Nana Chang (She/her)

Biomedical Engineering Student

DeliceChangNY@gmail.com | 236-513-9637

linkedin.com/in/nanachang/ | nana-chang.github.io/portfolio/

TECHNICAL SKILLS

Software: MATLAB, R, Python, C++, Java, GitHub, ImageJ, FIJI, Dragonfly, OpenSim
Mechanical: SolidWorks, AutoCAD, Rapid Prototyping, Stress analysis, Generative design
Electrical: LT Spice, Altium, PCB Design, Circuit Analysis/Design, Signal processing
Certifications (UBC): Chemical safety, Biosafety, Radiation safety and protection, WHIMS

EDUCATION

University of British Columbia   **8/2026**
Bachelor of Applied Science - Biomedical Engineering - CGPA: 83

TECHNICAL WORK EXPERIENCE

ExoTechHK, Hong Kong Science Park, Hong Kong   **5/2025 – Present**
Biomechanics Analyst
- Processed marker-based motion data from lifting activities to quantify joint kinematics and dynamics
- Validated exoskeleton assistance efficacy by simulating and analyzing biomechanical load reduction
- Researched and troubleshooted solutions to optimize exoskeleton for ergonomic performance

Centre of Aging SMART, Vancouver Coastal Health Research Institute, Vancouver   **5/2024 – 8/2024**
Academic Research Assistant
- Trained a deep-learning model (U-Net) in Dragonfly for image segmentation of SEM image
- Evaluated model's performance with MATLAB, achieving a 98% Accuracy and 71% Dice coefficient
- Fabricated detailed 3D resin prints of trabecular bone structures from micro-CT scan
- Conducted examinations of femur specimens utilizing X-ray to assess bone mineral condition
- Presented findings to academic peers in meetings and created posters to showcase project highlights

The Chinese University of Hong Kong, Hong Kong   **5/2022 – 8/2022**
Biochemistry Research Assistant (Volunteer)
- Administered preventative peptide drug treatments on a fly model of traumatic brain injury (TBI)
- Operated a High Impact Trauma device to induce TBI in flies and measured Mortality Index at 24 hours
- Determine optimal trauma level to be 4 strikes as the effective threshold
- Presented experimental findings to academic peers, showcasing research and analysis

---

DESIGN STUDENT TEAM

Biomedical Engineering Student Team (BEST), UBC   **9/2024 – 4/2025**
Medical Innovation in Neurotechnology (MINT) Team member
- Optimized EEG-controlled bipedal robot structure with SolidWorks for stability and printability
- Designed a PCB for the overcurrent protection circuit, ensuring reliable power management
- Collaborating on integrating EEG signals with a deep learning model to classify signals for movement

---

TECHNICAL PROJECT

Portfolio - Showcasing my design team and engineering course projects

Adaptive Swing Footrest for wheelchair, course project   **1/2025 – 4/2025**
- Designed and prototyped a swing-based footrest mechanism with a pivot joint, spring tension, and a locking mechanism to ensure stability while allowing natural leg motion
- Conducted iterative testing on range of motion, footpad tensioning and locking mechanism
- Integrated material selection and cost analysis to optimize durability, recyclability, and affordability

Motion Monitoring with IMU, course project   **1/2024 – 4/2024**
- Analyzed cycling motion consistency at different speeds on 6 participants in MATLAB and quantified performance by filtering and standardizing to get root mean square error
- Collected body segment locomotion data with Inertial Measurement Units in smartphones

Automation of Cell Aspiration, course project   **1/2024 – 4/2024**
- Designed a high precision and accuracy negative pressure control device for cell aspiration
- Built sensing circuit using instrumentation amplifier and pressure sensor for accurate pressure readings
- Verified and validated prototype with elaborative testing on mechanical, electrical, and code assessment
- Assessed risk, failure modes, and requirements testing

Deadlift Augmentation Device, course project   **9/2023 – 12/2023**
- Directed comprehensive joint moment analysis of deadlifts in MATLAB, using marker-less motion tracking via OpenPose, identifying hip joint as bearing highest load with peak moment of 730 Nm
- Engineered a wearable sensor vest to collect data for posture improvement and injury prevention

Impact Detecting Device, course project   **1/2023**
- Collectively worked on design of whiplash injuries detecting devices to understand injury biomechanics
- Developed sensor-based method to collect head and neck kinetic impact data

Assistive Grip Device, course project   **11/2022**
- Coordinated as a group to create an assistive guitar pick grip for paralyzed individual
- Built physical prototypes and Weighted Decision Matrix to assess effective and robust design

Bike lane route, course project   **10/2022**
- Worked as a team to evaluate and select best bike lanes route in Vancouver based on various criteria
- Determined optimal route meeting needs of majority of stakeholders and ensure robustness

Cardboard chair design, course project   **9/2022**
- Collaborated collectively on designing a minimalistic compact cardboard chair
- Analyzed needs of stakeholders and generate prototype solutions

---

VOLUNTEER EXPERIENCE

Yan Chai Hospital, Hong Kong   **5/2019 – 8/2019**
Volunteer helper
- Educated visiting members of the public on basics of Alzheimer's disease
- Provided support and assistance to patients, including operating clinical machines as needed

---

OTHER WORK EXPERIENCE

Wah Fu Christian Church, Hong Kong   **6/2018 – 8/2018**
Teaching Assistant
- Delivered educational lessons to primary school children and provided structured daycare
- Planned and executed events including team building activities, extracurricular activities, outings etc.

UBC THE UNIVERSITY OF BRITISH COLUMBIA

Co-op Program
Faculty of Applied Science

COOP.APSC.UBC.CA
604-822-3022
aspc.coop@ubc.ca