

Amit Aides, Ph.D.

curriculum vitæ

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Pitch

Computer Vision AI expert and hardware hacker with a passion for understanding our world and improving it through science and technology.

Experience

Vocational

- 2019–Present **Environmental Research & Medical Imaging, Google Research, Israel**
- Technical Lead, develop computer vision & AI algorithms to support medical procedures.
 - Develop remote sensing algorithms for the detection of environmental hazards.
- 2015–2019 **Deeplearning Researcher, IBM, Israel**
- Developed audio-visual algorithms for Multi-Modal Biometrics.
 - Developed audio-visual algorithms for video enhancement.
 - Developed object detection and recognition algorithms.
- 2008–2016 **Teaching Assistant, Technion, Israel Institute of Technology**
- Served as team leader and lead developer of the optical payload and image processing system for the Technion's team in the **AUVSI Student UAS Competition** (achieving 2nd and 4th places in 2015 and 2016 respectively).
 - Developed and taught the Linux Kernel hands-on course for the OS Laboratory.
 - Supervised undergraduate projects in the Vision and Image Sciences Laboratory.
 - Served as teaching assistant for the Microprocessors and Logic Design courses.
- 2007–2010 **Part time SW engineer, Sick Sensors Ltd**
- Designed and developed automatic testing environment for rotary encoders.
 - Designed micro-controller's firmware.
- 2004–2006 **Co-founder, DigitalPeers**
- Co-authored CamTrack, pioneering webcam software.
 - Developed robust real-time face tracking algorithm.
 - Developed scriptable graphic engine based on python.
 - Designed DigitalPeers's Website.
- 2002–2003 **HW engineer, Marvell Israel (M.I.S.I) Ltd**
- Developed a testing environment in C++ for Chip Verification.
- 2000–2001 **HW engineer, ISD Ltd**
- Designed chips using VHDL.
- 1994–1996 **Teaching Assistant, Technion, Israel Institute of Technology**
- Served as instructor in the Energy Conversion Laboratory.
- 1992–1993 **HW engineer, IBM Israel Ltd**
- Supported a synthesis tool in the VLSI department.

Education

- 2012–2018 **Ph.D.**, *Technion, Israel Institute of Technology*
- Developed novel inverse algorithms for remote sensing.
 - Developed unique large camera networks for remote sensing.
- 2008–2011 **Master of Science**, *Technion, Israel Institute of Technology*
- Developed computer vision algorithms for video processing.
- 1991–1996 **Bachelor of Science**, *Technion, Israel Institute of Technology*
- Study Fields and Projects:
- Computers.
 - Control systems
 - Biological systems and signals.
 - Design of Phase Array antenna controller for the Technion satellite.

PhD thesis

- title *Lightfield Analysis and Recovery of the Atmosphere*
- supervisors Professor Yoav Y. Schechner

Master thesis

- title *Multiscale Ultrawide Video Extrapolation*
- supervisors Professor Yoav Y. Schechner

Languages

Hebrew (native), English (fluent), Spanish (fluent).

Computer Skills

Python, tensorflow, pytorch, C, C++, Matlab.

Open Source Projects

Software I Developed

- **CameraNetwork** - Software for remote sensing camera network.
- **AUVSI-TAS-System** - Payload system developed by the Technion team for the **AUVSI SUAS** 2015-2016 competitions.
- **Experiment** - Framework for running Python experiments.
- **pycompsense** - Python toolbox for compressed sensing and sparse reconstruction algorithms.
- **pyrwt** - Python wrapper for the *RICE* Wavelet Toolbox.
- **pyoslabgrader** - A package for writing automatic tests for the linux kernel course taught in the Technion.
- **pydirect** - Python wrapper for the *DIRECT* global optimization algorithm.
- **cyipopt** - Python wrapper for the *IPOPT* optimization package.

Software I Contributed to

- **ignite** - High-level library to help with training neural networks in PyTorch.
- **chainer** - A flexible framework of neural networks for deep learning.
- **scikits-learn** - Easy-to-use and general-purpose machine learning in Python.

