NI CHEN | Researcher

☎ +966 054 4018 462 • ✉ chenni@snu.ac.kr, nichen@arizona.edu
ni-chen.github.io • Updated in January, 2023

Employments

University of Arizona — **Tucson, United States**
Associate Research Professor — *Jan. 2023 -*

King Abdullah University of Science and Technology — **Thuwal, Kingdom of Saudi Arabia**
Researcher — *Nov. 2019 - Jan. 2023*

Seoul National University — **Seoul, Korea**
Brain Korea Research Assistant Professor — *Sep. 2017 - Oct. 2019*

Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences — **Shanghai, China**
Assistant, Associate Professor — *Jul. 2016 - Sep. 2017*

The University of Hong Kong — **Hong Kong SAR, China**
Research Scientist — *Sep. 2014 - Jun. 2016*

Education

Ph.D., Seoul National University — **Seoul, Korea**
Electrical and Computer Engineering, 91.3/100 — *Sep. 2010 - Aug. 2014*
Dissertation: Full Complex Wave Generation Methods using Multiple Intensity Images
Advisor: Byoungho Lee

M.E., Chungbuk National University — **Cheongju, Korea**
Computer and Communication Engineering, 98.44/100 — *Sep. 2008 - Aug. 2010*
Dissertation: Study on 3D Hologram Synthesis based on Integral Imaging and the Resolution Enhancement.
Advisors: Nam Kim, Jae-Hyeung Park

B.E., Harbin Institute of Technology (Weihai) — **Weihai, China**
Software Engineering, 88.83/100 (2/58) — *Sep. 2004 - Jul. 2008*

Research Fields

My main research explores the interaction between light waves and objects, seeking general tools in computations that enable us to solve fundamental issues in existing 3D/4D optical imaging techniques, including:

- **Interactive Imaging:** Differential optical system
- **Three-dimensional/Four-dimensional imaging:** Holographic imaging, Light field imaging, Phase imaging
- **Three-dimensional display:** Light field display, Holographic display, Holographic Optical Elements (HOE virtual reality display)

Publications

Citation Report

- Research ID: C-5537-2012
  - Sum of the Times Cited: 889
  - h-index: 15
- Google Scholar: https://scholar.google.com/citations?user=adQED6IAAAAJ
  - Sum of the Times Cited: 1397
  - i10-index: 22

Peer-reviewed Journal Articles

- **In progress**

40. Yang Wu, Xiangli Lei, Jun Wang*, and **Ni Chen**. "Fast optimization of computer-generated holograms using conjugate gradient". *IEEE Transactions on Computational Imaging*, 2022. [IF:4.708]. (Submitted)
39. **Ni Chen***, Liangcai Cao, Ting-Chung Poon, Byoungho Lee, and Edmund Y. Lam. "Differentiable imaging: a new tool for computational imaging". *Advanced Physics Research*, 2022. (Invited Perspective, Submitted)
38. **Ni Chen***, Congli Wang, and Wolfgang Heidrich. "Differentiable Holography", 2022. (Submitted)

- **Published** (First/corresponding authored: **18**, co-authored: **19**)

37. Congli Wang, **Ni Chen**, and Wolfgang Heidrich*. "dO: A differentiable engine for deep lens design of computational imaging systems". *IEEE Transactions on Computational Imaging*, 8(1):905–916, 2022. [IF:4.708]. http://doi.org/10.1109/TCI.2022.3212837

36. **Ni Chen***, Congli Wang, and Wolfgang Heidrich. "HTRSD: Hybrid Taylor Rayleigh-Sommerfeld diffraction". *Optics Express*, 30(21):37727–37735, 2022. [IF:3.833]. http://doi.org/10.1364/OE.471907

35. Peiding Wang, Jun Wang*, Yang Wu, Chengmin Liu, Han Han, and **Ni Chen**. "Bi-directional phase compensation to accelerate conical hologram generation". *Displays*, 74(102276), 2022. [IF:3.074]. http://doi.org/10.1016/j.displa.2022.102276

34. **Ni Chen***, Congli Wang, and Wolfgang Heidrich. "Compact computational holographic display (invited article)". *Frontiers in Photonics*, 3(835962):5, 2022. http://doi.org/10.3389/fphot.2022.835962, (Invited Article)

33. Jun Wang*, Xiangli Lei, Yang Wu, Fengming Jin, and **Ni Chen**. "Holographic display with optical computational fresnel convolution in broaden distance". *Optics Express*, 30(3):4288–4301, 2022. [IF:3.833]. http://doi.org/10.1364/OE.450778

