Jinwei Gu

Principal Research Scientist & Senior Manager, NVIDIA Cosmos Lab
Adjunct Associate Professor, CUHK CSE

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Education

9/2005 – 5/2010	**Columbia University** Ph.D. in Computer Science *(with Distinction)*
9/2002 – 5/2005	**Tsinghua University** M.S. in Automation *(Outstanding Master's Thesis Award)*
9/1998 – 5/2002	**Tsinghua University** B.S. in Automation

Employment

5/2024 – Present	**NVIDIA Cosmos Lab** Principal Research Scientist & Senior Manager
3/2023 – Present	**The Chinese University of Hong Kong (CUHK)** Adjunct Associate Professor, Dept. of Computer Science & Engineering
11/2018 – 3/2023	**SenseBrain Technology (SenseTime USA)** R&D Executive Director
11/2015 – 11/2018	**NVIDIA Research** Senior Research Scientist
11/2013 – 10/2015	**Futurewei Technologies** Senior Research Scientist
9/2010 – 6/2013	**Rochester Institute of Technology (RIT)** Assistant Professor, Chester F. Carlson Center for Imaging Science
9/2005 – 5/2010	**Columbia University** Graduate Research Assistant, CAVE Laboratory
5/2008 – 8/2008	**Adobe Research** Research Intern, CTL Lab
2003 – 2004	**Microsoft Research Asia (MSRA)** Research Intern, Visual Computing Lab

Research Interests

Omnimodal World Foundation Models for Physical AI; Computational Imaging; AI Image Sensor/Camera Systems; Synthetic Data Generation; 3D Computer Vision; Computational Photography; Computer Graphics.

Research & Product Experience

NVIDIA Cosmos Lab (2024 – Present)

One of the core contributors and tech leads for **NVIDIA Cosmos** World Foundation Model Platform for Physical AI. Led technical efforts across the full Cosmos journey: Cosmos Tokenizer (neural image/video tokenizer suite), Cosmos-Predict1 world foundation models, Cosmos-Transfer1 (multimodal ControlNet), Cosmos-Reason1 (embodied reasoning), Cosmos-Predict2, Cosmos-Predict2.5/Transfer2.5, **Cosmos 3** (omnimodal world models spanning text, images, video, audio, and actions), Cosmos-Policy (visuomotor robot policies), and related Physical AI evaluation and synthetic data generation infrastructure. Cosmos 3 achieved top open-model results across many Physical AI benchmarks, with code, model cards, and several SDG datasets released through NVIDIA, GitHub, and Hugging Face.

Selected Cosmos project pages: Tokenizer; Predict1; Reason1; Predict2; Predict2.5; Transfer2.5; Cosmos 3.

CUHK (2023 – Present)

Adjunct Associate Professor conducting research on novel image capturing, rendering, and editing with Generative AI and LLMs, including computational photography, neural image sensors, and vision foundation models.

SenseBrain Technology (2018 – 2023)

Built and led an R&D team of ∼30 engineers in Silicon Valley, focusing on complete product solutions for photo/video quality enhancement on smartphones. Co-developed with SONY the world's first AI imaging sensor (RGBW IMX866) and 200 MP camera (IMX777), shipping in flagship smartphones. Delivered AI ISP, Super Resolution, Super Night, Portrait Restoration, RGBCMY sensor, Under-Display Camera, and HDR video pipelines.

NVIDIA (2015 – 2018): DRIVE IX / Co-Pilot SDK

Core contributor to the AI Co-Pilot SDK (AI for in-car monitoring), including head pose estimation, gaze tracking, facial keypoint detection, drowsiness/distraction detection, and gesture recognition. Demoed live in NVIDIA CEO keynote at CES 2017; shipped in NVIDIA DRIVE IX SDK.

NVIDIA (2015 – 2017): VirtualEye Project

Key member in this NVIDIA–DARPA collaboration: real-time multi-camera Co-SLAM, 3D reconstruction, novel view synthesis, and free-view video streaming for telepresence. Led Co-SLAM tracking module; ported full pipeline to NVIDIA Jetson TX2.

