Or Litany

Contact Information

School of Electrical Engineering,
Tel Aviv University

Cell: (+972)-54-9130349
E-mail: orlitany@gmail.com
Homepage: www.eng.tau.ac.il/∼orlitany
GitHub: github.com/orlitany

Research Interests

Computer Vision, Deep Learning, 3D Shape Analysis and Sparse Models.

Education

Tel Aviv University, Tel Aviv, Israel

Ph.D. Candidate, Electrical Engineering, August 2014 (expected graduation date: April 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

Technion, Haifa, Israel
Postdoctoral Researcher **April, 2018 - Present**
Working on Geometric Deep Learning; Advisor: Prof. Alex M. Bronstein

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

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.

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

B.Sc Project Instructor **December 2014 - present**
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.

Relevant Coursework

Selected topics in image processing, graphics and computer vision (Prof. Shai Avidan), Machine learning (Prof. Andrew Ng, Coursera), Computer vision and robotics workshop (Prof. Michael Brsontein and Prof. Nir sochen), Advanced topics in computer graphics seminar (Prof. Daniel Cohen-Or), Image and video processing (Prof. Guillermo Sapiro, Coursera) , mathematical methods for image processing (Prof. Nir Sochen), International computer vision summer school, Microsoft Research PhD summer school, Convolutional Neural Networks for Visual Recognition (Prof. Fei-Fei Li, Online), Google computer vision summit.

Publications

"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. Bronstein, 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 (NOR-

DIA), 2012.

Papers in preparation

"Coarse-Tuning: Bi-Level Optimization for Partial Domain Adaptation", O.Litany, D.Freedman.

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

"Deep Convolutional Denoising of Low-Light Images", T.Remez, O.Litany, R.Giryes, A.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

- 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.

Invited Talks

- 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 - present**

Domain adaptation in Deep Learning

Google NYC

Research Intern **July, 2017 - October, 2017**

Geometric deep-learning for shape completion (to apear at CVPR 2018)

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.