Ariel Slepyan

Contact Information

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Education

08/2020 – 08/2021	M.S.E in Biomedical Engineering	
	Johns Hopkins University	Baltimore, MD, USA
	Advisor: Professor Nitish Thakor	
08/2016 – 05/2020	B.S. in Biomedical Engineering	
	Johns Hopkins University	Baltimore, MD, USA

Research Experience

06/2020 –	Graduate Student	
	Neuroengineering & Biomedical Instrumentation Lab	
	Johns Hopkins University	Baltimore, MD, USA
06/2019 – 05/2020	Undergraduate Researcher	
	Neuroengineering & Biomedical Instrumentation Lab	
	Johns Hopkins University	Baltimore, MD, USA
Summer 2019	Researcher	
	Singapore Institute for Neurotechnology	Singapore
Summer 2018	Visiting Scholar	
	Interuniversity Microelectronics Centre (IMEC)	Leuven, Belgium
01/2017 – 01/2019	Undergraduate Researcher	
	BioMEMS Lab	
	Johns Hopkins University	Baltimore, MD, USA
Summer 2014/15	Research Intern	
	Groisman Lab	
	University of California, San Diego	La Jolla, CA, USA

Research Interests

Tactile sensing, E-skin, Neuromorphic Systems, Sensory Feedback, BCI, Neural Interfaces, Robotics, Wearable Devices, BioMEMS, Microfluidics, Point-of-care Diagnostics

Awards & Honors

2020	Recipient of Dean's Master's Fellowship
2019	Finalist for FastForward Summer Award ($10,000)
2018	Winner of Johns Hopkins Spark Grant
2017	2nd place overall winner at MedHacks 2017
2016	Recipient of Michael R. Bloomberg Scholarship
2016	2nd place in Microbiology at Intel ISEF 2016 (International Science and Engineering Fair)
2016	1st place in Engineering at the New York State Science and Engineering Fair
2015	1st place in Materials Science at the New York State Science and Engineering Fair

Teaching Assistantships

EN.580.657	Rehabilitation Engineering: Design Lab	Spring 2021
EN.580.571	Honors Instrumentation	Spring 2021
EN.580.771	Principles of the Design of Biomedical Instrumentation	Fall 2020
EN.580.477	Biomedical Data Science Lab	Fall 2019

Publications/presentations
1. A. Slepyan, S. Sankar, and N. Thakor "Texture Discrimination Using a Neuromimetic Asynchronous Flexible Tactile Sensor Array with Spatial Frequency Encoding", 10th International IEEE/EMBS Conference on Neural Engineering, 2021
   https://ieeexplore.ieee.org/document/9441136
2. A. Slepyan and N. Thakor, *"Towards scalable soft e-skin:* Flexible event-based tactile-sensors using wireless sensor elements embedded in soft elastomer", 2020 8th IEEE International Conference on Biomedical Robotics and Biomechatronics (BioRob), New York, 2020
   https://ieeexplore.ieee.org/document/9224353
3. A. Slepyan, R. Acharya, A. Silva, D. Kumar, and N. Thakor, "A Biomimetic Soft Finger for Palpation Applications", Do Good Robotics Symposium, Maryland, 2019
4. A. Slepyan, N. Ribeiro, A. Saad-Eldin, A. Blakney, "Rapid development of paper-based microfluidic devices using crayons and coffee filters", Baltimore Innovation Week Science Conference, 2017

Technical Skills

Microfabrication: Photolithography, Etching, Thin Film Deposition, Bonding, Mask Design, PDMS
Programming: Python, C++, MATLAB, Machine Learning, Data Science
Prototyping/Instrumentation: Sensors, Hardware, Circuit Design, Microcontrollers, i2c/SPI, Bluetooth
Computer Programs: AutoCAD, LTSpice, KiCAD, 3D Printing

Major projects (see more on my webpage)
1. "Scalable tactile sensing e-skins through spatial frequency encoding" **2020-21 Master's Thesis**
2. "A flexible tactile sensing glove and haptic feedback armband connected by Bluetooth for facile tactile feedback in prosthetic hands" **2020**
3. "Teleoperation of a UR5 robotic arm with an attached prosthetic hand (3D printed), with soft fingertips and flexible, fabric-based force sensors" **2020**
4. "A Monte Carlo Simulation of the spectral response of a 7-layered human skin model for diagnostic imaging" **2020**
5. "*Towards scalable soft e-skin*: Flexible event-based tactile sensors using wireless sensor elements embedded in soft elastomer" **2019**
6. "A two-finger soft robotic gripper with tactile feedback for delicate grasping" **2019**
7. "A smart, wireless UV sensing wristband with alarm and snooze" **2019**
8. "Wireless video game control via motion sensing for bilateral transhumeral amputees" **2019**
9. "Vacuum based droplet loading for microfluidics" **2018** – **2019**
10. "Micro-droplet sorting using dielectrophoresis (DEP) in a silicon microchip" **2018**
11. "Rapid development of paper-based point-of-care diagnostics using an inexpensive piezoelectric inkjet printer" **2017 – 2018**
12. "Enzyme Kinetics Measurements in a Combinatorial Dynamic Droplet Array" **2017**
13. "Rapid development of paper-based microfluidic devices using crayons and coffee filters" MedHacks **2017**
14. "Microfluidic Analysis of E. coli Thermotaxis" **2014 – 2015**

Patents in progress (1)
   "Scalable, Event-Based Sensing Using Wireless Sensor Elements Embedded in Flexible Elastomer"

Leadership Experience

2017 – 2018	Team leader of student venture PPOC4.me
	Focused on developing accessible paper based microfluidic diagnostic devices using an inkjet printer. Member of TCO Lab's Hatchery Incubator. Presented at invitational Baltimore Innovation Week Science Conference (2017).
2017 –	Hardware Director at WJHU Student Radio