Futurewei (2013 – 2015): V-Sports Project

Team lead for prototyping a complete virtual reality system with multiple cameras, including multi-camera tracking, 3D reconstruction, and free-view video rendering for sports.

RIT (2010 – 2013): Computational Imaging for Recycling

Principal investigator for building a novel active lighting and imaging system for recycling scrap materials.

Honors & Awards

- **Best of CES Award (2025)** — NVIDIA Cosmos World Foundation Models
- CVPR 2019 Best Paper Finalist — Neural RGB→D Sensing
- CVPR 2018 Outstanding Reviewer
- Ph.D. Degree with Distinction, Columbia University, 2010
- Ph.D. Service Award, Columbia University, 2009
- Principal Scholarship Award, Tsinghua University, 2005
- Outstanding M.S. Thesis Award, Tsinghua University, 2005

Publications

For the complete up-to-date list, see Google Scholar.

Selected Recent Preprints and Technical Reports

A1. NVIDIA Cosmos Team. "Cosmos 3: Omnimodal World Models for Physical AI." *arXiv:2606.02800*, 2026. Project; Code; Models/Data.

A2. Shenyuan Gao, William Liang, Kaiyuan Zheng, ..., **Jinwei Gu**, et al. "DreamDojo: A Generalist Robot World Model from Large-Scale Human Videos." *arXiv:2602.06949*, 2026.

A3. Xiao Fu, Shitao Tang, Min Shi, Xian Liu, **Jinwei Gu**, Ming-Yu Liu, Dahua Lin, Chen-Hsuan Lin. "Plenoptic Video Generation." *arXiv:2601.05239*, 2026.

A4. NVIDIA Cosmos Team. "World Simulation with Video Foundation Models for Physical AI (Cosmos-Predict2.5 / Cosmos-Transfer2.5)." *arXiv:2511.00062*, 2025. Predict2.5; Transfer2.5; Predict2.5 Code; Transfer2.5 Code.

A5. Wei-Cheng Tseng, **Jinwei Gu**, Qinsheng Zhang, Hanzi Mao, Ming-Yu Liu, Florian Shkurti, Lin Yen-Chen. "Scalable Policy Evaluation with Video World Models." *arXiv:2511.11520*, 2025.

A6. NVIDIA. "Cosmos-Predict2: World Simulation Model for Physical AI." 2025. Project; Code.

A7. NVIDIA Cosmos Team. "Cosmos-Reason1: From Physical Common Sense To Embodied Reasoning." *arXiv:2503.15558*, 2025. Project; Code.

A8. NVIDIA Cosmos Team. "Cosmos-Transfer1: Conditional World Generation with Adaptive Multimodal Control." *arXiv:2503.14492*, 2025. Project; Code.

A9. J. Dai, L. Chen, X. Wang, Y. Hu, **Jinwei Gu**, T. Xue. "Tolerance-Aware Deep Optics." *arXiv:2502.04719*, 2025.

A10. NVIDIA Cosmos Team. "Cosmos World Foundation Model Platform for Physical AI." *arXiv:2501.03575*, 2025. Project; Code.

A11. NVIDIA Cosmos Team. "Cosmos Tokenizer: A Suite of Image and Video Neural Tokenizers." *arXiv:2501.03575*, 2025. Project; Code; TokenBench.

Refereed Journal Articles

J20. Lingen Li, Mingde Yao, Xingyu Meng, Muquan Yu, Tianfan Xue, **Jinwei Gu**. "Uni-ISP: Toward Unifying the Learning of ISPs from Multiple Mobile Cameras." *IEEE Transactions on Image Processing*, vol. 34, 2025.

J19. H. Wu, C. Chen, L. Liao, J. Hou, W. Sun, Q. Yan, **Jinwei Gu**, W. Lin. "Neighbourhood Representative Sampling for Efficient End-to-End Video Quality Assessment." *IEEE TPAMI*, vol. 45, no. 12, 2023.

