR15][P15-a,b][IV16][CVPRW15][CVPR16b]**
- Conducted tracking and scene reconstruction research for ADAS and autonomous driving project (Sensor fusion: depth-camera, vision, IMU, etc.)
- Conducted an Real-time viewfinder editing project: **[SIGGRAPHA13]**.
- Co-author of a tutorial on OpenCV for native Android: SIGGRAPH13 (mobile)
- Fast Image registration and tracking for mobile vision **[P14]**
- Stochastic Motion field analysis using Gaussian Process **[CVPR12]**

Georgia Institute of Technology   Atlanta, Georgia

Dynamic Scene Analysis

- Recognizing traffic patterns and detecting anomalous events using Gaussian Process Regression Flow, and 4th-order moment. Persistent Stare Exploitation and Analysis System (*PerSEAs*) with *Kitware/DARPA* **[ICCV11]**.
- Analysis and prediction of multi-agent motion in dynamic sports scene. Tracking ground positions using geometric constraint optimization **[CVPR10A/B]**.

Dynamic Scene Visualization and Augmented Reality

- City-level visualization of dynamic scenes from distributed videos using spatio-temporal interpolation and analysis **[ISMAR09]**, **[VR11]**, **[4GS09]**. Media coverage and articles in **[CNN09]**, **[NS09]** and **[PS09]**.
- 3D Reconstruction and localization of nearby buildings from the analysis of GPS signals having low signal-to-noise ratio. Published in **[ISWC08]** and **[TECH06]**.

Video-based Rendering

- Video-based spatio-temporal view interpolation for Simulating Cardiac Surgery (Emory/Inova Heart Vascular Insitute) Presented in **[STS11]** and **[ISMICS11]**

Interactive Video and Multimedia System

- Automatic generation of the annotated collection of mosaics for interactive video navigation. (AwareHome/Tunner Studio) **[ACMMM06]** and **[GT-CMU05]**

Real-time Rendering Algorithm

- Generalized Shadow Volume algorithm for the real-time rendering of non-manifold transparent casters. Published in **[JGT08]**, **[TECH07]** and **[GT-CMU06B]**

Disney Research, Pittsburgh   Pittsburgh, PA USA

Scene Analysis and Micro-casting

- Conducted a project for detecting important location in the game. Designed and implemented proto-type system for micro-casting. **[CVPR10A]**
- Implemented player tracking algorithm using particle filter and mean-shift , and team classification algorithm for sports visualization. **[CVPR10B]**

Samsung SDS IT R&D Center, and Samsung Electronics   Seoul, South Korea

Face Recognition, Real-time Collaboration System

- Responsible for face detection part. Fisher-face, and statistical skin segmentation were used for ViaFace$^{\mathrm{TM}}$. Appeared in COMDEX 2001 Las Vegas.
- Designed and developed Real-time Collaboration System: Syncbiz$^{\mathrm{TM}}$ (2002 Samsung Best solution award)
- Developed embedded framework for IP-Set top box: LivingWise$^{\mathrm{TM}}$ (fed into Korea Telecommunication's IP-STB services)
- Ubiquitous Home network framework: NEX$^{\mathrm{TM}}$ (framework fed into U-City projects at Samsung SDS): Remote Management system in the home server for U-City.

Republic of Korea Airforce   Suwon, South Korea

Avionic Instrumentation Engineer, Sergeant

- Responsible for the data acquisition, calibration, maintenance of sensors (gyro, INAS etc.) for F-4E/RF-4C/F5.

REFEREED
CONFERENCE
PUBLICATIONS

[WACV22] A Abdelhamed, J Yim, A Punnappurath, MS Brown, J Choe, K Kim, *Extracting Vignetting and Grain Filter Effects From Photos*, In *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision, WACV 2022*

[NeurIPS20] X. Li, S. Liu, K.Kim, S. De melo, X. Wang, M. Yang, J. Kautz, *Online Adaptation for Consistent Mesh Reconstruction in the Wild*, In *Proceeding of 2020 Conference on Neural Information Processing Systems, NeurIPS 2020*

[ECCV20a] W. Yuan, B. Eckart, K.Kim, V. Jampani, D. Fox, J. Kautz, *DeepGMR: Learning Latent Gaussian Mixture Models for Registration*, In *Proceeding of 2020 European Conference on Computer Vision, ECCV 2020*

[ECCV20b] X. Li, S. Liu, K.Kim, S. De melo, V. Jampani, M. Yang, J. Kautz, *Self-supervised Single-view 3D Reconstruction via Semantic Consistency*, In *Proceeding of 2018 European Conference on Computer Vision, ECCV 2020*