32. Congli Wang, **Ni Chen**, and Wolfgang Heidrich*. "Towards self-calibrated lens metrology by differentiable refractive deflectometry". *Optics Express*, 29(19):30284–30295, 2021. [IF:3.833]. http://doi.org/10.1364/OE.433237

31. Yifan Ma, Jun Wang*, Yang Wu, Fengming Jin, Zekun Zhang, Zhenxing Zhou, and **Ni Chen**. "Large field-of-view holographic display by gapless splicing of multi-segment cylindrical holograms". *Applied Optics*, 60(24):7381–7390, 2021. [IF:1.973]. http://doi.org/10.1364/AO.434077

30. Zhenxing Zhou, Jun Wang*, Yang Wu, Fengming Jin, Zekun Zhang, Yifan Ma, and **Ni Chen**. "A new holographic display based on conical holography to expand vertical field of view". *Optics Express*, 29(14):22931–22943, 2021. [IF:3.833]. http://doi.org/10.1364/OE.430604

29. **Ni Chen**†*, Congli Wang†, and Wolfgang Heidrich. "Snapshot space-time holographic three-dimensional particle tracking velocimetry". *Laser & Photonics Reviews*, 15(8):2100008, 2021. [IF:13.138]. http://doi.org/10.1002/lpor.202100008, (Reported by media including EurekAlert, Phys.org, Communications of the ACM, and etc.)

28. **Ni Chen***, Congli Wang, and Wolfgang Heidrich. "Holographic 3D particle imaging with model-based network". *IEEE Transactions on Computational Imaging*, 7:288–296, 2021. [IF:4.708]. http://doi.org/10.1109/TCI.2021.3063870

27. Yang Wu, Jun Wang*, Chun Chen, Chan-Juan Liu, Feng-Ming Jin, and **Ni Chen**. "Adaptive weighted gerchberg-saxton algorithm for generation of phase-only hologram with artifacts suppression". *Optics Express*, 29(2):1412–1427, 2021. [IF:3.833]. http://doi.org/10.1364/OE.413723

26. Bingyi Li, Jun Wang*, Chun Chen, Yuejia Li, Ruoxue Yang, and **Ni Chen**. "Spherical self-diffraction for speckle suppression of a spherical phase-only hologram". *Optics Express*, 28(21):31373–31385, 2020. [IF:3.833]. http://doi.org/10.1364/OE.401679

25. Ruoxue Yang, Jun Wang*, Chun Chen, Yang Wu, Bingyi Li, Yuejia Li, **Ni Chen**, and Boaz Jessie Jackin. "Fast diffraction calculation for spherical computer-generated hologram using phase compensation method in visible range". *Applied Science*, 10(17):5784, 2020. [IF:2.679]. http://doi.org/10.3390/app10175784

24. Yuejia Li, Jun Wang*, Chun Chen, Bingyi Li, and **Ni Chen**. "Occlusion culling for computer-generated cylindrical hologram based on space-limit function". *Optics Express*, 8(12):18516–18528, 2020. [IF:3.833]. http://doi.org/10.1364/OE.395791

23. Zhimin Xu, Si Zuo, Edmund Y. Lam, Byoungho Lee, and **Ni Chen***. "AutoSegNet: an automated neural network for image segmentation". *IEEE Access*, 8:92452–92461, 2020. [IF:3.476]. http://doi.org/10.1109/ACCESS.2020.2995367

22. **Ni Chen***, Edmund Y. Lam, Ting-Chung Poon, and Byoungho Lee. "Sectional hologram reconstruction through complex deconvolution". *Optics and Lasers in Engineering*, 127(2020):125945, 2019. [IF:5.666]. http://doi.org/10.1016/j.optlaseng.2019.105945

21. Min Wan, Inbarasan Muniraj, Ra'ed Malallah, **Ni Chen**, John J Healy, James P Ryle, and John T. Sheridan*. "Orthographic projection images based photon counted integral Fourier holography". *Applied Optics*, 58(10):2656–2661, 2019. [IF:1.973]. http://doi.org/10.1364/AO.58.002656

20. **Ni Chen**, Chao Zuo*, and Byoungho Lee. "3D imaging based on depth measurements". *Infrared and Laser Engineering*, 48(6):603013, 2019. [IF:0.76]. http://doi.org/10.3788/IRLA201948.0603013

19. Ping Su, Shu An, Jianshe Ma*, and **Ni Chen**. "Study on the reduction effect of stereo depth caused by lens aberration in lenticular-based autostereoscopic displays". *Applied Science*, 9(3):380, 2019. [IF:2.679]. http://doi.org/10.3390/app9030380