J18. Kevin Chan, Xiangyu Xu, Xintao Wang, **Jinwei Gu**, Chen Change Loy. "GLEAN: Generative Latent Bank for Image Super-Resolution and Beyond." *IEEE TPAMI*, 45(3), 2023.

J17. Josh Rego, Huaijin Chen, Shuai Li, **Jinwei Gu**, Suren Jayasuriya. "Deep Camera Obscura: An Image Restoration Pipeline for Pinhole Photography." *Optics Express*, 30(15):27214–27235, 2022.

J16. Shiyu Duan, Huaijin Chen, **Jinwei Gu**. "JPD-SE: High-level Semantics for Joint Perception-Distortion Enhancement in Image Compression." *IEEE Transactions on Image Processing*, vol. 31, 2022.

J15. Chongyi Li, Chunle Guo, Linghao Han, Jun Jiang, Ming-Ming Cheng, **Jinwei Gu**, Chen Change Loy. "Low-light Image and Video Enhancement Using Deep Learning: A Survey." *IEEE TPAMI*, vol. 44, 2022.

J14. Felipe Gutierrez-Barragan, Huaijin Chen, Mohit Gupta, Andreas Velten, **Jinwei Gu**. "iToF2dToF: A Robust and Flexible Representation for Data-Driven Time-of-Flight Imaging." *IEEE Transactions on Computational Imaging*, vol. 7, 2021.

J13. Chao Liu, **Jinwei Gu**. "Discriminative Illumination: Per-Pixel Classification of Raw Materials based on Optimal Projections of Spectral BRDF." *IEEE TPAMI*, 36(1):86–98, 2014.

J12. Dengyu Liu, **Jinwei Gu**, Yasunobu Hitomi, Mohit Gupta, Tomoo Mitsunaga, Shree Nayar. "Efficient Space-Time Sampling with Pixel-wise Coded Exposure for High Speed Imaging." *IEEE TPAMI*, 36(2):248–260, 2014.

J11. **Jinwei Gu**, Shree Nayar, Eitan Grinspun, Peter Belhumeur, Ravi Ramamoorthi. "Compressive Structured Light for Recovering Inhomogeneous Participating Media." *IEEE TPAMI*, 35(3):555–567, 2013.

J10. **Jinwei Gu**, Ravi Ramamoorthi, Peter Belhumeur, Shree Nayar. "Removing Image Artifacts Due to Dirty Camera Lenses and Thin Occluders." *ACM Transactions on Graphics (SIGGRAPH Asia)*, Dec. 2009.

J9. Wojciech Matusik, Boris Ajdin, **Jinwei Gu**, Jason Lawrence, Hendrik Lensch, Fabio Pellacini, Szymon Rusinkiewicz. "Printing Spatially-Varying Reflectance." *ACM Transactions on Graphics (SIGGRAPH Asia)*, Dec. 2009.

J8. Jie Zhou, Fanglin Chen, **Jinwei Gu**. "A Novel Algorithm for Detecting Singular Points from Fingerprint Images." *IEEE TPAMI*, vol. 31, no. 7, 2009.

J7. **Jinwei Gu**, Chien-I Tu, Ravi Ramamoorthi, Peter Belhumeur, Wojciech Matusik, Shree Nayar. "Time-Varying Surface Appearance: Acquisition, Modeling, and Rendering." *ACM Transactions on Graphics (SIGGRAPH)*, vol. 25, no. 3, 2006.

J6. **Jinwei Gu**, Jie Zhou, Chunyu Yang. "Fingerprint Recognition by Combining Global Structure and Local Cues." *IEEE Transactions on Image Processing*, vol. 15, no. 7, 2006.

J5. Wei Jiang, Guihua Er, Qionghai Dai, **Jinwei Gu**. "Similarity-based Online Feature Selection in Content-based Image Retrieval." *IEEE Transactions on Image Processing*, vol. 15, no. 3, 2006.

J4. Wei Jiang, Guihua Er, Qionghai Dai, **Jinwei Gu**. "Hidden Annotation for Image Retrieval with Long-term Relevance Feedback Learning." *Pattern Recognition*, vol. 38, no. 11, 2005.

