# Orion Jusuf

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## EDUCATION

**Northwestern University** Anticipated June 2024
*B.S.* Biomedical Engineering w/ Computer Science Minor, *M.S.* Mechanical Engineering (Robotics/Controls) GPA: 3.97/4.00
Relevant Courses: Mechatronics, Machine Dynamics, Biomechanics, Transport, Manufacturing, Fluid Mechanics, Machine Learning

## EXPERIENCE

**Shirley Ryan Ability Lab** **Chicago, IL**
Biomechanics Research Intern March 2022 - Present
- Validated a computational biomechanical model of the arm and hand using ultrasound
- Awarded funding to optimize wrist surgical salvage procedures using novel simulation techniques
- Collaborated with OpenSim to detect and resolve 4.4 release bugs and ensure backwards compatibility with lab models
- Collaborating with Meta AI Research to develop more computationally efficient biomechanical models of the hand using ML

**Niles Township District for Special Education** **Niles, IL**
Medical Device Development Intern June 2021 - September 2021
- Acquired grant to modify diagnostic equipment and develop strengthening devices for students with disabilities
- Spearheaded creation of a novel physical therapy curriculum that improved vocational prospects of special education students
- Produced a database that manages over 500 students, automated assessment forms, and developed a program management guide

**Bone Tissue Engineering Lab at Stanford University** **Palo Alto, CA**
Research Intern June 2019 - August 2019
- Developed a series of biomaterial formulas, scaffold designs and evaluation methods that optimized the manufacturing conditions of biodegradable multi-material hydrogel scaffolds using an augmented 3D-printer
- Created and distributed Python code packages using OpenCV to streamline tedious image processing tasks

## SKILLS

**Programming:** Python, C, C++, MATLAB, GitHub, CSS, HTML
**Software:** Solidworks/Inventor/NX, KiCAD/LTSpice, OpenSim, SimTK, Simulink, Microsoft Office
**Fabrication:** 3D Printing, Laser Cutting, PCB Design, Mill, CNC Router, Lathe, Sheet Metal, Arduino, PIC, GD&T
**Languages:** English (Native), Mandarin Chinese (Conversational), Spanish (Conversational)

## ACTIVITIES

**Northwestern Biomedical Engineering Society** **Evanston, IL**
President, Treasurer May 2021 - Present
- Led an overhaul of executive board structure including the introduction of 6 new officer positions and 3 committees
- Established new biweekly newsletter, individual/group mentorship meetings, networking events, and a medical device design team

**Northwestern Theme Park Engineering and Design Group** **Evanston, IL**
Treasurer, Technical Director March 2022 - Present
- Fundraised over 30,000 dollars for club initiatives; Implemented internal purchasing guidelines and financial records systems
- Led student teams through design and construction of a concert sensory space and Northwestern's first haunted house
- Managed event space and equipment contracts, purchased materials, drafted attraction layouts, and developed safety protocols

Project Manager, Mechanical Lead | **ISU Ride Engineering Competition** January 2021 - Present
- Led team of over 30 members through the design, and industrial manufacturing of an amusement park flat ride model, which autonomously operated for 8 hours during competition, maintained high throughput, and satisfied relevant ASTM standards
- Trained team to design mechanical and electronic systems in CAD and utilize shop machinery for rapid prototyping

Team Leader | **Toronto Metropolitan Thrill Design Invitational (By Universal Creative)** June 2022 – November 2022
- Solved theme park attraction design challenges in a group of five designers and engineers within a short 24-hour time frame
- Presented novel designs for ride vehicles, interactive attractions, and safety devices to a panel of industry experts
- Won distinction in technical skills for novel ride vehicle design and recognitions for creative skills and innovation

Volunteer Design Consultant | **Shedd Aquarium Outdoor Spaces Project** May 2021 - December 2021
- Pitched the creation of a learning garden environment to the Shedd Aquarium using Unity to educate students about local biomes

**Northwestern Biomedical Engineering Department Undergraduate Curriculum Committee** **Evanston, IL**
Undergraduate Representative June 2021 - June 2023
- Communicated student feedback to professors and made recommendations regarding curriculum and course policies
- Directly influenced core course requirements, post-COVID absentee policies, and increased intradepartmental engagement

## PRESENTATIONS

"Linking biomechanical changes to grip strength deficits following surgical wrist redesign," BMES Annual Meeting, October 2022.