Or Litany

Contact Information

Postdoctoral researcher,
Facebook AI Research

Cell: (+1)650-313-3195
E-mail: orlitany at gmail dot com
Homepage: https://orlitany.github.io
GitHub: github.com/orlitany

Research Interests

Computer Vision, 3D Deep Learning for Shape Analysis and Scene Understanding, Representation Learning. computational shape analysis and representation learning.

Education

Tel Aviv University, Tel Aviv, Israel

Ph.D., Electrical Engineering, October 2018.
Advisor: Prof. Alex M. Bronstein

Tel Aviv University, Tel Aviv, Israel

M.Sc., Electrical Engineering (Computer Vision), August 2012

Hebrew University, Jerusalem, Israel

Talpiot Program[1]: B.Sc., Physics and Mathematics, August 2005

Academic Appointments

Facebook AI Research, CA, USA
Postdoctoral Researcher — **September, 2018 - Present**
Host: Prof. Jitendra Malik; Advisor: Prof. Leonidas Guibas

Technion, Haifa, Israel
Postdoctoral Researcher — **April, 2018 - August, 2018**
Working on Geometric Deep Learning

Technische Universität München, Munich, Germany
Visiting Scholar — **March - May 2016, April 2017**
Working on 3D shape analysis; Advisor: Prof. Daniel Cremers

Duke University, North Carolina, USA
Visiting Scholar — **November 2014**
Working on Computational Photography; Advisor: Prof. Guillermo Sapiro

Honors and Awards

[1] An elite Israel Defense Forces training program, for recruits who have demonstrated outstanding academic ability in the sciences and leadership potential (Acceptance rate $< 0.5\%$).

ICLR LLD workshop Best Paper Award, 2019

Elsevier Outstanding Reviewer, 2017

SGP Best Paper Award, 2016

Microsoft Research top talent intern, 2016

German Academic Exchange Service (DAAD) research grant, 2016

Weinstein prize for graduate studies, 2015

Google conference travel grant for ECCV, 2014

Tel Aviv University: graduated Magna Cum Laude, 2012

Teaching Experience

Teaching Assistant **March 2017 - June 2017**

Graduate level. Duties included evaluating home assignments.

- 0510-7002-01 Optimization, 2017.

B.Sc Project Instructor **December 2014 - August 2016**

Undergraduate level final projects for B.Sc in Electrical and Electronics Engineering.

Teaching Assistant **March 2015 - June 2015**

Graduate level. Duties included writing and evaluating home assignments.

- 0510-6201-01 Digital Processing of Single and Multi-Dimensional Signals, 2015.

Publications

"SOSELETO: A Unified Approach to Transfer Learning and Training with Noisy Labels", ICLR 2019 workshop on Learning from Limited Labeled Data O.Litany, D.Freedman. best paper award

"Self-supervised Learning of Dense Shape Correspondence", O.Halimi, O.Litany, E.Rodolà, A.Bronstein, R.Kimmel. CVPR 2019. Oral presentation

"Partial Single-and Multishape Dense Correspondence Using Functional Maps", O.Litany, E.Rodolà, A.Bronstein, M.Bronstein, D.Cremers. Elsevier, 2018.

"Class-Aware Fully-Convolutional Gaussian and Poisson Denoising", T.Remez, O.Litany, R.Giryes, A.Bronstein. Transactions on Image Processing, 2018.

"Generative Non-Rigid Shape Completion with Graph Convolutional Autoencoders", O.Litany, A.Bronstein, M.Bronstein, A.Makadia. CVPR 2018.

"Deep Functional Maps: Structured Prediction for Dense Shape Correspondence", O.Litany, T.Remez, E.Rodolà, A.Bronstein, M.Bronstein, ICCV 2017.

"Efficient Deformable Shape Correspondence via Kernel Matching", A.Boyarski, A.Bronstein, M.Bronstein, D.Cremers, R.Kimmel, Z.Lahner, O.Litany, T.Remez, E.Rodolà, R.Slossberg, M.Vestner, 3DV 2017.

"White Matter Fiber Representation using Continuous Dictionary Learning", G.Alexandroni, Y.Podolsky, O.Litany, T.Remez, A.Bronstein, H.Greenspan, R. Giryes, MICCAI, 2017.

"Deep Class Aware Denoising", T.Remez, O.Litany, R.Giryes, A.Bronstein, IEEE International Conference on Image Processing (ICIP), 2017.

"SHREC'17: Deformable Shape Retrieval with Missing Parts", E.Rodolà, L.Cosmo, O.Litany, M.Bronstein, A.Bronstein et al., EUROGRAPHICS Workshop on 3D Object Retrieval (3DOR 2017).

"Cloud Dictionary: Sparse Coding and Modeling for Point Clouds", O.Litany, T.Remez, A. Bron-

stein, Signal Processing with Adaptive Sparse Structured Representations (SPARS), 2017.

"Fully Spectral Partial Shape Matching", O.Litany, E.Rodolà, A.Bronstein, M.Bronstein. Eurographics 2017.

"Non-rigid Puzzles", O.Litany, E.Rodolà, A.Bronstein, M.Bronstein, D.Cremers, Computer Graphics Forum, Wiley, 2016. SGP best paper award.

"ASIST: Automatic Semantically Invariant Scene Transformation", O.Litany, T. Remez, D.Freedman, L.Shapira, A.Bronstein, R.Gal, CVIU journal.

"A picture is worth a billion bits: Real-time image reconstruction from dense binary threshold pixels", T. Remez, O.Litany, A.Bronstein, ICCP 2016.

"Image reconstruction from dense binary pixels", O.Litany, T.Remez, A.Bronstein, Signal Processing with Adaptive Sparse Structured Representations (SPARS), 2015.

