

AVIAD LEVIS

Personal webpage: aviadlevis.info

Email: aviad.levis@gmail.com

EDUCATION

- 2014-2019 Ph.D. (direct track), Viterbi Faculty of Electrical Engineering,
Technion - Israel Institute of Technology, Israel.
Thesis: *Volumetric Imaging of the Natural Environment*;
Supervisor: Prof. Yoav Schechner.
- 2009-2013 B.Sc. in Electrical Engineering, *Cum Laude*.
Ben-Gurion University, Israel.
-

EMPLOYMENT AND INTERNSHIPS

- 2020-present Postdoctoral researcher at the Computing & Mathematical Sciences, Caltech.
Imaging of black holes. Part of the *Event Horizon Telescope Collaboration*.
- 2018 Research internship at Google Research, Perception team.
Artificial intelligence for audio-visual signal analysis.
- 2014 Research internship at the Jet Propulsion Laboratory (NASA-Caltech).
Three-dimensional remote sensing of the atmosphere.
-

SELECTED ACCOMPLISHMENTS, HONORS, AND AWARDS

- 2020 Technion Viterbi postdoctoral fellowship for nurturing future faculty members.
- 2020 Zuckerman STEM leadership program postdoctoral fellowship.
- 2019 Young scientist participant in the 69th Lindau Nobel Laureate Meeting.
- 2019 [CloudCT](#): a space mission derived from my Ph.D. research, won ERC funding (€14 Million).
- 2018 International Space Science Institute (ISSI) Team - Invited Young Scientist.
- 2018 Jacobs-Qualcomm fellowship for academic achievement of Ph.D. students.
- 2017 Jury award for distinguished graduate students.
- 2017 Jacobs-Qualcomm fellowship for academic achievement of Ph.D. students.
- 2015 Jacobs fellowship for academic achievement of M.Sc. students.
-

TEACHING

- 2022 Organizer of an upcoming tutorial on “Computational Imaging in Science” at CVPR22.
- 2020-2022 Guest lecture in the course Computational Imaging, CMS department. Caltech.
- 2020-2021 Summer Undergraduate Research Fellowships (SURF) mentor, Caltech.
- 2014-2019 Undergraduate project supervisor, EE department. Technion.
- 2014-2016 Teaching assistant, EE department. Technion. Courses: Image Processing; Signals and Systems.
-

ACADEMIC SERVICE

- 2014-present Reviewer: CVPR, ECCV, ICCP, Optics Express, ICIP, IEEE Trans Comp Imaging, Journal
of Inverse Problems, JSQRT (Elsevier), MDPI Remote Sensing.
- 2022 Local Arrangement Chair: International Conference on Computational Photography.
- 2021 Program committee IEEE International Workshop on Computational Cameras and Displays.
- 2021 Graduate admission committee, CMS department, Caltech.
- 2020 Program committee IEEE ICCP, 2021.
- 2020 EE systems seminars committee, Caltech.
- 2020 Science organizing committee, 3rd imaging workshop, EHT collaboration.
- 2019 Organizer, CloudCT workshop, Technion, Israel.

PUBLICATIONS

Invited Talks at International Conferences

1. A. Levis, D. Lee, C. F. Gammie, K. L. Bouman *Imaging fluid-dynamics by stochastic model fitting*, Computational Imaging XIX, Electronic Imaging, 2021.
2. A. Levis, Y. Y. Schechner, R. Talmon, *Statistical tomography of microscopic life*, CVPR Workshop on Automated Analysis of Marine Video for Environmental Monitoring, 2018.
3. A. Aides, Y. Y. Schechner, V. Holodovsky, A. Levis, D. Althausen, *Measuring Atmospheric Scattering in 3D*, Propagation Through and Characterization of Atmospheric and Oceanic Phenomena, OSA, 2018.
4. Y. Y. Schechner, A. Aides, A. Levis and V. Holodovski, *Sensing aerosol distributions and clouds in 3D to better understand their climatic role*, ISEES 46th Annual Conf. Science and the Environment, 2018.
5. A. Levis, A. Aides, Y. Y. Schechner, A. B. Davis and V. Holodovsky, *Inverse-scattering Bridging Micron to Kilometer Scales*, CVPR Workshop on Computational Cameras and Displays, Hawaii, USA, 2017.
6. A. Levis, *Remote Sensing of 3D Cloud Microphysics via Radiative Transfer*, JpGU-AGU Joint Meeting, Makuhari Messe, Japan, 2017.
7. A. Levis, *Three-Dimensional Microphysical Tomography of Clouds*, The 16th Electromagnetic and Light Scattering Conference, Maryland, USA, 2017.
8. D. J. Diner, J. Chen, A. B. Davis, M. J. Garay, O. V. Kalashnikova, F. Seidel, M. Tosca, G. van Harten, F. Xu, A. Levis, Y. Schechner, *Capabilities and challenges in remote sensing of aerosol (and cloud) properties using multiangular and polarimetric imaging*, Gordon Research Conference, Radiation and Climate, 2015