J3. **Jinwei Gu**, Jie Zhou, David Zhang. "A Combination Model for Orientation Field of Fingerprints." *Pattern Recognition*, vol. 37, no. 3, 2004.

J2. Jie Zhou, **Jinwei Gu**. "A Model-based Method for the Computation of Fingerprints' Orientation Field." *IEEE Transactions on Image Processing*, vol. 13, no. 6, 2004.

J1. Jie Zhou, **Jinwei Gu**. "Modeling Orientation Fields of Fingerprints with Rational Complex Functions." *Pattern Recognition*, vol. 37, no. 2, 2004.

Refereed Conference Proceedings

C64. Yutian Chen, Shi Guo, Tianshuo Yang, Lihe Ding, Xiuyuan Yu, **Jinwei Gu**, Tianfan Xue. "4DSloMo: 4D Reconstruction for High-Speed Scenes with Asynchronous Capture." *SIGGRAPH Asia*, 2025.

C63. Hongjun Wang, Yitong Jiang, Collin McCarthy, David Wehr, Hanrong Ye, Xinhao Li, Ka Chun Cheung, Wonmin Byeon, **Jinwei Gu**, Ke Chen, Kai Han, Hongxu Yin, Pavlo Molchanov, Jan Kautz, Sifei Liu. "GSPN-2: Efficient Parallel Sequence Modeling." *NeurIPS*, 2025.

C62. Lingen Li, Guangzhi Wang, Zhaoyang Zhang, Yaowei Li, Xiaoyu Li, Qi Dou, **Jinwei Gu**, Tianfan Xue, Ying Shan. "ToonComposer: Streamlining Cartoon Production with Generative Post-Keyframing." *ICLR*, 2026.

C61. Xiao Fu, Shitao Tang, Min Shi, Xian Liu, **Jinwei Gu**, Ming-Yu Liu, Dahua Lin, Chen-Hsuan Lin. "Plenoptic Video Generation." *CVPR*, 2026.

C60. Moo Jin Kim, Yihuai Gao, Tsung-Yi Lin, Yen-Chen Lin, Yunhao Ge, Grace Lam, Percy Liang, Shuran Song, Ming-Yu Liu, Chelsea Finn, **Jinwei Gu**. "Cosmos Policy: Fine-Tuning Video Models for Visuomotor Control and Planning." *ICLR*, 2026.

C59. Lingen Li, Guangzhi Wang, Xiaoyu Li, Tianfan Xue, Ying Shan, **Jinwei Gu**. "CubeComposer: Spatio-Temporal Autoregressive 4K 360° Video Generation from Perspective Video." *CVPR*, 2026.

C58. Mingde Yao, Menglu Wang, King Man Tam, Lingen Li, Tianfan Xue, **Jinwei Gu**. "PolarFree: Polarization-based Reflection-Free Imaging." *CVPR*, 2025.

C57. Zeqi Gu, Yin Cui, Max Li, Fangyin Wei, Yunhao Ge, **Jinwei Gu**, Ming-Yu Liu, Abe Davis, Yifan Ding. "ArtiScene: Language-Driven Artistic 3D Scene Generation Through Image Intermediary." *CVPR*, 2025.

C56. Liqun Chen, Yuxuan Li, Jun Dai, **Jinwei Gu**, Tianfan Xue. "A Physics-Informed Blur Learning Framework for Imaging Systems." *CVPR*, 2025.

C55. Lingen Li, Zhaoyang Zhang, Yaowei Li, Jiale Xu, Xiaoyu Li, Wenbo Hu, Weihao Cheng, **Jinwei Gu**, Tianfan Xue, Ying Shan. "NVComposer: Boosting Generative Novel View Synthesis with Multiple Sparse and Unposed Images." *CVPR*, 2025.

C54. Hongjun Wang, Wonmin Byeon, Jiarui Xu, **Jinwei Gu**, Ka Chun Cheung, Xiaolong Wang, Kai Han, Jan Kautz, Sifei Liu. "Parallel Sequence Modeling via Generalized Spatial Propagation Network." *CVPR*, 2025.

