# Elias Nehme

*Curriculum Vitae*

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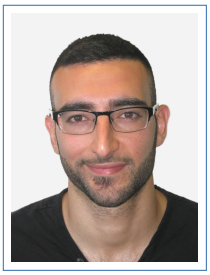

*Researcher in Computational Imaging and Machine Learning*

## Education

2018–Present **Ph.D. Candidate in Electrical Engineering (Direct Track)**, *Technion - IIT*.
Under the supervision of Prof. Tomer Michaeli and Prof. Yoav Shechtman.

2011–2016 **B.Sc. in Biomedical Engineering**, *Technion - IIT*.

## Professional Experience

2017–2018 **Magentiq Eye**, *Haifa*.
Image Processing and Deep Learning Engineer.

2017–2018 **Inspiring Vision**, *Haifa*.
Software and Algorithm Developer.

2015–2016 **The Laboratory for Synthetic Biology and Bio-electronics**, *Haifa*.
Research Assistant.

2014–2015 **Hospitech Respiration & Rambam Medical Center**, *Haifa*.
Clinical Trials Assistant.

## Teaching Experience

2018–Present **Teaching Assistant**, *Technion*.
- T.A. in charge: "Algorithms and Applications in Computer Vision", EE046746.
- T.A. in charge: "Computational Optical Imaging", BME336547.
- T.A. in charge: "Analysis of Biological Signals", BME336208.

2016–2017 **Lab Instructor**, *Technion*.
- Undergraduate lab on "Digital Systems", 335002.

## Fellowships, Awards and Honors

2020-2021 **Jacobs-Qualcomm Fellowship, Technion**.

2019 **VATAT Prize in Data Science, Machine Learning and Intelligent Systems, Technion**.

2019 **Best Poster Award, Quantitative Bio-Imaging Conference, France**.

2018–2019 **Excellent TA Award, Biomedical Engineering, Technion**.

2018 **Lev-Margulis Memorial Prize, Israeli Society for Microscopy (ISM) Conference, Tel Aviv**.

2016 **Dean Excellence Award, Biomedical Engineering, Technion**.

## Publications

### Journal Publications

1. **E. Nehme, L.E. Weiss, T. Michaeli, and Y. Shechtman**, *"Deep-STORM: super-resolution single-molecule microscopy by deep learning"*, Optica 5, 458-464 (2018).
   - Research highlighted in Nature Methods: R. Strack, "Deep learning advances super-resolution imaging", Nature Methods 15, 403 (2018).
2. **N. Granik, L.E. Weiss, E. Nehme, M. Levin, M. Chein, E. Perlson, Y. Roichman, and Y. Shechtman**, *"Single particle diffusion characterization by deep learning"*, Biophysical Journal 117, 185-192 (2019).

3. **E. Nehme, D. Freedman, R. Gordon, B. Ferdman, L.E. Weiss, O. Alalouf, R. Orange, T. Michaeli, and Y. Shechtman**, *"DeepSTORM3D: dense 3D localization microscopy and PSF design by deep learning"*, Nature Methods 17(7), 734-740 (2020).
4. **B. Ferdman, E. Nehme, L.E. Weiss, R. Orange, O. Alalouf, and Y. Shechtman**, *"VIPR: Vectorial Implementation of Phase Retrieval for fast and accurate microscopic pixel-wise pupil estimation"*, Optics Express, 28(7), 10179-10198 (2020).
5. **R. Gordon-Soffer, L.E. Weiss, R. Eshel, B. Ferdman, E. Nehme, M. Bercovici, and Y. Shechtman**, *"Microscopic scan-free surface profiling over extended axial ranges by point-spread-function engineering"*, Science Advances, 6(44), eabc0332 (2020).
6. **L. von Chamier, R.F. Laine, J. Jukkala, C. Spahn, D. Krentzel, E. Nehme, M. Lerche, S. Hernández-Pérez, P.K. Mattila, E. Karinou, S. Holden, A.C. Solak, A. Krull, T. Buchholz, M.L. Jones, L.A. Royer, C. Leterrier, Y. Shechtman, F. Jug, M. Heilemann, G. Jacquemet, and R. Henriques**, *"ZeroCostDL4Mic: an open platform to use Deep-Learning in Microscopy"*, Under review at Nature Communications, September 29 (2020).
7. **R. Orange, E. Nehme, L.E. Weiss, B. Ferdman, O. Alalouf, and Y. Shechtman**, *"3D printable diffractive optical elements by liquid immersion"*, Under review at Nature Communications, Oct 13 (2020).

### Peer-reviewed Conference Proceedings

8. **E. Nehme*, B. Ferdman*, L.E. Weiss, T. Naor, D. Freedman, T. Michaeli, and Y. Shechtman**, *"Learning an optimal PSF-pair for ultra-dense 3D localization microscopy"*, Submitted to IEEE International Conference on Computational Photography (ICCP) 2021, Dec 15 (2020).
   *E. Nehme and B. Ferdman contributed equally to this work.

## Conferences

### Talks

1. **Plenary Award Lecture**, *"Deep-STORM: super-resolution single-molecule microscopy by deep learning"*, Dan Panorama Hotel, Tel Aviv, Israel, June 20, 2018.
2. **Plenary Award Lecture**, *"DeepSTORM3D: deep learning for dense 3D localization microscopy"*, Mathematical Institute at the University of Oxford, Oxford, UK, January 6-9, 2020.

### Poster Presentations

1. **E. Nehme, L.E. Weiss, T. Michaeli, and Y. Shechtman**, *"DeepSTORM: super-resolution single-molecule microscopy by deep learning"*, NANO IL, International convention center, Jerusalem, Israel, Oct 9-11, 2018.
2. **E. Nehme, D. Freedman, T. Michaeli, and Y. Shechtman**, *"DeepSTORM3D: deep learning for dense 3D localization microscopy"*, Quantitative Bioimaging 2019, Rennes, France, Jan 9-12, 2019.
3. **E. Nehme, L.E. Weiss, D. Freedman, T. Michaeli, and Y. Shechtman**, *"Deep learning for dense single-molecule localization microscopy"*, Learning for Computational Imaging Workshop in conjunction with ICCV 2019, Seoul, South Korea, Nov 2, 2019.

## Extracurricular Activities and Academic Service

2019-2021 **Teachers Qualification Program**, *Israel's Ministry of Education & Biomedical Engineering, Technion-IIT*.
Basics of biological signal and image processing delivered to electronics high school teachers.

2018-Present **Reviewer**, *Optics Express, Biomedical Optics Express, Optica, and Nature Scientific Reports.*.

2015 **Students Semester Representative**, *Biomedical Engineering, Technion-IIT*.

2013–2014 **Nachshon Coordinator**, *The Center of Educational Technology (CET) & Perach*.
Supervising a group of 60 tutors, each one mentoring a group of 2-3 students from peripheral high schools for the 5-unit curriculum in mathematics.