18. **Ni Chen**†, Chao Zuo†, Edmund Y. Lam, and Byoungho Lee*. "3D imaging based on depth measurement technologies". *Sensors*, 18(11):3711, 2018. [IF:3.847]. http://doi.org/10.3390/s18113711, (Invited review)

17. Ao Zhou, Wei Wang, **Ni Chen***, Edmund Y. Lam, Byoungho Lee, and Guohai Situ. "Fast and robust misalignment correction of Fourier ptychographic microscopy for full field of view reconstruction". *Optics Express*, 26(18):23661–23674, 2018. [IF:3.833]. http://doi.org/10.1364/oe.26.023661

16. Ao Zhou, **Ni Chen**⋆, Haichao Wang, and Guohai Situ. "Analysis of Fourier ptychographic microscopy with half of the captured images". *Journal of Optics*, 20(9):095701, 2018. [IF:2.753]. http://doi.org/10.1088/2040-8986/aad453
15. Haichao Wang, **Ni Chen**⋆, Shanshan Zheng, Jingdan Liu, and Guohai Situ. "Fast and high-resolution light field acquisition using defocus modulation". *Applied Optics*, 57(1):A250–A256, 2018. [IF:1.973]. http://doi.org/10.1364/ao.57.00a250
14. Meng Lyu, Wei Wang, Hao Wang, Haichao Wang, Guowei Li, **Ni Chen**, and Guohai Situ⋆. "Deep-learning-based ghost imaging". *Scientific Reports*, 7(1):17865, 2017. [IF:4.379]. http://doi.org/10.1038/s41598-017-18171-7, (ESI highly cited paper)
13. Caihong Wang, **Ni Chen**⋆, Yingjie Yu, and Guohai Situ. "Phase-only hologram encoding with one-dimensional grating function". *Acta Optica Sinica*, 37(09):0909001–1–0909001–6, 2017. [IF:1.28]. http://doi.org/10.3788/AOS201737.0909001, (Cover Image, Highlight and Outstanding paper)
12. **Ni Chen**⋆, Zhenbo Ren, Dayan Li, Edmund Y. Lam, and Guohai Situ. "Analysis of the noise in back-projection light field acquisition and its optimization". *Applied Optics*, 56(13):F20–F26, 2017. [IF:1.973]. http://doi.org/10.1364/ao.56.000f20
11. Zhenbo Ren, **Ni Chen**, and Edmund Y. Lam⋆. "Automatic focusing for multisectional objects in digital holography using the structure tensor". *Optics Letters*, 42(9):1720–1723, 2017. [IF:3.776]. http://doi.org/10.1364/ol.42.001720
10. **Ni Chen**, Zhenbo Ren, and Edmund Y. Lam⋆. "High resolution Fourier hologram synthesis from photographic images through computing the light field". *Applied Optics*, 55(7):1751–1756, 2016. [IF:1.973]. http://doi.org/10.1364/AO.55.001751
9. Zhenbo Ren, **Ni Chen**, and Edmund Y. Lam⋆. "Extended focused imaging and depth map reconstruction in optical scanning holography". *Applied Optics*, 55(5):1040–1047, 2016. [IF:1.973]. http://doi.org/10.1364/ao.55.001040, (15 of the most cited articles in applied optics between 2016 and 2018)
8. **Ni Chen**, Zhenbo Ren, Haiyan Ou, and Edmund Y. Lam⋆. "Resolution enhancement of optical scanning holography with a spiral modulated point spread function". *Photonics Research*, 4(1):1–6, 2016. [IF:7.254]. http://doi.org/10.1364/prj.4.000001
7. Gang Li, Keehoon Hong, Jiwoon Yeom, **Ni Chen**, Jae-Hyeung Park, Nam Kim, and Byoungho Lee⋆. "Acceleration method for computer generated spherical hologram calculation of real objects using graphics processing unit (invited paper)". *Chinese Optics Letters*, 12(6):060016–60020, 2014. [IF:2.448]. http://doi.org/10.3788/col201412.060016
6. Soon-Gi Park, Jiwoon Yeom, Youngmo Jeong, **Ni Chen**, Jong-Young Hong, and Byoungho Lee⋆. "Recent issues on integral imaging and its applications". *Journal of Information Display*, 15(1):37–46, 2014. [IF:2.913]. http://doi.org/10.1080/15980316.2013.867906, (Invited paper)
5. **Ni Chen**, Jiwoon Yeom, Keehoon Hong, Gang Li, and Byoungho Lee⋆. "Fast-converging algorithm for wavefront reconstruction based on a sequence of diffracted intensity images". *Journal of the Optical Society of Korea*, 18(3):217–224, 2014. [IF:1.179]. http://doi.org/10.3807/josk.2014.18.3.217
4. Keehoon Hong, Soon gi Park, Jiwoon Yeom, Jonghyun Kim, **Ni Chen**, Kyungsuk Pyun, Chilsung Choi, Sunil Kim, Jungkwuen An, Hong-Seok Lee, U in Chung, and Byoungho Lee⋆. "Resolution enhancement of holographic printer using a hogel overlapping method". *Optics Express*, 21(12):14047–14055, 2013. [IF:3.833]. http://doi.org/10.1364/oe.21.014047
3. **Ni Chen**, Jiwoon Yeom, Jae-Hyun Jung, Jae-Hyeung Park, and Byoungho Lee⋆. "Resolution comparison between integral-imaging-based hologram synthesis methods using rectangular and hexagonal lens arrays". *Optics Express*, 19(27):26917–26927, 2011. [IF:3.833]. http://doi.org/10.1364/oe.19.026917
2. Jisoo Hong, Youngmin Kim, Hee-Jin Choi, Joonku Hahn, Jae-Hyeung Park, Hwi Kim, Sung-Wook Min, **Ni Chen**, and Byoungho Lee⋆. "Three-dimensional display technologies of recent interest: principles, status, and issues [Invited]". *Applied Optics*, 50(34):H87–H115, 2011. [IF:1.973]. http://doi.org/10.1364/ao.50.000h87, (Invited Paper, ESI highly cited paper)
1. **Ni Chen**, Jae-Hyeung Park⋆, and Nam Kim. "Parameter analysis of integral Fourier hologram and its resolution enhancement". *Optics Express*, 18(3):2152–2167, 2010. [IF:3.833]. http://doi.org/10.1364/oe.18.002152