C53. Yujin Wang, Tianyi Xu, Fan Zhang, Tianfan Xue, **Jinwei Gu**. "AdaptiveISP: Learning an Adaptive Image Signal Processor for Object Detection." *NeurIPS*, 2024.

C52. Xin Cai, Zhiyuan You, Hailong Zhang, **Jinwei Gu**, Wentao Liu, Tianfan Xue. "PhoCoLens: Photorealistic and Consistent Reconstruction in Lensless Imaging." *NeurIPS* (Spotlight), 2024.

C51. Ziran Zhang, Yongrui Ma, Yueting Chen, Feng Zhang, **Jinwei Gu**, Tianfan Xue, Shi Guo. "From Sim-to-Real: Toward General Event-based Low-light Frame Interpolation with Per-scene Optimization." *SIGGRAPH Asia*, 2024.

C50. Yongrui Ma, Shi Guo, Yutian Chen, Tianfan Xue, **Jinwei Gu**. "TimeLens-XL: Real-Time Event-Based Video Frame Interpolation with Large Motion." *ECCV*, 2024.

C49. Ruikang Li, Yujin Wang, Shiqi Chen, Fan Zhang, **Jinwei Gu**, Tianfan Xue. "DualDN: Dual-domain Denoising via Differentiable ISP." *ECCV*, 2024.

C48. Yutian Chen, Shi Guo, Fangzheng Yu, Feng Zhang, **Jinwei Gu**, Tianfan Xue. "Event-based Motion Magnification." *ECCV*, 2024.

C47. Yitong Jiang, Zhaoyang Zhang, Tianfan Xue, **Jinwei Gu**. "AutoDIR: Automatic All-in-One Image Restoration with Latent Diffusion." *ECCV*, 2024.

C46. Zhixiang Wang, Baiang Li, Jian Wang, Yu-Lun Liu, **Jinwei Gu**, Yung-Yu Chuang, Shin'ichi Satoh. "Matting by Generation." *SIGGRAPH*, 2024.

C45. Zhaoyang Zhang, Wenqi Shao, Yixiao Ge, Xiaogang Wang, **Jinwei Gu**, Ping Luo. "Cached Transformers: Improving Transformers with Differentiable Memory Cache." *AAAI*, 2024.

C44. Gangwei Xu, Yujin Wang, **Jinwei Gu**, Tianfan Xue, Xin Yang. "HDRFlow: Real-time HDR Video Reconstruction with Large Motion." *CVPR*, 2024.

C43. Kechun Liu, Yitong Jiang, Inchang Choi, **Jinwei Gu**. "Learning Image-Adaptive Codebooks for Class-Agnostic Image Restoration." *ICCV*, 2023.

C42. Zhaoyang Zhang, Yitong Jiang, Wenqi Shao, Xiaogang Wang, Ping Luo, Kaimo Lin, **Jinwei Gu**. "Real-time Controllable Denoising for Image and Video." *CVPR*, 2023.

C41. Ruicheng Feng, Chongyi Li, Huaijin Chen, Shuai Li, **Jinwei Gu**, Chen Change Loy. "Generating Aligned Pseudo-Supervision from Non-Aligned Data for Image Restoration in Under-Display Camera." *CVPR*, 2023.

C40. Man Zhou, Yu Hu, Jie Huang, Feng Zhao, **Jinwei Gu**, Chen Change Loy, Deyu Meng, Chongyi Li. "Deep Fourier Up-Sampling." *NeurIPS*, 2022.

C39. Zhaoyang Zhang, Yitong Jiang, Jun Jiang, Xiaogang Wang, Ping Luo, **Jinwei Gu**. "STAR: Structure-Aware Lightweight Transformer for Real-time Image Enhancement." *ICCV*, 2021.

C38. Ke Yu, Zexian Li, Yue Peng, Chen Change Loy, **Jinwei Gu**. "ReconfigISP: Reconfigurable Camera Image Processing Pipeline." *ICCV*, 2021.

