TZOFI KLINGHOFFER

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EDUCATION

PhD ***(Machine Learning, Computer Vision, Computational Imaging)*** **Sept. 2021 – Present**
Massachusetts Institute of Technology, Media Lab, Cambridge, MA
Advisor: Ramesh Raskar

Master of Science **2023**
Massachusetts Institute of Technology, Media Lab, Cambridge, MA
Thesis Committee: Ramesh Raskar. Phillip Isola, Sanja Fidler

Bachelor of Science in Computer Science, ***summa cum laude*** **2018**
The University of Alabama, College of Engineering, Tuscaloosa AL
Minors: Chinese; Social Innovation and Leadership; Certificate in Global Studies

FULL-TIME EXPERIENCE

Amazon **Aug. 2020 – Sept. 2021**
Software Development Engineer II, Alexa AI *Cambridge, MA*

- Led design and implementation of software for automated generation of training and test datasets

MIT Lincoln Laboratory **May 2018 – Aug. 2020**
Associate Tech Staff, Homeland Protection Group (Clearance: Secret) *Lexington, MA*

- Developed machine learning and computer vision methods for national security mission areas
- In collaboration with MIT CSAIL, led computer vision research on segmentation/classification of pathologies in medical images, including x-ray and microscopy, resulting in 3 publications
- Contributed to development and deployment of real-time software systems that improved anomaly detection for critical areas of homeland security by over 600%

INTERN EXPERIENCE

Meta Reality Labs **May 2023 – Sept. 2023; May 2024 - Present**
AI Research Scientist Intern: 3D vision for extended reality *Cambridge, MA*

NVIDIA Research **May 2022 – Jan. 2023**
Research Intern: Neural rendering for autonomous vehicle perception *Remote*

MIT Sea Grant Program **May – Aug. 2017**
Research Intern: Object detection for NOAA fisheries management *Cambridge, MA*

Lockheed Martin Corporation **May – Aug. 2016**
Space Systems: Software Engineering Intern: Software optimization for Orion mission *Littleton, CO*

Jacobs Technology **June – Aug. 2014; May – Aug. 2015**
Software Development & Test Intern: Created automated testing for U.S. Air Force system *Nashua, NH*

SELECTED PAPERS (* EQUAL CONTRIBUTION)

N. Behari, A. Young, S. Somasundaram, **T. Klinghoffer**, A. Dave, R. Raskar, "Blurred LiDAR for Sharper 3D: Robust Handheld 3D Scanning with Diffuse LiDAR and RGB." In Submission, 2024.

D. Gilo, **T. Klinghoffer**, O. Litany, "EPI-NAF: Enhancing Neural Attenuation Fields for Limited-Angle CT With Epipolar Consistency Conditions." In Submission, 2024.

K. Tiwary, **T. Klinghoffer***, A. Young*, S. Somasundaram, N. Behari, A Dave, B Cheung, D.E. Nilsson, T. Poggio, R. Raskar, "A Roadmap for Generative Design of Visual Intelligence." MIT Press, 2024.

T. Klinghoffer, X. Xiang*, S. Somasundaram*, Y. Fan, C. Richardt, R. Raskar, R. Ranjan, "PlatoNeRF: 3D Reconstruction in Plato's Cave via Single-View Two-Bounce Lidar." CVPR, 2024 (**Oral – Best Paper Finalist, ~0.2% acceptance rate**). [Webpage] [MIT News]

T. Klinghoffer*, K*. Tiwary, N. Behari, B. Agrawalla, R. Raskar, "DISeR: Designing Imaging Systems with Reinforcement Learning." International Conference on Computer Vision, 2023.

T. Klinghoffer, J. Philion, W. Chen, O. Litany, Z. Gojcic, J. Joo , R. Raskar, S. Fidler, J. Alvarez, "Towards Viewpoint Robustness in Bird's Eye View Segmentation." International Conference on Computer Vision, 2023.

K. Tiwary**,** A. Dave, N. Behari, **T. Klinghoffer**, A. Veeraraghavan, R. Raskar, "ORCA: Glossy Objects as Radiance Field Cameras." IEEE Conference on Computer Vision and Pattern Recognition, 2023.

T. Klinghoffer*, K. Tiwary*, R. Raskar, "Towards learning neural representations from shadows." In Proceedings of The European Conference on Computer Vision, 2022.

T. Klinghoffer*, K. Tiwary*, A. Balata, V. Sharma, R. Raskar, "Physically Disentangled Representations." Presented at The European Conference on Computer Vision Workshops, 2022.