Invited talks

12. **Ni Chen**⋆. "Computational lensless holographic imaging". In *Intenational Conference on Optical and Photonic Engineering*, Nanijing, China, 2022. (Keynote speech)
11. **Ni Chen**⋆. "Differentiable diffraction imaging". In *SPIE Photonics Asia*, Nantong, China, 2022.
10. **Ni Chen**⋆. "Computational holography - how computational techniques leverage traditional optical imaging". In *School of Science, RMIT*, Melbourne, Australia, 2022.
9. **Ni Chen**⋆. "Differentiable holographic imaging". In *Computational Optical Sensing and Imaging (COSI)*, Vancouver, Canada, 2022.
8. **Ni Chen**⋆. "Differential lens design and its applications in imaging". In *Forum on Photonic Integrated Circuits*, Qingdao, China, 2022.
7. **Ni Chen**⋆. "Computational 3D/4D holographic imaging". In *Tech Talk at Frontiers in Optics/Laser Science - OSA Membership Booth/Lounge*, Virtual, 2021.

6. **Ni Chen**⋆. "Computational 3D/4D holographic imaging". In *OSA Frontiers in Optics/Laser Science*, Virtual, 2021.
5. **Ni Chen**⋆. "New techniques of computational 3D/4D holographic imaging". In *Computational Imaging conference*, Hangzhou, China, 2021.
4. **Ni Chen**⋆ and Byoungho Lee. "Wavefront deconvolution and its applications". In *SPIE proceeding of 8th Applied Optics and Photonics China (AOPC 2019)*, Beijing, China, 2019.
3. Byoungho Lee⋆, Soon gi Park, **Ni Chen**, Jiwoon Yeom, Keehoon Hong, and Jonghyun Kim. "New technologies and perspective for 3D imaging". In *2014 IEEE Photonics conference*, pp. 176–177, San Diego, CA, USA, 2014. http://doi.org/10.1109/ipcon.2014.6995305
2. Byoungho Lee⋆, Jiwoon Yeom, and **Ni Chen**. "Hologram generation based on incoherent capturing". In *4th International Workshop on Perspectives of Optical Imaging and Metrology*, Utsunomiya, Japan, 2012.
1. Byoungho Lee⋆, **Ni Chen**, Keehoon Hong, and Jiwoon Yeom. "Hologram generation from intensity images". In *The 2th Korea–Japan Workshop on Digital Holography and Information Photonics (DHIP)*, Tokushima, Japan, 2012.