C37. Zhaoyang Zhang, Wenqi Shao, **Jinwei Gu**, Xiaogang Wang, Ping Luo. "Dynamic Quantization with Mixed Precision and Adaptive Resolution." *ICML*, 2021.

C36. Ruicheng Feng, Chongyi Li, Huaijin Chen, Shuai Li, Chen Change Loy, **Jinwei Gu**. "Removing Diffraction Image Artifacts in Under-Display Camera via Dynamic Skip Connection Network." *CVPR*, 2021.

C35. Kelvin Chan, Xintao Wang, Xiangyu Xu, **Jinwei Gu**, Chen Change Loy. "GLEAN: Generative Latent Bank for Large-Factor Image Super-Resolution." *CVPR* (Oral), 2021.

C34. Matthias Innmann, Kihwan Kim, **Jinwei Gu**, Matthias Nießner, Charles Loop, Marc Stamminger, Jan Kautz. "NRMVS: Non-Rigid Multi-View Stereo." *WACV*, 2020.

C33. Yan Chen, Jimmy Ren, Xuanye Cheng, Keyuan Qian, **Jinwei Gu**. "Very Power Efficient Neural Time-of-Flight." *WACV*, 2020.

C32. Wei-Sheng Lai, Orazio Gallo, **Jinwei Gu**, Deqing Sun, Ming-Hsuan Yang, Jan Kautz. "Video Stitching for Linear Camera Arrays." *BMVC*, 2019.

C31. Soumyadip Sengupta, **Jinwei Gu**, Kihwan Kim, Guilin Liu, David Jacobs, Jan Kautz. "Neural Inverse Rendering of an Indoor Scene from a Single Image." *ICCV*, 2019.

C30. Chao Liu, **Jinwei Gu**, Kihwan Kim, Srinivas Narasimhan, Jan Kautz. "Neural RGB→D Sensing: Depth and Uncertainty from a Video Camera." *CVPR* (Oral), 2019. [**Best Paper Finalist**]

C29. Chen Liu, Kihwan Kim, **Jinwei Gu**, Yasutaka Furukawa, Jan Kautz. "PlaneRCNN: 3D Plane Detection and Reconstruction from a Single Image." *CVPR* (Oral), 2019.

C28. Donghoon Lee, Sifei Liu, **Jinwei Gu**, Ming-Yu Liu, Ming-Hsuan Yang, Jan Kautz. "Context-aware Synthesis and Placement of Object Instances." *NeurIPS*, 2018.

C27. Sifei Liu, Guangyu Zhong, Shalini Gupta, **Jinwei Gu**, Varun Jampani, Ming-Hsuan Yang, Jan Kautz. "Switchable Temporal Propagation Network." *ECCV*, 2018.

C26. Samarth Brahmbhatt, **Jinwei Gu**, Kihwan Kim, James Hays, Jan Kautz. "MapNet: Geometry-Aware Learning of Maps for Camera Localization." *CVPR* (Spotlight), 2018.

C25. Huaijin Chen, **Jinwei Gu**, Orazio Gallo, Ming-Yu Liu, Ashok Veeraraghavan, Jan Kautz. "Reblur2Deblur: Video Deblurring via Self-Supervised Learning." *ICCP*, 2018.

C24. Patrick Wieschollek, Orazio Gallo, **Jinwei Gu**, Jan Kautz. "Separating Reflection and Transmission Images in the Wild." *ECCV*, 2018.

C23. Sifei Liu, Shalini Gupta, **Jinwei Gu**, Ming-Hsuan Yang, Jan Kautz. "Learning Affinity via Spatial Propagation Networks." *NeurIPS*, 2017.

C22. Kihwan Kim, **Jinwei Gu**, Stephen Tyree, Pavlo Molchanov, Matthias Nießner, Jan Kautz. "A Lightweight Approach for Reflectance Estimation on-the-fly." *ICCV* (Oral), 2017.

C21. Suren Jayasuriya, Orazio Gallo, **Jinwei Gu**, Timo Aila, Jan Kautz. "Reconstructing Intensity Images from Binary Spatial Gradient Cameras." *CVPR Embedded Vision Workshop* (Oral), 2017.

