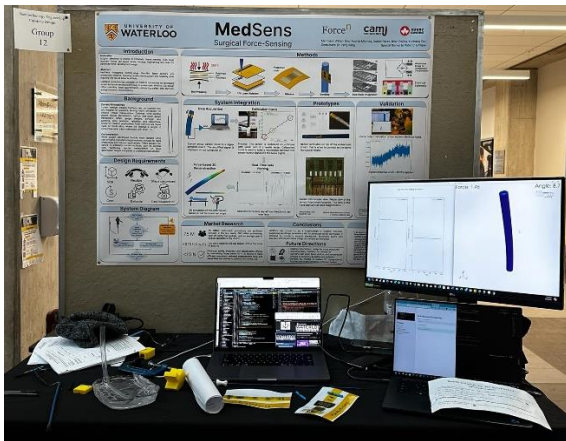
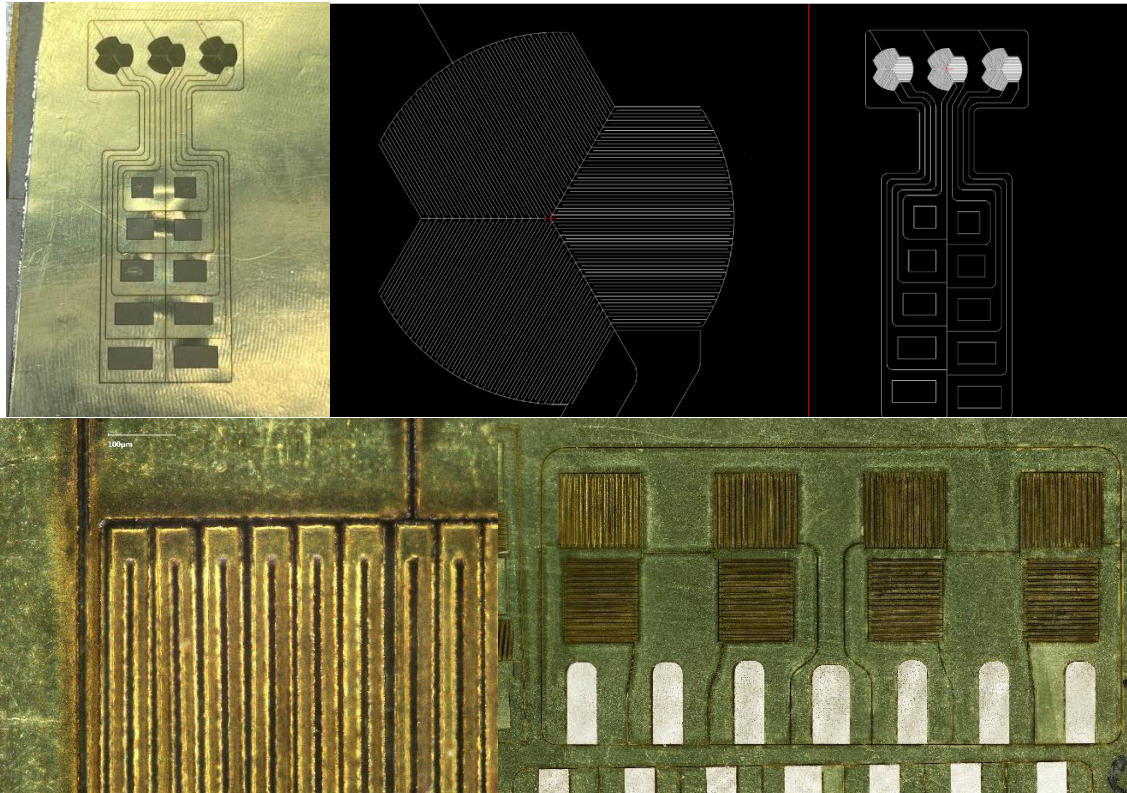


PORTFOLIO OF WORK

Endoscopic Seath Force Sensor

University of Waterloo & Forcen Inc.

