Ariel Slepyan

Contact Information

2701 N. Charles St, Room 235
Johns Hopkins University
Baltimore, MD

Tel: (516) 304-2517
Email: aslepya1@jhu.edu
Webpage: arielslepyan.me

Education

08/2020 – 05/2021	M.S.E in Biomedical Engineering Johns Hopkins University Advisor: Professor Nitish Thakor	Baltimore, MD, USA
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.580.771	Principles of the Design of Biomedical Instrumentation	Fall 2020
EN.580.477	Biomedical Data Science Lab	Fall 2019

Publications/presentations

1. 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
2. A. Slepyan, R. Acharya, A. Silva, D. Kumar, and N. Thakor, "A Biomimetic Soft Finger for Palpation Applications", Do Good Robotics Symposium, Maryland, 2019

Publications in progress

1. "Scalable sensing arrays with spatial frequency encoding" – Conference Paper, Winter 2021
2. "Multilayer Fingertip Sensors with Neuromorphic Feedback" – Journal Paper, Spring 2021
3. "Scalable soft e-skins through spatial frequency encoding" – Journal Paper, 2021
4. "High Density Tactile Sensing for Flexible e-Skins" – Review Paper, 2021

Major projects

1. "Teleoperation of a UR5 robotic arm with an attached prosthetic hand (3D printed), with soft fingertips and flexible, fabric-based force sensors" 2020
2. "A Monte Carlo Simulation of the spectral response of a 7-layered human skin model for diagnostic imaging" 2020
3. "Autonomous navigation robot with color coded navigation cues and distance sensors" 2020
4. "*Towards scalable soft e-skin*: Flexible event-based tactile sensors using wireless sensor elements embedded in soft elastomer" 2019
5. "A biomimetic soft finger for palpation applications" 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. "A method of wireless video game control via motion sensing for bilateral below-elbow amputees" 2019
9. "A breadboard-based ECG amplifier" 2019
10. "Vacuum based droplet loading for microfluidics" 2018 – 2019
11. "Development of a Microfluidic Flow Cytometry Device with Electrokinetic Focusing Capabilities" 2018
12. "Classification of embryonic stem cell-derived cardiomyocytes using a k-means algorithm and a linear classifier" 2018
13. "Micro-droplet sorting using dielectrophoresis (DEP) in a silicon microchip" 2018
14. "Rapid development of paper-based point-of-care diagnostics using an inexpensive piezoelectric inkjet printer" 2017 – 2018
15. "Enzyme Kinetics Measurements in a Combinatorial Dynamic Droplet Array" 2017
16. "Rapid development of paper-based microfluidic devices using crayons and coffee filters" MedHacks 2017
17. "Microfluidic Analysis of E. coli Thermotaxis" 2014 – 2015

Patents (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