Conference Papers

- **Published** (First/corresponding authored: **26**, co-authored: **11**)

37. Congli Wang, **Ni Chen**, and Wolfgang Heidrich. "Lens design with automatic differentiation". In *Imaging and Systems and Applications*, p. IF1D.6, Virtual, 2021. http://doi.org/10.1364/ISA.2021.IF1D.6
36. **Ni Chen**, Congli Wang, and Wolfgang Heidrich. "Space-time optical imaging framework: Holographic particle tracking velocimetry". In *Digital Holography & 3D Imaging*, p. W4B.4, Virtual, 2021. http://doi.org/10.1364/DH.2021.DW4B.4
35. Congli Wang, **Ni Chen**, and Wolfgang Heidrich. "Lens design optimization by back-propagation". In *International Optical Design conference*, p. JTh4A.2, Virtual, 2021. (Student paper award)
34. **Ni Chen**, Yuqi Li, and Wolfgang Heidrich⋆. "Physics-based holo-net for three-dimensional imaging". In *Digital Holography & 3D Imaging*, p. JTh3D.3, 2020. http://doi.org/10.1364/3d.2020.jth3d.3
33. **Ni Chen**⋆, Jinsoo Jeong, and Byoungho Lee. "Light field compression with holography". In *Digital Holography & 3D Imaging*, p. W2A.4, France, 2019. http://doi.org/10.1364/dh.2019.w2a.4
32. **Ni Chen**⋆ and Byoungho Lee. "High-resolution light field acquisition without defocus noise". In *The 18th International Meeting on Information Display*, pp. P3–98, Busan, Korea, 2018.
31. Hao Wang⋆, Meng Lyu, **Ni Chen**, and Guohai Situ. "In-line hologram reconstruction with deep learning". In *Imaging and Applied Optics 2018*, p. DW2F.2, Orlando, USA, 2018. http://doi.org/10.1364/dh.2018.dw2f.2
30. Ao Zhou, Wei Wang, **Ni Chen**⋆, and Guohai Situ. "Fast light source misalignment correction of fourier ptychographic microscopy". In *Imaging and Applied Optics 2018*, p. JTh3A.5, Orlando, USA, 2018. http://doi.org/10.1364/3d.2018.jth3a.5
29. Min Wan, Inbarasan Muniraj, **Ni Chen**, Derek Cassidy, John J Healy, James P Ryle, and John T Sheridan⋆. "Photon-counted integral holography using orthographic projection images". In *Unconventional Optical Imaging*, p. 106773G, Strasbourg, France, 2018. http://doi.org/10.1117/12.2307581
28. Ao Zhou, Guohai Situ, and **Ni Chen**⋆. "Analysis of fourier ptychographic microscopy with half reduced images". In *2017 International conference on Optical Instruments and Technology: Optoelectronic Imaging/Spectroscopy and Signal Processing Technology*, Beijing, China, 2018. http://doi.org/10.1117/12.2287075
27. **Ni Chen**⋆, Haichao Wang, Ao Zhou, and Guohai Situ. "High performance light field acquisition". In *Digital Holography and Three-Dimensional Imaging*, Jeju, Korea, 2017. http://doi.org/10.1364/dh.2017.w2a.21
26. Haichao Wang, **Ni Chen**⋆, Jingdan Liu, and Guohai Situ. "Light field imaging based on defocused photographic images". In *Digital Holography & 3D Imaging*, Jeju, Korea, 2017. http://doi.org/10.1364/dh.2017.w3a.3
25. Zhenbo Ren, **Ni Chen**, Antony C. S. Chan, and Edmund Y. Lam⋆. "Extended focused imaging in a holographic microscopy imaging system". In *2015 IEEE International conference on Imaging System & Techniques*, pp. 1–6, Macau, China, 2015. http://doi.org/10.1109/ist.2015.7294471
24. **Ni Chen**, Zhenbo Ren, Antony Chan, Xing Sun, and Edmund Y. Lam⋆. "Depth enhancement of optical scanning holography with a spiral phase plate". In *Digital Holography & 3D Imaging Meeting*, p. DW2A.3, Shanghai, China, 2015. http://doi.org/10.1364/dh.2015.dw2a.3
23. Zhenbo Ren, **Ni Chen**, Antony Chan, and Edmund Y. Lam⋆. "Autofocusing of optical scanning holography based on entropy minimization". In *Digital Holography & 3D Imaging Meeting*, p. DT4A.4, Shanghai, China, 2015. http://doi.org/10.1364/dh.2015.dt4a.4
22. **Ni Chen**, Jae-Hyeung Park, Jiwoon Yeom, Jonghyun Kim, Gang Li, and Byoungho Lee⋆. "Fourier hologram synthesis from two photographic images captured at different focal planes". In *Imaging and Applied Optics 2014*, vol. JTu4A, p. 6, Seattle, Washington, USA, 2014. http://doi.org/10.1364/aio.2014.jtu4a.6
21. **Ni Chen**, Jiwoon Yeom, and Byoungho Lee⋆. "Optimized phase retrieval algorithm with multiple illuminations". In *Fringe 2013*, pp. 337–340, Nurtingen, Germany, 2014. http://doi.org/10.1007/978-3-642-36359-7_60