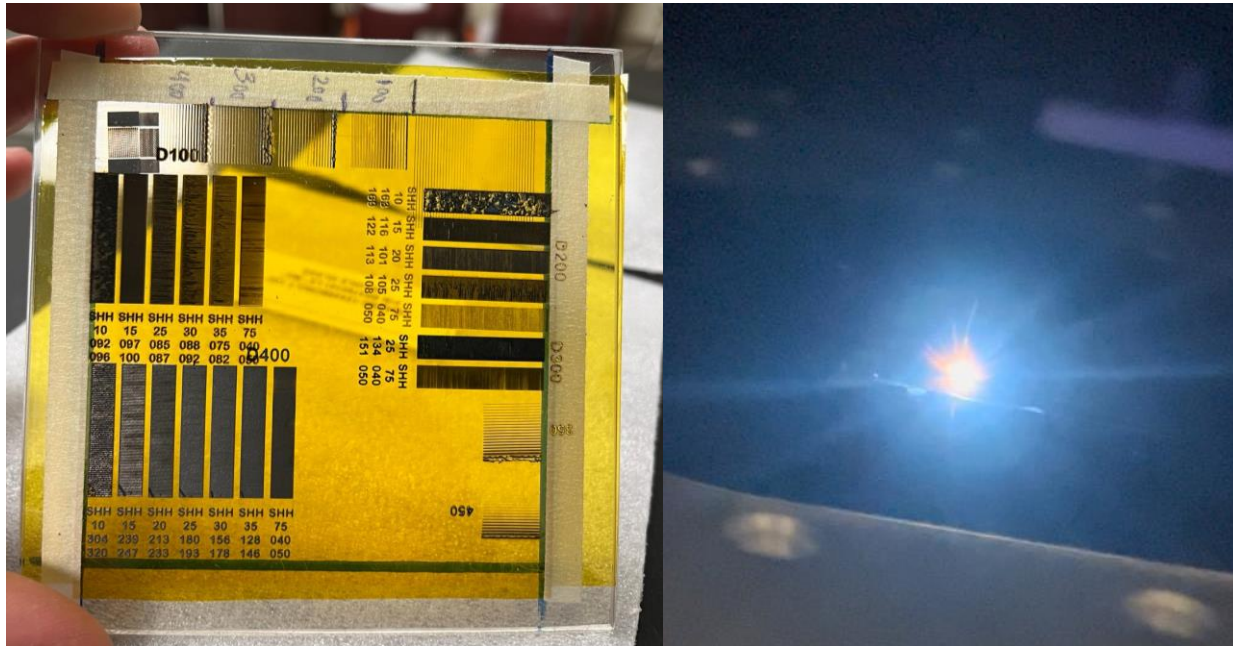
For real-time force-feedback, intuitive tissue and probe 3D reconstruction and safety systems.



Laser-Induced Graphene Bioelectronics

University of Waterloo

Flexible graphene bioelectronics focuses on integrated interconnection of multifunctional sensors on centimeter-scale 2D sheet for integration into Biomedical devices with 1D geometries.



Automated Testing Devices for Construction-Site Monitoring Sensors

Brickeye Inc.