"Putting the Pieces Together: Regularized Multi-part Shape Matching", O.Litany, A.Bronstein, M.Bronstein, Proc. Workshop on Nonrigid Shape Analysis and Deformable Image Alignment (NORDIA), 2012.

Papers in preparation

"Generalization through Canonicalization", O.Litany, S.Sridhar, J.Hoffman, A.Morcos, L.Guibas.

"Deep Learning for Non-linear Function Approximation and Mapping", O.Litany, S.Melzi, M.Ovsjanikov.

"Deep Hough Voting for 3D Object Detection in Point Clouds", C.Qi, O.Litany, K. He, L. Guibas.

"SHREC19: Shape Correspondence with Isometric and Non-Isometric Deformations". R.M.Dyke, C.Stride, Y.K.Lai, P.L.Rosin, [and 22 others, including O.Litany]

"Dual-Primal Graph Convolutional Networks", F.Monti, O.Shchur, A.Bojchevski, O.Litany, S.Gnnemann, M.Bronstein.

"FPGA system for real-time computational extended depth of field imaging using phase aperture coding", T.Remez, O.Litany, S.Yoseff, H.Haim, A.Bronstein.

Professional Service

- Invited speaker at the, "Deep Learning for Science School" at Berkeley, 2019.
- Organizing Committee member, "Deep Learning for Computer Graphics and Geometry Processing" at Eurographics, 2019.
- Committee member at the SUMO (Scene Understanding and Modeling) Challenge, 2019.
- Organizing Committee Member, "Deep Learning meets Geometry", tutorial at ECCV 2018. Munich, Germany, September 2018.
- Organizing Committee Member, "Deep Learning and Geometry", workshop at the EUSIPCO. Kos, Greece, September 2017.
- Organizing Committee Member, "Deformable Partial Shape Retrieval", track at the EUROGRAPHICS Shape Retrieval Contest (3DOR SHREC 2017). Lyon, France, May 2017.
- Reviewer for ECCV 2016, 3DV 2017, CVPR 2017, CVPR 2018, TPAMI, Pattern Recognition, ICASSP 2018, ECCV 2018, 3DV 2018, Transactions on Graphics (TOG), NIPS 2018, SIGGRAPH ASIA 2018, GMDL workshop 2018, Eurographics 2019, CVPR 2019, IEEE Robotics and Automation Letters.
- Session chair at IAS Workshop on Machine Learning for 3D Understanding (2018).

Invited Talks

- 17.4.2019. Cornell Tech University. Invited by Prof. Noah Snavely.

- 16.4.2019. New York University (NYU). Invited by Prof. Daniele Panizzo and Prof. Juan Bruna.
- 10.4.2019. Palo Alto Research Center (Xerox PARC). Invited by Kalai Ramea.
- 31.1.2019. "San Francisco Deep Learning Meetup", San Francisco, CA, USA.
- 4.7.2018. "TUM IAS Workshop on Machine Learning for 3D Understanding", TU Munich, Germany.
- 15.3.2018. "Imaging and Vision from Theory to Applications" workshop, Siegen, Germany. Invited by Prof. Michael Muller.
- 26.1.2018. Stanford University. Invited by Prof. Leonidas Guibas.
- 27.09.2017. New York University (NYU). Invited by Prof. Juan Bruna.
- 13.09.2017. Google NYU.
- 26.06.2017. Invited speaker at Israel computer vision MeetUp. Google campus Tel-Aviv.
- 13.01.2017. Invited speaker at the Dagstuhl Seminar 17021 Functoriality in Geometric Data. Schloss Dagstuhl, Leibniz Center for Informatics (Germany).
- 25.12.2016. Invited speaker at the Israeli Computer Vision Day. IDC Herzliya (Israel).
- 24.11.2016. Weizmann Insitute of Science (Israel). Invited by Prof. Y. Lipman.
- 22.11.2016. Tel Aviv University (Israel). Invited by Prof. D. Cohen-Or.
- 27.10.2016. Invited speaker at the G-Caffe Seminar, Stanford University (US). Invited by Prof. L. Guibas.
- 21.06.2016. Eurographics Symposium on Geometry Processing (SGP), FU Berlin (Germany). Invited by Prof. M. Ovsjanikov and Prof. D. Panozzo.
- 5.6.2016. The Hebrew University of Jerusalem (Israel). Invited by Prof. Shmuel Peleg.
- 15.4.2016. Technische Universitt Mnchen (Germany). Invited by Prof. D. Cremers.
- 12.4.2016. USI University of Lugano (Switzerland). Invited by Prof. M. Brsontein.
- 30.11.2015. Ben Gurion University (Israel). Invited by Prof. O. Ben-Shahar.

Employment History

Google TLV

Research Intern **December, 2017 - August, 2018**
Transfer learning algorithms in Deep Learning
Floods forecasting team

Google NYC

Research Intern **July, 2017 - October, 2017**
Geometric deep-learning for shape completion (published at CVPR)

Intel Perceptual Computing

Research Intern **July, 2016 - June, 2016**
3D shape correspondence (3 publications at ICCV and Eurographics)

Microsoft Research

Research Intern **February, 2015 - December, 2016**
3D scene understanding and reconstruction for VR (see ASIST in publications)

IAF

Head of Section (Military rank: Major) **August 2012 - August 2014**
Led an innovation team of nine R&D engineers and physicists (B.Sc to Ph.D)

Senior researcher **August 2007 - August 2011**
Invented and led development of seed ideas/concepts to operational capabilities.

Elbit Systems Electro-optics (Elop)

Image Processing Algorithms Developer **December 2005 - December 2006**
Developed scenario simulations and tracking algorithms for a fiber laser based DIRCM system.