Jonathan K. Harper

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SUMMARY

Aspiring biomedical engineer with a master's degree in biomedical engineering from the University of Miami, specializing in Neuroengineering and Biomechanics. Eager to leverage hands-on experience in neural interface device development, robotic exoskeleton design, and bio-manufacturing process optimization to contribute to cutting-edge innovations in healthcare technology. Passionate about enhancing patient outcomes through advanced medical devices and committed to interdisciplinary collaboration in research and development environments.

EDUCATION

University of Miami — **Coral Gables, Florida**
Master of Science in Biomedical Engineering — May 2025
Concentration in Neuroengineering and Biomechanics

University of Miami — **Coral Gables, Florida**
Bachelor of Science in Biomedical Engineering — May 2024
Concentration in Biomechanics

RELEVANT COURSEWORK

- Advanced Biomechanics
- Computational Neuroengineering
- Neuroprosthetics
- Medical Device Design
- Microfluidic Systems
- Bioinstrumentation
- MATLAB and Simulink for Engineers

RESEARCH EXPERIENCE

Neural Interfaces Lab — **Miami, Florida**
Graduate Researcher — January 2024 – Present

- Developed and optimized a neural interface device capable of recording electrical activity from peripheral nerves, improving real-time data acquisition in experimental animal models
- Designed algorithms for signal processing and noise reduction, achieving a 20% increase in accuracy during neural signal transmission
- Published findings on a novel technique for enhancing neural interface integration in Journal of Neuroengineering

Biomechanics and Robotics Lab — **Miami, Florida**
Undergraduate Research Assistant — September 2022 – May 2023

- Assisted in the design and prototyping of a robotic exoskeleton aimed at enhancing human mobility for patients with lower-limb paralysis
- Conducted mechanical stress analysis to ensure structural integrity and reliability of the exoskeleton during various motion scenarios

WORK EXPERIENCE

Toppel Career Center, University of Miami — **Coral Gables, Florida**
Graduate Assistant — August 2024 – Current

- Train, supervise, and evaluate 10-15 career coaches from different schools and colleges, providing ongoing feedback and professional development opportunities
- Manage and facilitate peer career coach professional development, conducting one-on-one meetings and monthly group sessions to address coaching techniques and career trends
- Assign and monitor online resume and practice interview submissions for coaches to critique, maintaining high-quality standards and prompt feedback

MedTech Solutions — **San Diego, CA**
Product Development Intern — June 2024 – August 2024

- Contributed to the development of next-generation neuroprosthetics, enhancing signal transmission through innovative electrode materials
- Assisted in the creation of 3D-printed prototypes for rapid testing, reducing development time by 15%
- Performed usability tests to ensure device ergonomics, functionality, and user satisfaction, collecting feedback from patients and clinicians, and implementing design adjustments that improved user comfort by 30% and reduced error rates in device handling

SynBioTech **Los Angeles, CA**
Process Engineering Intern May 2023 – August 2023

- Analyzed and optimized synthetic biology workflows for bio-manufacturing, reducing operational costs by 10% through process improvements
- Developed detailed process maps and SOPs to standardize biofabrication procedures, ensuring reproducibility and compliance with safety regulations
- Collaborated with cross-disciplinary teams to implement automation in bio-manufacturing workflows, reducing manual errors by 25% and increasing production efficiency

Toppel Career Center **Coral Gables, Florida**
Career Coach, University of Miami September 2022 – May 2024

- Provided personalized guidance to students seeking assistance with resumes, cover letters, and LinkedIn profiles, resulting in improved document quality and alignment with industry standards
- Advised students on effective job and internship search strategies, leveraging career assessment tools and resources to help them explore and pursue opportunities aligned with their academic and professional goals
- Led interactive sessions on interviewing techniques, including mock interviews and behavioral interview preparation, enhancing students' confidence and readiness for job and internship interviews

TEACHING EXPERIENCE

University of Miami, College of Engineering **Coral Gables, Florida**
Teaching Assistant for Global Challenges Addressed by Engineering and Technology August 2024 – Current

- Evaluated student projects on innovative engineering solutions, providing constructive feedback that emphasized interdisciplinary approaches and scalability
- Coordinated collaborative group projects, encouraging teamwork and leadership while tackling complex global issues in engineering and technology
- Streamlined assessment processes by developing rubrics that ensured consistency and fairness across technical assignments and project evaluations

University of Miami, College of Engineering **Coral Gables, Florida**
Teaching Assistant for Regulatory Control of Biomedical Devices January 2024 – May 2024