[CVPR20a] J. Yoon, K. Kim, O. Gallo, H. Park, J. Kautz, *Novel View Synthesis of Dynamic Scenes with Globally Coherent Depths*, In *Proceeding of IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2020*

[CVPR20b] M. Boss, V. Jampani, K. Kim, H. Lensch, J. Kautz, *Two-shot Spatially-varying BRDF and Shape Estimation*, In *Proceeding of IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2020*

[CVPR20c] A. Badki, O. Gallo, A. Troccoli, K. Kim, P. Sen, J. Kautz, *Bi3D: Stereo Depth Estimation via Binary Classifications*, In *Proceeding of IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2020*

[WACV20] M. Innmann, K.Kim, J. Gu, M. Nießner, C. Loop, M. Stamminger, J.Kautz, *NR-MVS: Non-Rigid Multi-view Stereo*. In *Proceeding of 2020 IEEE Winter Conference on Applications on Computer Vision, WACV 2020 (Oral)*

[ICCV19] S.Sengupta, J. Gu, K.Kim, G.Liu, D. Jacobs, J.Kautz, *Neural Inverse Rendering of an Indoor Scene from a Single Image*. In *Proceeding of 2019 IEEE International Conference on Computer Vision, ICCV 2019*

[CVPR19a] C.Liu, K.Kim, J.Gu, Y. Furukawa, J.Kautz, *PlaneRCNN: 3D Plane Detection and Reconstruction from a Single View*, In *Proceeding of IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2019 (Oral)*

[CVPR19b] C.Liu, J.Gu, K.Kim, S. Narasimhan, J.Kautz, *Neural RGB→D Sensing: Depth and Uncertainty from a Video Camera*, In *Proceeding of IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2019. (Oral) *Best paper finalist*

[CVPR19c] A. Ranjan, V. Jampani, K.Kim, D.Sun, L.Balles, J.Wulff, M.Black, *Competitive Collaboration: Joint Unsupervised Learning of Depth, Camera Motion, Optical Flow and Motion Segmentation*. In *Proceeding of 2019 IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2019*

[CVPR19d] X. Li, S. Liu, K.Kim, X. Wang, M. Wang, J. Kautz, *Putting Humans in a Scene: Learning Affordance in 3D Indoor Environments*. In *Proceeding of 2019 IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2019*

[ECCV18a] Z. Lv, K. Kim, A. Troccoli, D. Sun, J. Rehg, J. Kautz, *Learning Rigidity in Dynamic Scenes with a Moving Camera for 3D Motion Field Estimation* , In *Proceeding of 2018 European Conference on Computer Vision, ECCV 2018*

[ECCV18b] B. Eckart, K. Kim, J. Kautz, *Fast and Accurate Point Cloud Registration using Trees of Gaussian Mixtures* , In *Proceeding of 2018 European Conference on Computer Vision, ECCV 2018*

[CVPR18] S. Brahmbhatt, J. Gu, K. Kim, J. Hays, J. Kautz, *Geometry-Aware Learning of Maps for Camera Localization (MapNet)* , In *Proceeding of 2018 IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2018* *(Oral)*

[ICCV17a] K. Kim, J. Gu, S. Tyree, P. Molchanov, M. Nießner, J. Kautz, *A Lightweight Approach for On-the-Fly Reflectance Estimation*, In *Proceeding of 2017 IEEE International Conference on Computer Vision, ICCV 2017* *(Oral)*

[ICCV17b] R. Maier, K. Kim, M. Nießner, D. Cremers, J. Kautz, *Intrinsic3D: High-Quality 3D Reconstruction by Joint Appearance and Geometry Optimization with Spatially-Varying Lighting*, In *Proceeding of 2017 IEEE International Conference on Computer Vision, ICCV 2017*

[3DV17] V. Golyanik, K. Kim, R. Maier, M. Nießner, J. Kautz, *Multiframe Scene Flow with Piecewise Rigid Motion*, In *Proceeding of 2017 IEEE International Conference on 3D Vision, 3DV 2017* *(Oral)*

[CVPR16a] B. Eckart, K. Kim, A. Troccoli, A. Kelly, J. Kautz, *Accelerated Generative Models for 3D Point Cloud Data*, In *Proceeding of 2016 IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2016* *(Oral)*

[CVPR16b] P. Molchanov, X. Yang, S. Gupta, K. Kim, S. Tyree, J. Kautz, *Online Detection and Classification of Dynamic Hand Gestures with Recurrent 3D Convolutional Neural Networks*, In *Proceeding of 2016 IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2016*