20. **Ni Chen**, Keehoon Hong, Jiwoon Yeom, and Byoungho Lee*. "Wavefront reconstruction using multiple illuminations and single-shot intensity image". In *Photonics conference*, vol. TP-VI9, pp. 382–384, Jeju, Korea, 2013.
19. Gang Li, Keehoon Hong, **Ni Chen**, Jae-Hyeung Park, Nam kim, and Byoungho Lee*. "Acceleration of spherical hologram generation with spherical wavefront recording surface". In *Optics and Photonics Taiwan, the International conference 2013*, pp. 2013–FRI–S0402–O003, Zhongli, Taiwan, 2013.
18. **Ni Chen** and Byoungho Lee*. "Wavefront measurement using intensity images". In *The Optical Society of Korea Annual Meeting 2013*, pp. WP–III4, Daejeon, Korea, 2013.
17. **Ni Chen**, Keehoon Hong, Jiwoon Yeom, Jae-Hyun Jung, and Byoungho Lee*. "Experiment verification of hologram generation using intensity images". In *Information Optics and Optical Data Storage II*, vol. 8559-15, pp. 85590F–85590F, Beijing, China, 2012. http://doi.org/10.1117/12.1000098
16. **Ni Chen**, Jiwoon Yeom, and Byoungho Lee*. "Hologram recording using one single color intensity image". In *The 12th International Meeting on Information Display*, pp. 660–661, Daegu, Korea, 2012. (Outstanding poster paper award)
15. **Ni Chen**, Jiwoon Yeom, Gibal Park, Jae-Hyeung Park, and Byoungho Lee*. "Digital hologram recording using transport of intensity equation". In *The 4th International conference on 3D system and Applications*, pp. 94–96, Hsinchu, Taiwan, 2012.
14. **Ni Chen** and Byoungho Lee*. "Analysis of the resolution of hologram reconstruction related to the lens array shape based on integral imaging". In *the first Korea-Japan Workshop on Digital Holography and Information Photonics*, pp. 87–88, Seoul, Korea, 2011.
13. **Ni Chen**, Jiwoon Yeom, Jae-Hyeung Park, and Byoungho Lee*. "High resolution Fourier hologram generation using hexagonal lens array based on integral imaging". In *The 11th International Meeting on Information Display*, pp. P2–05, Seoul, Korea, 2011.
12. **Ni Chen**, Jiwoon Yeom, Jae-Hyeung Park, and Byoungho Lee*. "High efficiency computer generated multi–plane phase-only hologram algorithm". In *18th conference on Optoelectronics and Optical Communication*, vol. F1D-IV3, pp. 314–315, Gyeongju, Korea, 2011.
11. Jiwoon Yeom, **Ni Chen**, Jae-Hyeung Park, and Byoungho Lee*. "Depth resolution improvement based on an integrated phase hologram image". In *18th conference on Optoelectronics and Optical Communication*, vol. T2D-IV5, pp. 180–181, Gyeongju, Korea, 2011. (Best paper award)
10. **Ni Chen**, Jiwoon Yeom, Keehoon Hong, Jisoo Hong, Jae-Hyun Jung, Jae-Hyeung Park, and Byoungho Lee*. "Phase-only hologram generation from multiple defocused images of three-dimensional object". In *Digital Holography and Three-Dimensional Imaging*, p. DMB3, Tokyo, Japan, 2011. http://doi.org/10.1364/dh.2011.dmb3
9. **Ni Chen**, Jiwoon Yeom, Keehoon Hong, Jisoo Hong, Jae-Hyeung Park, and Byoungho Lee*. "Numerical phase–only Fresnel hologram generation of three–dimensional object". In *The Optical Society of Korea Annual Meeting 2011*, pp. TP–VII4, Seoul, Korea, 2011.
8. Jae-Hyeung Park*, Seung-Woo Seo, **Ni Chen**, and Nam Kim. "Hologram synthesis from defocused images captured under incoherent illumination". In *Biomedical Optics and 3-D Imaging*, p. JMA29, Miami, Florida, USA, 2010. http://doi.org/10.1364/biomed.2010.jma29
7. **Ni Chen**, Meilan Piao, Jae-Hyeung Park*, and Nam Kim. "Color reconstruction of 3d objects from single–plane Fourier hologram based on integral imaging". In *10th International Meeting on Information Display*, pp. 59–4, Ilsan, Korea, 2010.
6. Jae-Hyeung Park*, Seung-Woo Seo, **Ni Chen**, and Nam Kim. "Fourier hologram generation from multiple incoherent defocused images". In *Three-Dimensional Imaging, Visualization, and Display 2010 and Display Technologies and Applications for Defense, Security, and Avionics IV*, vol. 7690, p. 76900F, Orlando, Florida, USA, 2010. http://doi.org/10.1117/12.852487
5. **Ni Chen**, Jae-Hyeung Park*, and Nam Kim. "Resolution analysis of fourier hologram using integral imaging and its enhancement". In *Emerging Liquid Crystal Technologies V*, vol. 7618, pp. 76180901–76180908, San Francisco, California, USA, 2010. http://doi.org/10.1117/12.840175
4. **Ni Chen**, Jae-Hyeung Park*, and Nam Kim. "Resolution analysis of Fourier hologram using integral imaging". In *20th Anniversary of the Optical Society of Korea, Special Technical Presentation conference*, pp. WP–III6, Gwangju, Korea, 2009.
3. **Ni Chen**, Jae-Hyeung Park*, and Nam Kim. "Resolution enhanced Fourier hologram using integral imaging". In *14th 3D Display Media Technical Workshop*, vol. P-3, pp. 112–117, Seoul, Korea, 2009.
2. Jae-Hyeung Park*, **Ni Chen**, Ganbat Baasantseren, Min-Young Shin, and Nam Kim. "Hologram generation from orthographic view images of three-dimensional object and its optimization". In *Three-Dimensional Imaging, Visualization, and Display 2009*, vol. 7329, p. 73290D, Orlando, Florida, USA, 2009. http://doi.org/10.1117/12.821444
1. **Ni Chen**, Nam Kim, Jae-Hyeung Park*, and Seok-Hee Jeon. "Resolution enhanced Fourier hologram using integral imaging with lens array shifting". In *16th conference on Optoelectronics and Optical Communication*, vol. TP-51, pp. 183–184, Daechon, Korea, 2009.