Peer Reviewed Publications¹

9. A. Levis, P. Srinivasan, A. Chael, R. Ng, and K. L. Bouman, *Gravitationally Lensed Black Hole Emission Tomography*, Proc. IEEE CVPR, 2022.
10. A. Levis, D. Lee, J. A. Tropp, C. F. Gammie, and K. L. Bouman, *Inference of Black Hole Fluid-Dynamics from Sparse Interferometric Measurements*, Proc. IEEE ICCV, 2021.
11. A. Levis, Y. Y. Schechner, A. B. Davis, and J. Loveridge, *Multi-View Polarimetric Scattering Cloud Tomography and Retrieval of Droplet Size*, Remote Sensing, 2020.
12. T. Loeub, A. Levis, V Holodovsky and Y. Y. Schechner, *Monotonicity Prior for Cloud Tomography*, European Conference on Computer Vision (ECCV), 2020.
13. A. Aides, A. Levis, V Holodovsky, Y. Y. Schechner, D. Althausen, and A. Vainiger *Distributed Sky Imaging Radiometry and Tomography*, Proc. IEEE ICCP, 2020.
14. F. A. Mejia, B. Kurtz, A. Levis, Í Parra and J. Kleissl *Cloud Tomography Applied to Sky Images: A Virtual Testbed*, Solar Energy, 2018.
15. A. Levis, Y. Y. Schechner and R. Talmon, *Statistical Tomography of Microscopic Life*, Proc. IEEE CVPR, 2018.
16. A. Levis, Y. Y. Schechner and A. B. Davis, *Multiple-Scattering Microphysics Tomography*, Proc. IEEE CVPR, 2017.
17. V. Holodovsky, Y. Y. Schechner, A. Levin, A. Levis and A. Aides, *In-Situ Multi-View Multi-Scattering Stochastic Tomography*, Proc. IEEE ICCP, 2016.
18. A. Levis, Y. Y. Schechner, A. Aides and A. B. Davis, *Airborne Three-Dimensional Cloud Tomography*, Proc. IEEE ICCV, 2015. - **Oral presentation (3.3% acceptance)**.
19. D. Veikherman, A. Aides, Y. Y. Schechner and A. Levis, *Clouds in The Cloud*, Proc. ACCV, 2014.

EHT Collaboration Publications

20. The Event Horizon Collaboration et al. *First Sagittarius A* Event Horizon Telescope Results. I. The Shadow of the Supermassive Black Hole in the Center of the Milky Way*, ApJ, 2022.
21. The Event Horizon Collaboration et al. *First Sagittarius A* Event Horizon Telescope Results. II. EHT and Multiwavelength Observations, Data Processing, and Calibration*, ApJ, 2022.

¹In major competitive computer vision conferences, full-length papers undergo a rigorous double-blind review process (the authors are anonymous at submission). Acceptance is typically tougher than in journals, particularly for Oral presentation. Acceptance ratios in recent (2015) CVPR and ICCV conferences were: Orals:3% Posters:23% Rejected \approx 72%.

22. The Event Horizon Collaboration et al. *First Sagittarius A* Event Horizon Telescope Results. III. Imaging of the Galactic Center Supermassive Black Hole*, ApJ, 2022.
23. The Event Horizon Collaboration et al. *First Sagittarius A* Event Horizon Telescope Results. IV. Variability, Morphology, and Black Hole Mass*, ApJ, 2022.
24. The Event Horizon Collaboration et al. *First Sagittarius A* Event Horizon Telescope Results. V. Testing Astrophysical Models of the Galactic Center Black Hole*, ApJ, 2022.
25. The Event Horizon Collaboration et al. *First Sagittarius A* Event Horizon Telescope Results. VI. Testing the Black Hole Metric*, ApJ, 2022.