Publications

- Amit Aides, Tamar Avraham, and Yoav Y. Schechner. Multiscale ultrawide foveated video extrapolation. In *IEEE International Conference on Computational Photography (ICCP)*, Apr 2011.
- Amit Aides, Yoav Y. Schechner, Vadim Holodovsky, Michael J. Garay, and Anthony B. Davis. Multi sky-view 3d aerosol distribution recovery. *Opt. Express*, 21(22):25820–25833, Nov 2013.
- Dmitry Veikherman, Amit Aides, Yoav Y. Schechner, and Aviad Levis. Clouds in the cloud. In *The 12th Asian Conference on Computer Vision (ACCV)*, Nov 2014.
- Aviad Levis, Yoav Y. Schechner, Amit Aides, and Anthony B Davis. Airborne three-dimensional cloud tomography. In *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*, 2015.
- Aviad Levis, Yoav Y Schechner, Amit Aides, and Anthony B Davis. An efficient approach for optical radiative transfer tomography using the spherical harmonics discrete ordinates method. *arXiv preprint arXiv:1501.06093*, 2015.
- Vadim Holodovsky, Yoav Y Schechner, Anat Levin, Aviad Levis, and Amit Aides. In-situ multi-view multi-scattering stochastic tomography. In *IEEE International Conference on Computational Photography (ICCP)*. IEEE, 2016.
- Amit Aides and Hagai Aronowitz. Text-dependent audiovisual synchrony detection for spoofing detection in mobile person recognition. In *INTERSPEECH*, Sep 2016.
- Ahmad Kiswani, Amit Aides, and Mark Silberstein. Deep learning in aerial systems using jetson. <https://devblogs.nvidia.com/parallelforall/deep-learning-in-aerial-systems-jetson/>, 2016.
- Aviad Levis, Amit Aides, Yoav Y. Schechner, Anthony B. Davis, and Vadim Holodovsky. Inverse-scattering bridging micron to kilometer scales. CVPR workshop on Computational Cameras and Displays, 2017.
- Amit Aides, Dov David, and Hagai Aronowitz. Robust audiovisual liveness detection for biometric authentication using deep joint embedding and dynamic time warping. In *2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 3026–3030. IEEE, 2018.
- Leonid Karlinsky, Joseph Shtok, Sivan Harary, Eli Schwartz, Amit Aides, Rogerio Feris, Raja Giryes, and Alex M. Bronstein. Repmet: Representative-based metric learning for classification and few-shot object detection. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Amit Alfassy, Leonid Karlinsky, Amit Aides, Joseph Shtok, Sivan Harary, Rogerio Feris, Raja Giryes, and Alex M. Bronstein. Laso: Label-set operations networks for multi-label few-shot learning. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019.
- Amit Aides, Aviad Levis, Vadim Holodovsky, Yoav Y. Schechner, Dietrich Althausen, and Adi Vainiger. Distributed sky imaging radiometry and tomography. In *IEEE International Conference on Computational Photography (ICCP)*, Apr 2020.

Daniel Freedman, Yochai Blau, Liran Katzir, Amit Aides, Ilan Shimshoni, Danny Veikherman, Tomer Golany, Ariel Gordon, Greg Corrado, Yossi Matias, et al. Detecting deficient coverage in colonoscopies. *arXiv preprint arXiv:2001.08589*, 2020.

Dan M Livovsky, Danny Veikherman, Tomer Golany, Amit Aides, Valentin Dashinsky, Nadav Rabani, David Ben Shimol, Yochai Blau, Liran Katzir, Ilan Shimshoni, et al. Detection of elusive polyps via a large-scale artificial intelligence system (with videos). *Gastrointestinal Endoscopy*, 2021.

George Leifman, Amit Aides, Tomer Golany, Daniel Freedman, and Ehud Rivlin. Pixel-accurate segmentation of surgical tools based on bounding box annotations. In *IEEE International Conference on Pattern Recognition (ICPR)*, Aug 2022.

Tomer Golany, Amit Aides, Daniel Freedman, Nadav Rabani, et al. Artificial intelligence for phase recognition in complex laparoscopic cholecystectomy. *Surgical Endoscopy*, accepted 2022.