[IV16] S. Gupta, P. Molchanov, X. Yang, K. Kim, S. Tyree, J. Kautz, *Towards Selecting Robust Hand Gestures for Automotive Interfaces*, In *Proceeding of 2016 IEEE Intelligent Vehicles Symposium, IV 2016* *(Oral)*

[3DV15] B. Eckart, K. Kim, A. Troccoli, A. Kelly, J. Kautz, *MLMD: Maximum Likelihood Mixture Decoupling for Fast and Accurate Point Cloud Registration*, In *IEEE 3D Vision, 3DV2015* *(Oral)*

[EGSR15] S. U. Mehta, K. Kim, D. Pajak, K. Pulli, J. Kautz, R. Ramamoorthi, *Filtering Environment Illumination for Interactive Physically-Based Rendering in Mixed Reality*, In *Eurographics Symposium on Rendering, EGSR 2015* *(Oral)*

[CVPRW15] P. Molchanov, S. Gupta, K. Kim, J. Kautz, *Hand Gesture Recognition with 3D Convolutional Neural Networks*, In *IEEE CVPR 2015 Workshop on Hand Gesture Recognition*

[FG15] P. Molchanov, S. Gupta, K. Kim, K. Pulli, *Multi-sensor System for Driver's Hand-Gesture Recognition*, In *IEEE Automatic Face and Gesture recognition, FG2015* *(Oral)*

[RADAR15] P. Molchanov, S. Gupta, K. Kim, K. Pulli, *Short-Range FMCW Monopulse Radar for Hand-Gesture Sensing*, In *IEEE International Radar Conference 2015*

[3DV14] D. Herrera, K. Kim, J. Kannala, K. Pulli, and J. Heikkila , *DT-SLAM: Deferred Triangulation for Robust SLAM*, In *IEEE 3D Vision, 3DV2015*

[SIGGRAPHA13] J. Baek, D. Pajak, K. Kim, K. Pulli, and M. Levoy, *WYSIWYG Computational Photography via Viewfinder Editing*, In *ACM Transactions on Graphics, SIGGRAPH Asia 2013*

[CVPR12] K. Kim, D. Lee, and I. Essa, *Detecting Regions of Interest in Dynamic Scenes with Camera Motions*, In *Proceeding of 2012 IEEE Conference on Computer Vision and Pattern Recognition*

[ICCV11] K. Kim, D. Lee, and I. Essa, *Gaussian Process Regression Flow for Analysis of Motion Trajectories*, In *Proceeding of 2011 IEEE International Conference on Computer Vision*

[CVPR10a] K. Kim, M. Grundmann, A. Shamir, I. Matthews, J. Hodgins, and I. Essa, *Motion Fields to Predict Play Evolution in Dynamic Sports Scenes*, In *Proceeding of 2010 IEEE Conference on Computer Vision and Pattern Recognition*

[CVPR10b] R. Hamid, R. Kumar, M. Grundmann, K. Kim, I. Essa and J. Hodgins, *Player Localization Using Multiple Static Cameras for Sports Visualization*, *In Proceeding of 2010 IEEE Conference on Computer Vision and Pattern Recognition*

[ISMAR09] K. Kim, S. Oh, J. Lee and I. Essa, *Augmenting Aerial Earth Maps with Dynamic Information*, In *Proceeding of 2009 IEEE/ACM International Symposium on Mixed and Augmented Reality*

[ISWC08] K. Kim, J. Summet, T. Starner, D. Ashbrook, M. Kapade and I. Essa, *Localization and 3D Reconstruction of Urban Scenes Using GPS*, In *Proceeding of 2008 IEEE International Conference on Wearable Computers*

[ACMMM06] K. Kim, I. Essa and G. D. Abowd, *Interactive Mosaic Generation for Video Navigation*, In *Proceeding of 2006 ACM International Conference on Multimedia*

REFEREED JOURNAL PUBLICATIONS

[TOG13] J. Baek, D. Pajak, K. Kim, K. Pulli, and M. Levoy, *WYSIWYG Computational Photography via Viewfinder Editing*, In *ACM Transactions on Graphics, Volume 32.*

[VR11] K. Kim, S. Oh, J. Lee and I. Essa, *Augmenting Aerial Earthmaps with Dynamic Information from Videos* , In *Virtual Reality Journal* [Special issue on Augmented Reality], Springer London, 2011 (VR)