Other Conference Publications

26. A. Levis, A. B. Davis, J. Loveridge, Y. Y. Schechner *3D Cloud Tomography and Droplet size Retrieval from Multi-Angle Polarimetric Imaging of Scattered Sunlight from Above*, Proc. SPIE, Polarization Science and Remote Sensing X, 2021.
27. A. Levis, Y. Y. Schechner, A. B. Davis, J. Loveridge *Droplet Size Tomography Using Multi-View Polarimetric Measurements*, AGU Fall Meeting, 2020.
28. L. Forster, Y. Kölling, V. Pörtge, T. Zinner, B. C. Mayer, A. Levis, J. R. Loveridge, A. B. Davis *3D cloud tomography during EUREC4A: Synergy of MISR multi-angle satellite imaging and airborne remote sensing onboard HALO*, AGU Fall Meeting, 2020.
29. A. Levis, V. Holodovsky, Y. Y. Schechner, E. Eytan, I. Koren, A. Aumann, K. Schilling *CloudCT: Spaceborne scattering tomography by a large formation of small satellites for improving climate*, COSPAR Symposium, Israel, 2019.
30. V. Holodovsky, M. Fisher, Y. Y. Schechner, D. Rosenfeld, A. Levis *Geometric aspects of stereoscopic spaceborne imaging of dynamic clouds in the CLOUD experiment*, COSPAR Symposium, Israel, 2019.
31. D. Rosenfeld, C. Cornet, S. Aviad, P. Crebassol, P. Dandini, E. Defer, C. Fallet, V. Holodovsky, A. Levis, A. Kaidar, C. Price, D. Ricard, Y. Schechner, P. Tabary, Y. Yair *C³IEL : Cluster for Climate and Cloud Imaging of Evolution and Lightning, an innovative way to observe clouds and their environment*, COSPAR Symposium, Israel, 2019.
32. A. B. Davis, F. Xu, G. V. Harten, D. J. Diner, A. Levis, Y. Y. Schechner, G. Matheou, *Inherent Properties of Clouds in the PBL Derived from Multi-angle Spectro-Polarimetric Imaging at the "Edge of Space:" New Capabilities of JPL's AirMSPI Sensor on NASA's Airborne ER-2 Platform*, AGU Fall Meeting, San Fransico, 2019.
33. A. Levis, Y. Y. Schechner, R. Talmon, *Statistical Tomography of Microscopic Life*, Proc. IEEE ICCP - Int. Conference on Computational Photography, USA, 2018.
34. A. Levis, Y. Y. Schechner, R. Talmon, *In-situ Tomography of Plankton*, MOST Workshop on Exploring Translucent Media, 2018.
35. A. Levis, Y. Y. Schechner, A. Aides, A. B. Davis, *3D Cloud Tomography via Solar Radiative Transfer*, International Radiation Symposium, New Zealand, 2016.
36. A. Levis, Y. Y. Schechner, A. Aides, A. B. Davis, *3D Cloud Tomography using Solar Radiative Transfer*, Atmospheric Radiation Science Workshop, Colorado, 2016.
37. A. Levis, Y. Y. Schechner, A. Aides, *Three-Dimensional Cloud Tomography*, Vision Day, Israel, 2016.
38. V. Holodovsky, A. Levis, Y. Y. Schechner, A. Levin, A. Aides, A. B. Davis, *3D Multi-Scattering Tomography*, Int. Conf. Computational Photography, Illinois, 2016.
39. A. Levis, Y. Y. Schechner, A. Aides, A. B. Davis, *Airborne Three-Dimensional Cloud Tomography*, Israeli Machine Vision Conference, Israel, 2016.
40. D. Rosenfeld, A. Levis, I. Bibi, Y. Y. Schechner, A. Rosenfeld, D. Fischer, J. Woytach, *Globe Imaging of 3D Motion: Microphysics to centuries of change*, ICCV Workshop, Chile, 2015.
41. A. Levis, A. Aides, V. Holodovsky, Y. Y. Schechner, A. Levin, A. B. Davis, *Efficient 3D Atmospheric Tomography of Scatter Distribution*, AGU-GAC-MAC-CGU Joint Assembly, Canada, 2015.
42. A. Aides, D. Veikherman, A. Levis, Y. Y. Schechner *Ground-Based Multi-Angle Imaging Network for 3D Atmospheric Sensing*, AGU-GAC-MAC-CGU Joint Assembly, Canada, 2015.
43. D. Veikherman, A. Aides, Y. Y. Schechner, A. Levis, *Clouds in The Cloud*, Israel Computer Vision Day, Israel, 2016.