Patents

1. Zhimin Xu, Xuhui Zhang, and **Ni Chen**. "Novel high-resolution light field microscope structure". http://www2.soopat.com/Patent/201821783322, 2019. (number 209086540 U)

Funding (Selected)

Study on the quality enhancement of holographic AR display — **CNY 400,000**
Chengdu Science and Technology Commission — *Nov. 2019 - Dec. 2021*
Co-PI

Study on multi-dimensional holographic microscopy — **CNY 1,500,000**
Shenzhen Science and Technology Innovation Commission — *Jan. 2019 - Dec. 2021*
Co-PI

Study on hologram synthesis of real 3D objects under incoherent illumination — **CNY 240,000**
National Science Foundation of China (NSFC), 61705241 — *Jan. 2018 - Dec. 2020*
PI

Young scientist exchange program between Korea and China — **KRW 30,000,000**
National Research Foundation (NRF) of Korea — *Sep. 2017 - Sep. 2018*
PI

Development of photographic based high-resolution holographic technologies — **CNY 200,000**
National Science Foundation of Shanghai (NSFS), 17ZR1433800 — *May 2017 - Apr. 2020*
PI

Study on ultra-depth imaging in complex medium — **CNY 2,500,000**
Key Research Projects of frontier Science of CAS, QYZDB-SSW-JSC002 — *Aug. 2016 - Jul. 2021*
Participant (PI: Guohai Situ)

Coded aperture based multi-view image generation — **KRW 900,000,000**
Samsung Group, Experimental setup, Analysis of 3D object's light field in Fourier domain — *May 2012 - Apr. 2013*
Participant (PI: Byoungho Lee, Seoul National Univ.)

Wearable display/See-through head-mounted display — **KRW 800,000,000**
Samsung Group, Experimental setup, Analysis of waveguide efficiency related to the image quality — *Jul. 2012 - Jun. 2013*
Participant (PI: Byoungho Lee, Seoul National Univ.)