C20. Zhaopeng Cui, **Jinwei Gu**, Boxin Shi, Ping Tan, Jan Kautz. "Polarimetric Multi-View Stereo." *CVPR*, 2017.

C19. **Jinwei Gu**, Xiaodong Yang, Shalini Gupta, Jan Kautz. "Dynamic Facial Analysis: From Bayesian Filtering to Recurrent Neural Networks." *CVPR*, 2017.

C16. Chao Liu, Gefei Yang, **Jinwei Gu**. "Learning Discriminative Illumination and Filters for Raw Material Classification." *CVPR*, 2013.

C15. Jun Jiang, Dengyu Liu, **Jinwei Gu**, Sabine Süsstrunk. "What is the Space of Spectral Sensitivity Functions for Digital Color Cameras?" *WACV*, 2013.

C13. **Jinwei Gu**, Chao Liu. "Discriminative Illumination: Per-Pixel Classification of Raw Materials based on Optimal Projections of Spectral BRDFs." *CVPR* (Oral), 2012.

C10. **Jinwei Gu**, Toshihiro Kobayashi, Mohit Gupta, Shree Nayar. "Multiplexed Illumination for Scene Recovery in the Presence of Global Illumination." *ICCV* (Oral), 2011.

C9. Yasunobu Hitomi, **Jinwei Gu**, Mohit Gupta, Tomoo Mitsunaga, Shree Nayar. "Video From a Single Exposure Coded Photograph using a Learned Over-Complete Dictionary." *ICCV*, 2011.

C8. **Jinwei Gu**, Yasunobu Hitomi, Tomoo Mitsunaga, Shree Nayar. "Coded Rolling Shutter Photography: Flexible Space-Time Sampling." *ICCP* (Oral), 2010.

C7. **Jinwei Gu**, Shree Nayar, Eitan Grinspun, Peter Belhumeur, Ravi Ramamoorthi. "Compressive Structured Light for Recovering Inhomogeneous Participating Media." *ECCV* (Oral), 2008.

C6. **Jinwei Gu**, Ravi Ramamoorthi, Peter Belhumeur, Shree Nayar. "Dirty Glass: Modeling and Rendering Contaminations on Transparent Surfaces." *EGSR* (Oral), 2007.

C4. Stephen Lin, **Jinwei Gu**, Shuntaro Yamazaki, Heung-Yeung Shum. "Radiometric Calibration from a Single Image." *CVPR* (Oral), 2004.

C1. **Jinwei Gu**, Jie Zhou. "A Novel Model for Orientation Field of Fingerprints." *CVPR*, 2003.

Book Chapters & Theses

- Jie Zhou, David Zhang, **Jinwei Gu**, Nannan Wu. "Graphical Representation of Fingerprint Images." *Integrated Image and Graphics Technologies*, Kluwer Academic Publishers, 2004.
- "Measuring, Modeling, and Synthesis of Time-Varying Appearance of Natural Phenomena." Columbia University, Ph.D. Thesis, May 2010.
- "Fingerprint Orientation Field Modeling and Its Applications." Tsinghua University, M.S. Thesis, May 2005.

Patents

Granted (Selected)

P20. **Jinwei Gu**, Kihwan Kim, Jan Kautz, Guilin Liu, S. Sengupta. *Inverse Rendering of a Scene from a Single Image.* US Patent 11,276,235.

P19. Kihwan Kim, **Jinwei Gu**, Chen Liu, Jan Kautz. *3D Plane Detection and Reconstruction Using a Monocular Image.* US Patent 10,885,659.

P18. **Jinwei Gu**, Kihwan Kim, Chao Liu. *Estimating Depth for a Video Stream Captured with a Monocular RGB Camera.* US Patent 10,867,430.

P17. Sifei Liu, Shalini De Mello, **Jinwei Gu**, Varun Jampani, Jan Kautz. *Switchable Propagation Neural Network.* US Patent 10,762,393.