[JGT08] B. Kim, K. Kim and G. Turk, *A Shadow Volume Algorithm for Opaque and Transparent Non-Manifold Casters*, In *Journal of Graphics Tools*, A.K. Peters, 2008

THESIS

[BSTHESIS01] K. Kim, *Simple Enhanced Block-Matching Algorithm for Intermediate View Reconstruction*, Department of Electrical Engineering, Yonsei University

[PHDTHESIS11] K. Kim, *Spatio-temporal Data Interpolation for Dynamic Scene Analysis*, College of Computing, Georgia Institute of Technology

OTHER PUBLICATIONS POSTERS, TECH' REPORTS

[STS11][ISMICS 2011] E. Sarin, K. Kim, I. Essa, and W. Cooper, *3-Dimensional Visualization of the Operating Room Using Advanced Motion Capture: A Novel Paradigm to Expand Simulation-Based Surgical Education*

[4GS09] K. Kim, M. Grundmann, I. Essa, *Collaborative Crowd-casting using Mobile devices*, In *4G Symposium*, Las Vegas 2009

[TECH07] B. Kim, K. Kim, G. Turk, *Real-time Shadow of Transparent Casters Using Shadow Volume*, In *Georgia Institute of Technology Technical Report GT-IC-07-04*

[TECH06] K.Kim, J.Summet, T.Starner, D.Ashbrook, M.Kapade and I.Essa, *Localization and 3D Reconstruction of Urban Scenes Using GPS*, 2008 In *Georgia Institute of Technology Technical Report GT-IC-08-06*

[GT-CMU06A] K.Kim, I.Essa and F. Dellaert Augmenting Earth Maps with Dynamic Information Using Vanishing Point Clustering, In 2006 GT-CMU Retreat for Graphics

[GT-CMU06B] B. Kim and K. Kim, *Transparent Shadow Casters and Softened Self-Shadow Using Shadow Volume*, In 2006 GT-CMU Retreat for Graphics

[GT-CMU05] K. Kim and I. Essa, *Multi-scale Photomosaic*, In 2005 GT-CMU Retreat for Graphics

PATENTS

[P22a] X Li, S Liu, K Kim, S De Mello, V Jampani, J Kautz *Self-supervised single-view 3D reconstruction via semantic consistency* US Patent 11,238,650

[P22a] X Li, S Liu, K Kim, S De Mello, J Kautz *Three-dimensional object reconstruction from a video* US Patent App. 16/945,455

[P21c] SH. Baek, K. Kim, J. Gu, O. Gallo, AJ. Troccoli, MY. Liu, J. Kautz *Guided hallucination for missing image content using a neural network* US Patent 10,922,793

[P21b] B. Eckart, W. Yuan, V. Jampani, K. Kim, J. Kautz *Image aligning neural network* US Patent App. 16/675,120

[P21a] K. Kim, J. Gu, C. Liu, J. Kautz *3D Plane Detection and Reconstruction using a Monocular Camera* US Patent 11,037,051

[P20b] J. Gu, K. Kim, C. Liu *Estimating Depth fro a Video Stream Captured with a Monocular RGB Camera* US Patent app: 16,439,539

[P20c] J. Gu, K. Kim, J. Kautz, G. Liu, S. Sengupta, *Inverse Rendering of a Scene from a Single Image* US Patent app: 16,685,538

[P19a] P. Molchanov, S. Gupta, K. Kim, *Multi-Sensor Based User Interface* US Patent: 10,509,479

[P19b] K. Kim, S. Baek, O. Gallo, J. Gu, A.Troccoli, M. Liu, J. Kautz, *Guided Hallucination for Missing Image Content Using a Neural Network* US Patent app: 18-0154US2

[P19c] B. Eckart, K. Kim, J. Kautz, *Fast Multi-scale Point Cloud Registration with a Hierarchical Gaussian Mixture* US Patent 10,826,786

[P18a] S. Brahmbhatt, J. Gu, K. Kim, J. Kautz, *Learning-based Camera Pose Estimation from Images of an Environment* Us Patent app: 17-0132US1

[P18b] Z. Lv, K. Kim, A. Troccoli, D. Sun, J. Kautz, *Learning Rigidity in Dynamic Scenes for Three dimensional Scene Flow Estimation* US Patent app: 17-0167US2

[P17a] P. Molchanov, X. Yang, S. De Mello, K Kim, S. Tyree, K. Kim *Online detection and classification of dynamic gestures with recurrent convolutional neural networks* US Patent: 15,402,128

[P16a] B. Eckart, K. Kim, A. Troccoli, J. Kautz *Modeling Point Cloud Data - Hierarchies of Gaussian Mixture Models* US Patent.