Research Supervision and Teaching

Seoul National University
Ph.D. Thesis defense committee of Gang Li and Changwon Jang (Both are currently at Meta) — *Dec. 2018 - Nov. 2019*

Tongji University
3D Display: an overview — *Jun. 2017*

Shanghai Institute of Optics and Fine Mechanics
Co-supervisor of Haichao Wang (Ph.D.), Ao Zhou (M.Sc), Caihong Wang(M.Sc) — *Jul. 2016 - Sep. 2017*

King Abdullah University of Science and Technology
Mentor of Congli Wang (Ph.D.), currently is PostDoc at UCB — *Nov. 2019 - Sep. 2021*

The University of Hong Kong
Mentor of Zhenbo Ren (Ph.D.), currently is Assistant Professor at Northwestern Polytechnical University — *Sep. 2014 - May 2016*

Professional Activities

Executive Committee
Optica Technical Group Leadership, Optics in Digital Systems, — *Jan. 2022 - Dec. 2023*

Guest Associate Editor
Optics Express, Frontiers in Photonics, — *Jun. 2021 -*

Topical Editor
Acta Optica Sinica, — *Jun. 2017 - May 2020*

Conference / Session Chair
Session Chair of Advanced Holograms, Optica topical meeting - Computational Optical Sensing and Imaging, — *2022*
Session Chair of Computer Generated Holograms II, OSA topical meeting - Digital Holography and 3D Imaging, — *2021*

Conference Program Committee
OSA topical meeting, Digital Holography and 3-D Imaging, — *2020 - 2023*

Conference Technique Secretary

International Conference on Optical Instrument and Technology (OIT), *2017*
Xiangshan Science Conference - Fundamental Research of Computational Optical Imaging, *2017*

Committee
OSA Technical Group Leadership, Image Sensing and Pattern Recognition (IR), *Feb. 2018 - Dec. 2019*

Reviewer of journals / Conferences (26 journals, 1 conference, 1 funding agency)
Optics Letters, Biomedical Optics Express, Optics Express, Applied Optics, Journal of Optical Society of America A, Optics Continuum, Scientific Reports, Optics and Lasers in Engineering, Results in Optics, Measurements, Optics Communications, Optics Engineering, IEEE Access, IEEE Journal of Selected Topics in Quantum Electronics, IEEE Photonics Journal, IEEE Transactions on Instrumentation and Measurement, IEEE Transactions on Industrial Informatics, Applied Science, Light: Advanced Manufacturing, Applied Physics B, ETRI Journal, Optik, Journal of Information Display, Frontiers in Photonics, Chinese Journal of Lasers, Laser & Optoelectronics Progress, Acta Optica Sinica
Conference: DH 2020, 2021, 2022 2013 -

Reviewer of funding
National Natural Science Foundation of China (NSFC) 2019 -

Technical and Personal Skills

Computer Skills:
Programming Languages: *Matlab, Python (Keras, Pytorch), C/C++, Excel VBA, Java, HTML, Javascript, PHP, Linux shell, SQL.*
Math Tool: *Wolfram Mathematica.*
Word Processor: *LaTeX, Microsoft Office, Markdown.*
Others: *Adobe Photoshop, Adobe Illustrator, Blender.*

Languages:
Chinese: *Native proficiency*
English: *Full professional proficiency*
Korean: *Limited working proficiency*

Honors and Awards

Senior Member
OPTICA, *Jun. 2022*

Finalists (5 in 300)
Winter Enrichment Program (WEP) - Resilience Challenge, Middle East *Jan. 2022*

Best Paper
OSA Optical Design and Fabrication Congress - International Optical Design Conference, *Jul. 2021*

Outstanding paper award
Chinese Laser Press, China *Sep. 2017*

Special awards
NCRCAPS Lab., Seoul National University, Korea *Dec. 2012*

Outstanding Poster Paper Award
12th International Meeting on Information Display, Korea *Aug. 2012*

Outstanding Paper Award
18th Conference on Optoelectronics and Optical Communication, Korea *May 2011*

Brain Korea 21 Scholarship (7 times)
Seoul National University, Korea *2010 - 2014*

Superior Academic Performance Scholarship (3 times)
Seoul National University, Korea *2010 - 2012*

Brain Korea 21 Outstanding Master Course Student
Chungbuk National University, Korea *Feb. 2010*

Outstanding Graduates Award
Harbin Institute of Technology, China *Jul. 2008*

National Encouragement Scholarship
Harbin Institute of Technology, China *Sep. 2007*

Excellent Student Cadre
Harbin Institute of Technology, China *Sep. 2006*

National Scholarship
Harbin Institute of Technology, China *Mar. 2006*