ORR ZOHAR

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EXPERIENCE

PhD Research, Stanford University   *Sep 2021 - Present*
Graduate Researcher

MARVL; *Evaluating surgical skill from open surgical videos.*
· Currently developing a vision-based surgical training web application where students can upload videos of themselves practicing, and the application runs a novel multi-task model to evaluate their surgical skill.
· Developed an objectness-based open-world object detector that can identify unknown objects by estimating the objectness probability of each proposal. The method significantly improved open-world performance.

PhD Rotations, Stanford University
· **Pyramidal Lab**; *Extracting neural signals from Calcium imaging in real-time.* Developed a robust ADMM-based solver, which utilizes the one-sided Huber loss to robustly estimate neural traces from CA imaging. The solver can extract 100x as many neural traces in real-time compared to existing technologies.
· **Stanford Computational Imaging Lab**; *Programmable Sensors for Task-Specific Imaging.* Developed a differentiable model for focal-plane sensor-processors that allowed their integration into a end-to-end object detection pipeline, which was then optimized for HDR imaging.

proteanTecs LTD   *Sep 2020 - Present*
Machine Learning & Algorithms Engineer

· Develop supervised/unsupervised machine learning to automate data analytics tasks that help silicon manufacturers improve yield, discover issues with their equipment, and predict failures before they occur.
· Led the development of an algorithmic system that automates data analytics tasks composed of (sequential) parametric estimation, outlier detection, and alert collection and analysis for analytic insights.

de la Zerda lab, Stanford University   *Jul 2018 - Nov 2018*
Visiting Undergraduate Researcher

· Implemented a Synthetic Aperture algorithm and adapted it to our OCT systems for digital refocusing.
· Developed spectral demixing algorithms for GNPs injected in live mice.

EDUCATION

Stanford University   *September 2021 - Present*
Ph.D. in Electrical Engineering & Knight-Hennessy Scholar   (GPA: 4.0)

Technion - Israel Institute of Technology
Master of Engineering   *March 2019 - March 2021*
Electrical & Computer Engineering - Graduated Summa Cum Laude   (GPA: 98.4/100)

Bachelor of Science   *October 2015 - October 2019*
Chemical Engineering - Graduated Summa Cum Laude   (GPA: 97.5/100)

PUBLICATIONS

· **Zohar, O.**, Wang, K., Yeung, S., (2022). PROB: Probabilistic Objectness for Open World Object Detection. *CVPR 2023* (under review). Preprint available on arXiv.
· **Zohar*, O.**, Dinc*, F. *et al.*, (2022). Real-Time Robust Estimation of Neural Signals from Calcium Imaging Movies. *Neuron* (under review).
· Goodman, E. D. *et al.*, (2022). Analyzing Surgical Technique in Diverse Open-Surgical Videos with Multi-Task Machine Learning. *JAMA surgery* (under review).

- **Zohar*, O.**, Khatib*, M. *et al.*, (2021). Bio-Interfaced Sensors for Biodiagnostics. *VIEW.*
- Khatib, M., **Zohar, O.**, Haick, H., (2021). Self-Healing Soft Sensors: From Material Design to Implementation. *Advanced Materials.* (+Back Cover).
- Khatib, M., **Zohar, O.** *et al.*, (2020). A Multifunctional Electronic Skin Empowered with Damage Mapping and Autonomic Acceleration of Self-Healing in Designated Locations. *Adv. Mater.* (+Frontispiece).
- Khatib, M., **Zohar, O.** *et al.*, (2020). Highly Efficient and Water-Insensitive Self-Healing Elastomer for Wet and Underwater Electronics. *Advanced Functional Materials.*
- Balasubramanian, K., Wright, J., **Zohar, O.** *et al.*, (2020). Epitaxial Superconducting Tunnel Diodes for Light Detection Applications. *Optical Materials Express.*
- Zhao, J., Winetraub, *et al.*, (2020). Angular Compounding for Speckle Reduction in Optical Coherence Tomography using Geometric Image Registration Algorithm and Digital Focusing. *Scientific Reports.*
- Xing, X., Balasubramanian, K., Bouscher, S., **Zohar, O.** *et al.*, (2020). Photoresponse above 85 K of Selective Epitaxy Grown High-Tc Superconducting Microwires. *Applied Physics Letters.*

AWARDS & PATENTS

2021 Knight-Hennessy Scholar	*Autumn 2021*
Intuitive Surgical Best Poster at the SCIEN Industry Affiliates Meeting	*Spring 2021*
Best Poster at the Wearable Devices for Medical Diagnosis conference	*Winter 2019*
The Norman and Barbara Seiden family prize	*Spring 2018*
BAZAN Group Scholarship	*Summer 2018*
Patent: "A multifunctional and water-resistant electronic skin empowered with an autonomic self-repair mechanism."	*Summer 2022*
Technion president's award (7x, top 3% GPA) & Technion dean's award (1x, top 15% GPA).	

ADDITIONAL EXPERIENCE

LNBD, Technion University *Nov 2018 - Mar 2021*
Junior Researcher - Soft Electronics

Helped develop state-of-the-art self-healing multifunctional-multilayer electronic skins and sensors.

QUAD lab, Technion University *May 2017 - Oct 2019*
Student Research Projects (A & B)

- Developed high-TC Superconducting Nanowire Single-Photon Detectors. Initiated the Selective Growth method currently in use for producing YBCO SNSPDs.
- Physical, electrical, and thermal modeling of superconductor-semiconductor tunnel junctions.

OTHER SKILLS

Programming Languages	Python, Julia, MATLAB
Software & Tools	Working with remote Linux/Vertica/S3/GPC servers, GitHub
Other	LaTeX, MS Office

CONFERENCES & VOLUNTEERING

· Attended the IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR)	*2022*
· Presented a poster at the SCIEN Industry Affiliates Conference, Stanford.	*2021*
· Developed COVID19 early screening technology using ML and electronic stethoscopes.	*2020*
· Presented a poster at the Wearable Devices for Medical Diagnosis conference, Technion.	*2019*
· Attended the World Molecular Imaging Congress, Washington State Convention Center, Seattle.	*2018*