[P16c] P. Molchanov, S. Gupta, K. Kim, *In-Vehcle Short-range RADAR system for Intelligent UIs* US Patent App.

[P16c] P. Molchanov, S. Gupta, K. Kim, *Radar based user interface* US Patent App: 15,060,545

[P14] K. Kim, D. Pajak, K. Pulli,. *System, Method, and computer program product for performing one-dimensional searches in two-dimensional images* , US Patent: 14/191,332

[P13] K. Kim, A. Shamir, IA Matthews, M. Grundmann, JK. Hodgins, and Irfan Essa. *System and Method for Utilizing Motion Fields to Predict Evolution in Dynamic Scenes*, US Patent: 13,075,947

REVIEWER
TC,PC,EDITOR

PC/TC/Reviewer in CVPR, ICCV, ECCV, BMVC, ACCV, Eurographics, SIGGRAPH, SIGGRAPH ASIA, tPAMI, tIP, HPG, EVC, EVW, IWMV, IEICE (Assc.Editor).

ADVISED PH.D. STUDENTS, POST-DOC, AND INTERNS	**Student name (advising period), Degree, Grad School, (Current occupation)**
	Jongmin Baek (2013–2014), Ph.D., Stanford University. (Dropbox)
	Natesh Srinivasan (2013), Ph.D., Georgia Institute of Technology. (Apple)
	Daniel Herrera (2013–14), Ph.D., University of Oulu. (Facebook)
	Pavlo Molchanaov (2014), Ph.D., Tampere University of Technology (NVIDIA)
	Soham Uday Mehta (2014), Ph.D., University of California, Berkeley. (Apple)
	Benjamin Eckart (2013–2017), Ph.D., Carnegie Mellon University. (NVIDIA)
	Nasa Rouf (2014), Ph.D., University of British Columbia (Lyft)
	Yingze Bao (2013), Ph.D., Stanford and University of Michigan (Baidu)
	Viktor Kampe (2016), Ph.D., Chalmers University of Technology (Zenuity)
	Robert Maier (2017), Ph.D., Technical University of Munich. (Apple)
	Vladislav Golyanik (2017), Ph.D., University of Kaiserslautern. (MPI)
	Samarth Brahmbhatt (2017), Ph.D. student, Georgia Institute of Technology.
	Chao Liu (2018), Ph.D. student, Carnegie Mellon University (NVIDIA)
	Chen Liu (2018), Ph.D., Washington University in St. Louis. (Facebook)
	Soumyadip Sengupta (2018), Ph.D., University of Maryland. (U. of Washington)
	Xueting Li (2018–2020), Ph.D. student, University of California, Merced.
	Matthias Innmann (2018), Ph.D. student, University of Erlangen-Nürnberg.
	Anurag Ranjan (2018), Ph.D. student, MPI for Intelligent Systems. (Apple)
	Yonglong Tian (2018), Ph.D. student, Massachusetts Institute of Technology.
	Seunghwan Baek (2018), Ph.D. Korea Advanced Institute of Science and Technology
	Ilchae Jung (2019), Ph.D. student, Pohang University of Science and Technology
	Mark Boss (2019), Ph.D. student, University of Tubingen.
	Zhaoyang Lv (2017, 2019), Ph.D. student, Georgia Institute of Technology.(Facebook)
	Abhishek Badki (2019–2020), Ph.D. student, UC Santa Barbara.
	Anuj Pahuja (2019), Ph.D. student, Carnegie Mellon University. (Facebook)
	Jaeshin Yoon (2019), Ph.D. student, University of Minnesota, Twin Cities.

SOFTWARE AND HARDWARE SKILLS	Languages, Scripts, and Wrappers:
	• C, C++, Embedded C, Python, PyTorch, Caffe, Android Native C/C++, Java, JavaScript, MFC, ATL, COM, SQL, MySQL, MATLAB, under various IDE environments
	• Libraries for Vision/Graphics/Math : OpenCV, OpenGL, GLSL, DirectX, Lapack, Intel Math Kernel Library
	Digital Logic Circuit:
	• FPGA and Computer-Aided Design Tools: VHDL, MAX+PLUS, SPICE
	Video and Image Editing tools, and Renderer:
	• 3D Studio Max, Autodesk Maya, Adobe Photoshop, Premiere, and others
	• POV-Ray, Indigo, Blender

LANGUAGES	Fluent in Korean, English and Japanese

Last update: MAR, 2022