T. Klinghoffer*, S. Somasundaram*, K. Tiwary*, R. Raskar, "Physics vs. Learned Priors: Rethinking Camera and Algorithm Design for Task-Specific Imaging." In Proceedings of IEEE International Conference on Computational Photography (ICCP), 2022.

L. Gjesteby, **T. Klinghoffer**, M. Ash, M. Melton, K. Otto, D. Lamb, S. Burke, L Brattain, "Annotation-Efficient 3D U-Nets for Brain Plasticity Network Mapping," IEEE International Symposium on Biomedical Imaging, 2021.

T. Klinghoffer, P. Morales, Y.G. Park, N. Evans, K. Cheung, L. Brattain, "Self-Supervised Feature Extraction for 3D Axon Segmentation," IEEE Conference on Computer Vision and Pattern Recognition Workshops, 2020.

T. Klinghoffer, D. Chavez, L. Brattain, "Volumetric Segmentation for Dense Axon Tracing," presented at Recent Advances in Artificial Intelligence for National Security (RAAINS), MA, 2019.

P. Morales*, **T. Klinghoffer***, and S. J. Lee, "Feature Forwarding for Efficient Single Image Dehazing," In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops, 2019.

C. Ancuti, et al., "NTIRE 2019 Image Dehazing Challenge Report," In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops, 2019.

T. Klinghoffer, C. Perez, R. Vincent, P. Perdikaris, and C. Chryssostomidis, "Applying Image Recognition to Enhance Fisheries Management Capabilities," presented at American Meteorological Society's 17th Conference on Artificial and Computational Intelligence and its Applications to the Environmental Sciences, Austin, TX, 2018. **[Student Research Award]**

PATENTS

Synthetic Data Generation Using Viewpoint Augmentation for Autonomous Systems and Applications. **Oct. 2024**
T. Klinghoffer*, J. Philion, Z. Gojcic, S. Fidler, O. Litany, W. Chen, J.A.M. Lopez* | *US Patent App: 20240362897*

GRANTS WRITTEN / AWARDED

Hyundai America Technical Center, Inc. – $250k **June 2024 – Present**
MISTI MIT-Israel Zuckerman STEM Fund – $30k **May 2023 – Present**
Advanced Concepts Committee (MIT Lincoln Laboratory) – $210k **Oct. 2019 – Sept 2020**

PROFESSIONAL SERVICE

Primary Organizer | Workshop on Neural Fields Beyond Conventional Cameras, ECCV **Oct. 2024**
Reviewer | ML/Vision conferences and workshops (CVPR, ICCV, ECCV, ICML) **2021 – Present**

HONORS AND AWARDS

[1] 2024 Best Paper Award Finalist, CVPR
[2] 2024 DoD NDSEG Fellow
[3] 2023 Qualcomm Innovation Fellow
[4] 2023 Draper Scholar
[5] 2023 NSF GRFP Honorable Mention
[6] 2020 MIT Lincoln Scholar Awardee
[7] 2019 SMART Scholar Awardee
[8] 2018 Student Research Award - AMS
[9] 2016 National Oceanic and Atmospheric Administration (NOAA) Hollings Scholar

TEACHING EXPERIENCE

The University of Alabama Honors College (Programming Course Instructor) **Jan. – May 2018**

Mentored Students:

- **Bhavya Agrawalla (2022-24)**
- **Dewei Feng (2022-23)**
- **Mimi Lohanimit (2021-22)**

INVITED TALKS

Carnegie Mellon University, Computational Imaging Group **June 2024**
Technion – Israel Institute of Technology, LIT Lab **May 2024**
Hyundai Vision Conference - Imaging through Shadows and Reflections **Aug. 2023**

TECHNICAL KNOWLEDGE

Primary: Python, PyTorch, C, Keras, Tensorflow, GIT, SQL, MongoDB, Elastic, Linux, Windows
Secondary: Java, C++, Visual Basic, HTML, DXL, DOORS, .NET, Perforce, VMWare

MEDIA COVERAGE

PlatoNeRF: 3D Reconstruction in Plato's Cave via Single-View Two-Bounce Lidar **2024**
Featured in MIT News, MarkTechPost, ScienceDaily, Optics.org, and more.

ORCA: Glossy Objects as Radiance Field Cameras **2023**
MIT Front Page Spotlight. Featured in SciTechDaily, MarkTechPost, and more.