

# Nikita Gennadevich Lukhanin

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CONTACT	<i>E-mail:</i> <a href="mailto:nikitalukhanin@gmail.com">nikitalukhanin@gmail.com</a> <i>Website:</i> <a href="https://lukhanin.net/">https://lukhanin.net/</a>	<i>Last updated:</i> August, 2023
ADDRESS	2521 Hearst Ave, Berkeley, CA 94709	
CURRENT POSITION	Graduate Research Assistant University of California, Berkeley Etcheverry Hall	
EDUCATION	<b>University of California, Berkeley</b> Ph.D., Mechanical Science and Engineering M.S., Mechanical Science and Engineering Advisor: Liwei Lin	<b>Expected: May 2025, May 2028</b>
	<b>University of Illinois at Urbana-Champaign</b> B.S., Mechanical Science and Engineering (Highest Honors) Advisors: Joaquín Rodríguez-López & Charles Schroeder	<b>May 2023</b>
	<b>College of DuPage</b> A.S., Engineering Science (High Honors)	<b>May 2021</b>
AWARDS AND DISTINCTIONS	National Science Foundation (NSF) Graduate Research Fellowship Awarded to roughly 1 out of every 7 entering doctoral students	<b>2023</b>
	Berkeley Fellowship Offered to highly qualified entering doctoral students	<b>2023</b>
	O. A. Leutwiler Award Recipient determined upon scholarship, personal qualities, and professional and cultural activities	<b>2023</b>
	“Best Presentation” Gulf Coast Undergraduate Research Symposium (GCURS) Awarded to the best presentation within the Materials Science and NanoEngineering section	<b>2022</b>
	Beckman Undergraduate Fellowship ( <a href="https://mechse.illinois.edu/news/47669">https://mechse.illinois.edu/news/47669</a> ) Award of \$3,000 given to 5 undergraduates a year for interdisciplinary research	<b>2022</b>
	James Scholar Honors distinction offered for maintaining a minimum of 3.5 GPA	<b>2021</b>
	Academic High Honors High honors distinction offered for maintaining a minimum of 3.5 GPA	<b>2019</b>
	Scholastic Gold Medal Award “Moon Rocks” Highest distinction in high school art competition	<b>2019</b>
	Scholastic Gold Medal Award “Bird House” Highest distinction in high school art competition	<b>2018</b>
PUBLICATIONS	<ol style="list-style-type: none"><li><b>Lukhanin, N.</b>, Pence, M., Rodríguez, O., Rodríguez-López, J. FlexScope: A Compliant Mechanism Based Scanning Electrochemical Microscope <b>2023</b> (In Progress)</li><li><b>Lukhanin, N.</b>, Oh, I., Pence, M., Rodríguez, O., Rodríguez-López, J., Schroeder, C. The Electrolab: An Open-Source, Modular Electrochemical Platform Using a Solution Handling Robot for Automated Characterization of Redox-Active Electrolytes <b>2023</b> (Submitted)</li><li>Pence, M., Rodríguez, O., <b>Lukhanin, N.</b>, Schroeder, C., Rodríguez-López, J. Automated Measurement of Electrogenenerated Redox Species Degradation Using Multiplexed Interdigitated Electrode Arrays <i>ACS Meas. Sci. Au</i> <b>2022</b> (<a href="https://pubs.acs.org/doi/10.1021/acsmasuresciau.2c00054">https://pubs.acs.org/doi/10.1021/acsmasuresciau.2c00054</a>)</li></ol>	

RESEARCH  
POSITIONS

**Rodríguez-López Laboratory**

**Champaign, IL**

Undergraduate Research Assistant

October 2021-August 2023

*Multiplexed Interdigitated Electrode Array*

- Designed a low-current transducer for use between a working electrode and a current follower
- Created shielded multiplexer for use with microfabricated arrays for chemical characterization

*FlexScope: Compliant Mechanism Based Scanning Electrochemical Microscope*

- Invented a high-resolution compliant mechanism capable of nanometer level resolution
- Designed a 3-dimensional rigid stage that limits external vibration and noise
- Implemented scheduling algorithm on teensy platform to manage sensor and motor processes
- Developed a PID loop calibrated through Ziegler-Nichols method for noise reduction
- Engineered a 6.5-digit low-noise voltmeter under \$100 that interfaces through SPI and I2C

