



Kyle Olszewski

Senior Research Scientist, Snap Inc.

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Introduction

I am a Senior Research Scientist in the Creative Vision group at Snap Research. My research interests include facial expression tracking, particularly for emerging platforms such as virtual and augmented reality, 3D reconstruction, and intuitive interfaces for image manipulation and synthesis.

I was previously a Ph.D. student at the University of Southern California in the Geometric Capture Lab under Hao Li. My research has been published in venues such as SIGGRAPH, SIGGRAPH Asia, ICCV, ECCV, ICLR, and CVPR. I was a recipient of the 2018 Snap Research Fellowship.

Education

University of Southern California Ph.D. in Computer Science	<i>Los Angeles, CA</i> 2014 - 2020
Georgia Institute of Technology M.S. in Computer Science	<i>Atlanta, GA</i> 2007 - 2009
Boston University B.A. in Computer Science, College of Arts and Sciences. B.Sc. in Film and Television, College of Communications	<i>Boston, MA</i> Sep. 2003 - May. 2007

Positions Held

Senior Research Scientist, Snap Inc.	<i>Santa Monica, CA</i> Nov. 2022 - Present
Research Scientist, Snap Inc.	<i>Santa Monica, CA</i> May 2020 - Nov. 2022
Research Assistant, Geometric Capture Lab, University of Southern California	<i>Los Angeles, CA</i> 2014 - 2020
Research Internships:	<i>Misc. locations</i>
• Snap Inc. , <i>Santa Monica, CA</i> , Jun. 2018 - Aug. 2018	
• Adobe Inc. , <i>San José, CA</i> , Jun. 2017 - Aug. 2017	
• Microsoft Corp. , <i>Redmond, WA</i> , Jun. 2016 - Aug. 2016	
• Oculus VR / Facebook , <i>Redmond, WA</i> , Jun. 2015 - Aug. 2015	
Research Consultant, Pelican Imaging	<i>Santa Clara, CA</i> Jun. 2014 - Aug. 2014
Senior Software Engineer, NVIDIA Corp.	<i>Santa Clara, CA</i> Mar. 2013 - May 2014
Software Engineer, NVIDIA Corp.	<i>Santa Clara, CA</i> Sep. 2009 - Mar. 2013
Software Engineering Intern, NVIDIA Corp.	<i>Santa Clara, CA</i> Jun. 2008 - Aug. 2008
Undergraduate Research Assistant, Boston University Computer Vision and Graphics Lab	<i>Boston, MA</i> Jun. 2006 - Aug. 2006

Exhibition and Selected Press

(Click title for more information).

ACM SIGGRAPH Blog: [Broadcast From Around the World: Real-Time Live! Amazes at SIGGRAPH 2020.](#)

Snap Newsroom: [Snap Research Creates a New Way to Digitize and Render Assets for Augmented Reality.](#)

Marktechpost: [Meet NeROIC: An Efficient Artificial Intelligence \(AI\) Framework For Object Acquisition Of Images In The Wild.](#) D. Lorenzi.

Snap AR: [NeROIC Research Paper at SIGGRAPH 2022](#) (YouTube video).

What's AI: [Create Realistic 3D Models with AI!](#) (YouTube video), L. Bouchard.

AiThority: [Snap Researchers Introduce NeROIC for Object Capture and Rendering Applications.](#)

Auganix AR: [Snap Presents New "NeROIC" Research Paper at SIGGRAPH on Digital Asset Creation from Multiple Images.](#) S. Sprigg.

ACM SIGGRAPH Blog: [Broadcast From Around the World: Real-Time Live! Amazes at SIGGRAPH 2020.](#)

Radiolab: [Breaking News.](#) S. Adler.

Wired: [How Digital Avatars Could Be the Future of Fake News.](#) (YouTube video).

Wired: [Oculus can map your real-life expressions onto your VR avatar.](#) K. Collins.

Engadget: [Oculus VR figures out how avatars can mimic your facial expressions.](#) M. Moon.

MIT Technology Review: [Oculus Rift Hack Transfers Your Facial Expressions onto Your Avatar.](#) T. Simonite.

Voices of VR: [Oculus Research Collaborator Talks Tracking Facial Expressions While Wearing a VR Headset.](#) K. Bye.

USC News: [Who wants to show up as Gandalf at their next meeting?](#) D. Druhora.

Awards and Honors

Best in Show, ACM Siggraph Real-Time Live!, for "Volumetric Human Teleportation," 2020

Outstanding Reviewer, CVPR, 2021

Snap Research Fellowship, Snap Inc, 2018

Pelican Imaging Fellowship, University of Southern California, 2014 - 2015

Boston University Trustee Scholarship (full tuition, four years), 2003 - 2007

National Merit Scholarship (BMC Software, \$2,500 / year, four years), 2003 - 2007

Boston University Dean's List, 2003 - 2007

Boston University Computer Science Dept. Academic Achievement Award, May 2007

Member, Phi Beta Kappa Society, 2007

Member, Sigma Alpha Lambda National Leadership and Honors Org, 2006

Publications

(Click title for more information).

E. Ntavelis, A. Siarohin, **K. Olszewski**, C. Wang, L. Van Gool, and S. Tulyakov. [AutoDecoding Latent 3D Diffusion Models.](#) In *Proceedings of the Neural Information Processing Systems Conference (NeurIPS)*, 2023.