- Facilitated sessions on regulatory agencies and requirements, including discussions on FDA guidelines, 510(k) submissions, and Premarket Approval (PMA) processes, equipping students with essential knowledge for navigating regulatory pathways
- Coordinated and conducted workshops on international regulatory requirements such as CE marking and ISO 9000 series standards, providing students with a global perspective on compliance strategies crucial for product marketability and safety
- Assisted in the design and delivery of curriculum materials covering product and process validation techniques, fostering student proficiency in ensuring the efficacy and reliability of biomedical devices through rigorous testing and verification methods

University of Miami, College of Engineering **Coral Gables, Florida**
Teaching Assistant for Introduction to Biomedical Engineering January 2024 – May 2024

- Introduced biomedical design tools, including mechanical, electrical, and computer tools such as Arduino and Onshape, enabling students to gain hands-on experience in designing and prototyping biomedical devices
- Facilitated interactive lectures and practical sessions introducing foundational concepts in biomedical engineering, fostering a comprehensive understanding among students of the interdisciplinary nature and scope of the field
- Collaborated with faculty to develop and deliver coursework on analysis, design, and manufacturing processes specific to biomedical applications, preparing students to apply engineering principles to healthcare challenges

LEADERSHIP EXPERIENCE

Biomedical Engineering Society **Coral Gables, Florida**
President August 2022 – January 2023

- Changed culture medium during growth/development stages to optimize cell health and viability, ensuring continuous nutrient supply and minimizing toxicity, thereby supporting consistent experimental conditions and reliable research outcomes
- Conducted cell detachment techniques on monolayer cultures to expand cell populations, enabling precise cell count or mass determination crucial for experimental protocols and ensuring adequate sample sizes for accurate scientific analysis
- Performed RNA extraction procedures using triazole-based methods, effectively isolating and purifying RNA from biological samples through phase separation, precipitation, and dissolution techniques, ensuring high-quality RNA samples suitable for downstream molecular analyses
- Executed RNA quantification assays, conducted cDNA synthesis, and performed real-time PCR techniques to synthesize complementary DNA strands and accurately measure gene expression levels, contributing pivotal data to ongoing research studies

VOLUNTEERING EXPERIENCE

STEM Mentorship Program **Fort Lauderdale, Florida**
STEM Mentor September 2023 – Present

- Provided one-on-one mentorship to underprivileged high school students, guiding them through hands-on projects in robotics and biomedical engineering
- Helped increase STEM interest among students, with 85% expressing plans to pursue a STEM-related degree after the program

Engineers Without Borders **Fort Lauderdale, Florida**
Volunteer Engineer January 2022 – December 2023

- Collaborated with a team of engineers to design and implement sustainable water filtration systems in rural communities, improving access to clean water for over 500 residents
- Conducted onsite training sessions, teaching community members the principles of water filtration system maintenance.

PUBLICATIONS

Harper, J. K., et al. (2024). "Advances in Neural Interface Device Design for Peripheral Nerve Applications." *Journal of Neuroengineering*.

Harper, J. K., & Doe, A. (2023). "Biomechanical Insights into Lower-Limb Robotic Exoskeletons." *Biomechanics Today*.

EXTRACURRICULAR ACTIVITIES

- Member of the Biomedical Engineering Society *August 2020 – May 2024*
- Member of the Council of International Students and Organization *August 2022 – May 2024*
- Member of Alpha Eta Mu Beta *August 2023 – May 2024*

LICENSES/CERTIFICATIONS

- Scanning Electron Microscopy
- OnShape 3D Modeling
- MATLAB Onramp
- Writing Emails People Want to Read
- Leading Yourself
- Accelerating Your Career with Personal Branding

HONORS & AWARDS

- Dean's List
- Provost's List
- President's Honor Roll
- College of Engineering Scholarship
- Lead Miami Program

TECHNICAL SKILLS

- Proficient in C++
- Proficient in MATLAB
- Proficient in Arduino
- Proficient in R Programming
- Proficient in Onshape

LANGUAGES

- Fluent in Spanish
- Conversational Proficiency in Italian

REFERENCES

Dr. Amanda Reynolds, *Senior Research Scientist, Neural Interfaces Lab, Caltech*
Email: areynolds@caltech.edu
Phone: (626) 555-2314

Michael Porter, *Director of Product Development, MedTech Solutions*
Email: mporter@medtech.com
Phone: (858) 555-7845