*Electrolab: An Automated Electrochemical Characterization Platform*

- Utilized KiCad to design an embedded system capable of managing, power, motors, and sensors
- Established motion planning through sequential device motion and a trapezoidal velocity profile

**Schroeder Group**

**Champaign, IL**

Undergraduate Research Assistant

October 2021-August 2023

*Electrolab: An Automated Electrochemical Characterization Platform*

- 3D printed microfluidic fluid manipulation traps capable of controlling a living cells motion
- Formalized a protocol on the microcontroller for higher level GUI and API communication

*Electrolab Mini: A Droplet Based Automated Characterization Platform*

- Redesigned HV SMPS, multiplexer, and software from the OpenDrop platform
- Modified droplet manipulation PCB to support FluoroPel coating and microfluidic pumps

INTERNSHIPS

**SGS IBR Laboratories**

**Ann Arbor, MI**

Automation Engineering Intern

June 2021-August 2021

- Conceived and built debris simulant mixing machine up to industry standards
- Designed an enclosed solenoid timing circuit for oil filter testing stands
- Automated cleanroom vacuum testing benefiting trial accuracies and repeatability
- Modeled high pressure air test stand accelerating current and future construction

LEADERSHIP  
EXPERIENCE

**College of DuPage Robotics Team**

**Glen Ellyn, IL**

President

May 2020-June 2021

- Coordinated the design, software, and assembly of the rover for the NASA Lunabotics
- Established 3 business relationships for part fabrication while machine shops were closed
- Developed and led a virtually controllable sumo-bot outreach event for high-school students
- Conceptualized and 3D printed 6-foot robot arm with a differential manipulator

**College of DuPage Engineering Club**

**Glen Ellyn, IL**

Vice President

May 2020-June 2021

- Organized and ran Chicago inner-city outreach events to connect students with engineering
- Presented at annual Engineering Olympics competition to 250+ high-school students
- Managed \$30,000 towards club expenses, funding, and donations for robotics and outreach
- Directed class projects and discussions within engineering seminars in groups of 20+

CLUBS AND  
SOCIETIES

Illinois Triathlon Club (Member)

**2022-2023**

iRobotics (Member)

**2022-2023**

Ukrainian Student Association (Member)

**2022-2023**

American Society of Mechanical Engineers (Member)	<b>2021-2023</b>
American Chemical Society (Member)	<b>2021-2023</b>
Robotics Team (President)	<b>2019-2021</b>
Engineering Club (Vice President)	<b>2019-2021</b>

PRESENTATIONS AND TALKS	Undergraduate Research Symposium ( <b>University of Illinois, IL</b> )	<b>Spring 2023</b>
	“High-Precision Compliant Mechanism for Use in Scanning Electrochemical Microscopy”	
	Gulf Coast Undergraduate Research Symposium ( <b>Rice University, TX</b> )	<b>Fall 2022</b>
	“High-Precision Compliant Mechanism for Use in Scanning Electrochemical Microscopy”	
	Turkey Run Analytical Chemistry Conference ( <b>Turkey Run State Park, IN</b> )	<b>Fall 2022</b>
	“High-Precision Compliant Mechanism for Scanning Electrochemical Microscopy”	
	Undergraduate Research Symposium ( <b>University of Illinois, IL</b> )	<b>Spring 2022</b>
“High-Precision Compliant Mechanism for Scanning Electrochemical Microscopy”		
Engineering Olympics ( <b>College of DuPage, IL</b> )	<b>Fall 2020</b>	
	Outreach event for local high schoolers	

## SKILLS

### **Computer Languages:**

C++, Python, C, R, G Code, Bash, HTML

### **Applications:**

Solidworks, MATLAB, Fusion 360, KiCad, WEBENCH, Ansys, Mathematica, MS Office

### **Technologies:**

3D Printing, CNC, Embedded Systems, Arduino, ESP, Teensy, ROS, Git, Jetson Xavier NX, IoT

### **Spoken Languages:**

English, Russian, Ukrainian