A. Siarohin, W. Menapace, I. Skorokhodov, **K. Olszewski**, H.Y. Lee, J. Ren, M. Chai, and S. Tulyakov. [Unsupervised Volumetric Animation.](#) In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.

V. Lazova, V. Guzov, **K. Olszewski**, S. Tulyakov, and G. Pons-Moll. [Control-NeRF: Editable Feature Volumes for Scene Rendering and Manipulation.](#) In *Proceedings of the Winter Conference on Applications of Computer Vision (WACV)*, 2023.

A. Abdelreheem, **K. Olszewski**, H.Y. Lee, P. Wonka, and P. Achlioptas. [ScanEnts3D: Exploiting Phrase-to-3D-Object Correspondences for Improved Visio-Linguistic Models in 3D Scenes.](#) In *Proceedings of the Winter Conference on Applications of Computer Vision (WACV)*, 2024.

Y. Zhu, Y. Wu, **K. Olszewski**, J. Ren, S. Tulyakov, and Y. Yan. [Discrete Contrastive Diffusion for Cross-Modal Music and Image Generation.](#) In *Proceedings of the International Conference on Learning Representations (ICLR)*, 2023.

Z. Cheng, M. Chai, J. Ren, H.Y. Lee, **K. Olszewski**, Z. Huang, S. Maji, and S. Tulyakov. [Cross-Modal 3D Shape Generation And Manipulation.](#) In *Proceedings of the European Conference on Computer Vision (ECCV)*, 2022.

H. Wang, J. Ren, Z. Huang, **K. Olszewski**, M. Chai, Y. Fu, and S. Tulyakov. [R2L: Distilling Neural Radiance Field to Neural Light Field for Efficient Novel View Synthesis.](#) In *Proceedings of the European Conference on Computer Vision (ECCV)*, 2022.

Y. Zhu, **K. Olszewski**, Y. Wu, P. Achlioptas, M. Chai, Y. Yan, and S. Tulyakov. [Quantized GAN for Complex Music Generation from Dance Videos.](#) In *Proceedings of the European Conference on Computer Vision (ECCV)*, 2022.

Z. Kuang, **K. Olszewski**, M. Chai, Z. Huang, P. Achlioptas, and S. Tulyakov. [NeROIC: Neural Rendering of Objects from Online Image Collections.](#) In *ACM Transactions on Graphics (SIGGRAPH)*, 2022.

L. Han, J. Ren, H.Y. Lee, F. Barbieri, **K. Olszewski**, S. Minaee, D. Metaxas, and S. Tulyakov. [Show Me What and Tell Me How: Video Synthesis via Multimodal Conditioning.](#) In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.

- Y. Tian, J. Ren, M. Chai, **K. Olszewski**, X. Peng, D. Metaxas, and S. Tulyakov. A Good Image Generator Is What You Need for High-Resolution Video Synthesis. In *Proceedings of the International Conference on Learning Representations (ICLR, Spotlight Presentation)*, 2021.
- J. Ren, M. Chai, O. Woodford, **K. Olszewski**, and S. Tulyakov. Flow Guided Transformable Bottleneck Networks for Motion Retargeting. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.
- K. Olszewski**, D. Ceylan, J. Xing, J. Echevarria, Z. Chen, W. Chen, and H. Li. Intuitive, Interactive Beard and Hair Synthesis With Generative Models. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR, Oral Presentation)*, 2020.
- R. Li, Y. Xiu, S. Saito, Z. Huang, **K. Olszewski**, and H. Li. Monocular Real-Time Volumetric Performance Capture. In *Proceedings of the European Conference on Computer Vision (ECCV)*, 2020.
- R. Li, **K. Olszewski**, Y. Xiu, S. Saito, Z. Huang, and H. Li. Volumetric Human Teleportation. In *ACM SIGGRAPH 2020 Real-Time Live! (Awarded Best in Show)*, 2020.
- K. Olszewski**, S. Tulyakov, O. Woodford, H. Li, and L. Luo. Transformable Bottleneck Networks. In *Proceedings of the IEEE International Conference on Computer Vision (ICCV, Oral Presentation)*, 2019.
- S. Yamaguchi, S. Saito, K. Nagano, Y. Zhao, W. Chen, **K. Olszewski**, S. Morishima, and H. Li. High-Fidelity Facial Reflectance and Geometry Inference from an Unconstrained Image. In *ACM Transactions on Graphics (SIGGRAPH)*, 2018.
- K. Olszewski***, Z. Li*, C. Yang*, Y. Zhou, R. Yu, Z. Huang, S. Xiang, S. Saito, P. Kohli, and H. Li. Realistic Dynamic Facial Textures From a Single Image Using GANs. In *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*, 2017.
- K. Olszewski**, J. Lim, S. Saito, and H. Li. High-Fidelity Facial and Speech Animation for VR HMDs. In *ACM Transactions on Graphics (SIGGRAPH Asia)*, 2016.
- D. Casas, A. Feng, O. Alexander, G. Fyffe, P. Debevec, R. Ichikari, H. Li, **K. Olszewski**, E. Suma, and A. Shapiro. Rapid Photorealistic Blendshape Modeling From RGB-D Sensors. In *Proceedings of the Conference on Computer Animation and Social Agents (CASA)*, 2016.
- H. Li*, L. Trutoiu*, **K. Olszewski***, L. Wei*, T. Trutna, P.L. Hsieh, A. Nicholls, and C. Ma. Facial Performance Sensing Head-Mounted Display. In *ACM Transactions on Graphics (SIGGRAPH)*, 2015.