P11. **Jinwei Gu**, Xiaodong Yang, Shalini De Mello, Jan Kautz. *Systems and Methods for Dynamic Facial Analysis using a Recurrent Neural Network.* US Patent 10,402,628.

P6. **Jinwei Gu**, Yasunobu Hitomi, Tomoo Mitsunaga, Shree K. Nayar. *Methods and Systems for Coded Rolling Shutter.* US Patent 8,654,234.

P1. Jie Zhou, **Jinwei Gu**, Dingrui Wan. *Fingerprint Recognition based on Multiple Features.* Chinese Patent CN1595425A, 2005.

Applications

A2. Deqing Sun, Orazio Gallo, Jan Kautz, **Jinwei Gu**, Wei-Sheng Lai. *View Synthesis using Neural Networks.* US Patent Application 16299062, 2020.

A1. Donghoon Lee, Sifei Liu, **Jinwei Gu**, Ming-Yu Liu, Jan Kautz. *Joint Synthesis and Placement of Objects in Scenes.* US Patent Application 16201934.

Funding (as Principal Investigator)

- NSF CISE EAGER (2012–2014). "Smart Space-Time Sampling for Recovering and Recognizing Dynamic Scenes", $91,512.
- NYSP2I (2012–2013). "Computational Imaging-based Sorting Technologies for Recycling",

$49,992.
- Xerox University Affairs Committee (2011). "High-Speed Imaging and Event Detection with a Pixel-wise Coded Exposure Camera", $90,000.
- RIT START Award (2012). "Capturing Time-Varying Appearance of Food for Material Perception", $10,000.
- RIT CIS Micro-grant (2013). "Seeing the World through a Compound Eye", $6,895.
- RIT VP Research (2011). "Material Categorization with Discriminative Lighting", $5,000.

Professional Service

- **IEEE Senior Member** (2018–present)
- **Associate Editor**, IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2022–present
- **Associate Editor**, IEEE Transactions on Computational Imaging (TCI), 2019–2022
- **Associate Editor**, Journal of Electronic Imaging, 2015–2017
- **Area Chair**: CVPR 2021, 2024, 2025; ECCV 2020, 2022; ICCV 2019, 2023; NeurIPS 2023; ACCV 2012
- **Industry Chair**: ICCP 2020, 2023
- **Organizer**: MIPI Workshop, RichMediaGAI Workshop
- **NSF Panelist**: NSF Robust Intelligence (RI) Program, 2013, 2018; NSF CGV Program, 2014
- **Peer Reviewer**: ACM TOG, IEEE TIP, IEEE TPAMI, IJCV, JOSAA, CVIU; SIGGRAPH, SIGGRAPH Asia, ICCV, CVPR, ECCV, EGSR, ICCP, BMVC

Student Collaborators & Advisees

- Yitong Jiang, CUHK (Ph.D. Student, 2023–)
- Zhaoyang Zhang, CUHK (Intern 2019)
- Felipe Gutierrez, Univ. Wisconsin (Summer Intern 2019)
- Soumyadip Sengupta, Univ. Maryland (Summer Intern 2018)
- Chao Liu, CMU (Summer Intern 2018)
- Chen Liu, Univ. Washington, St. Louis (Summer Intern 2018)
- Huaijin Chen, Rice University (Summer Intern 2018)
- Samarth Brahmbhatt, Georgia Tech (Summer Intern 2017)
- Patrick Wieschollek, MPI (Summer Intern 2017)
- Sifei Liu, UC Merced (Summer Intern 2017)
- Zhaopeng Cui, Simon Fraser (Summer Intern 2016)
- Suren Jayasuriya, Cornell Univ. (Summer Intern 2016)
- Jian Wang, CMU (Summer Intern 2014)
- Dengyu Liu, Imaging Science, RIT (2011–2013)
- Chao Liu, Imaging Science, RIT (2011–2013)
- Jun Jiang, Color Science, RIT (graduated May 2013)

Miscellaneous

- **Programming**: C++/C (Proficient), Python (Proficient), Android (Familiar)

- **Languages**: English (fluent), Chinese (native)
- **Citizenship**: United States

References

Prof. Michael S. Brown
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