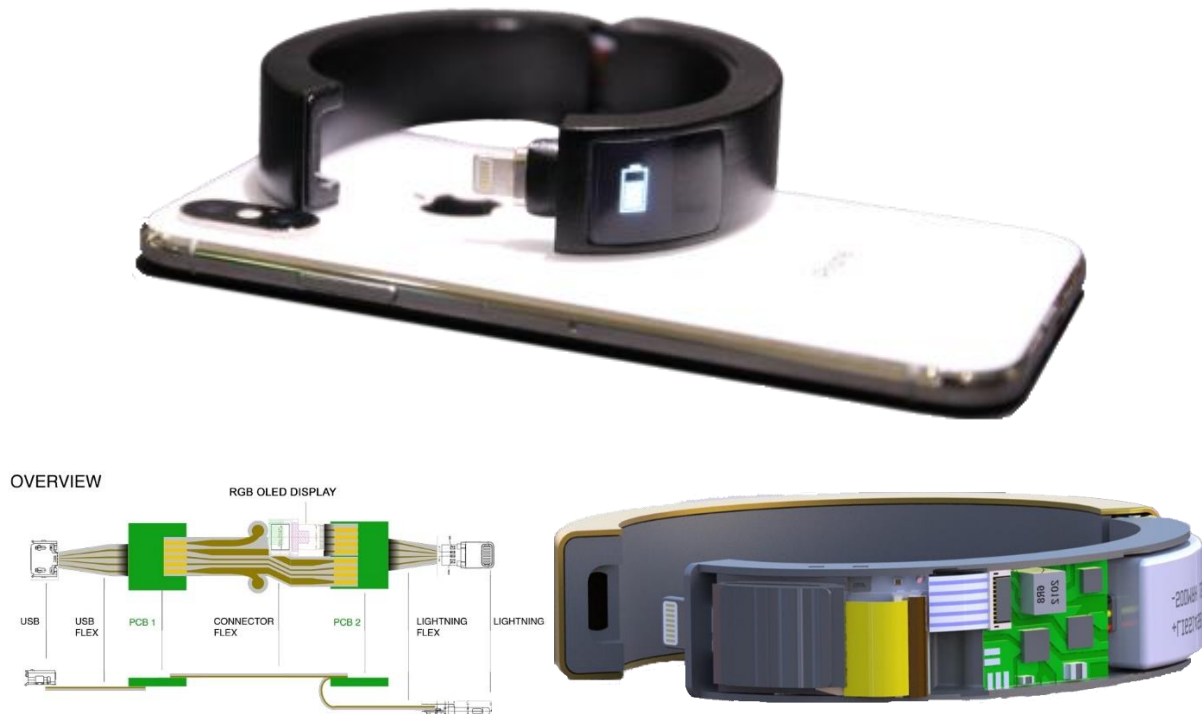
Robust design for rapid high-volume testing of environment-monitoring sensors.



Wearable Portable Charger Smart Band

Personal Project

UW Concept 5K pitch participant: solving battery-life and fitness tracking in one wearable device.



Integrated Joint-Torque and End-Effector Force-Sensing Robot Arm

Forcen Inc.

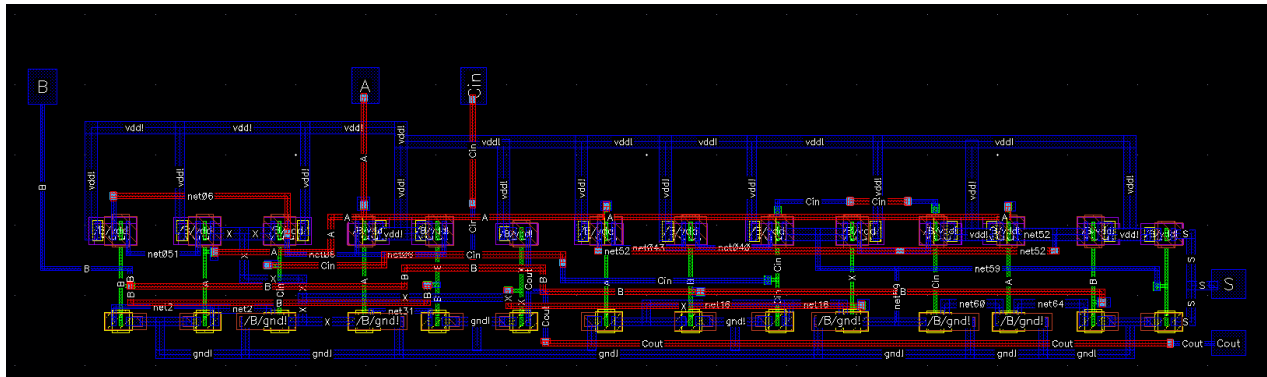
Planar 3-DOF arm for real-time force-feedback controlled actuation and calibration.



CMOS 1-bit Full Adder IC Layout

Course Project

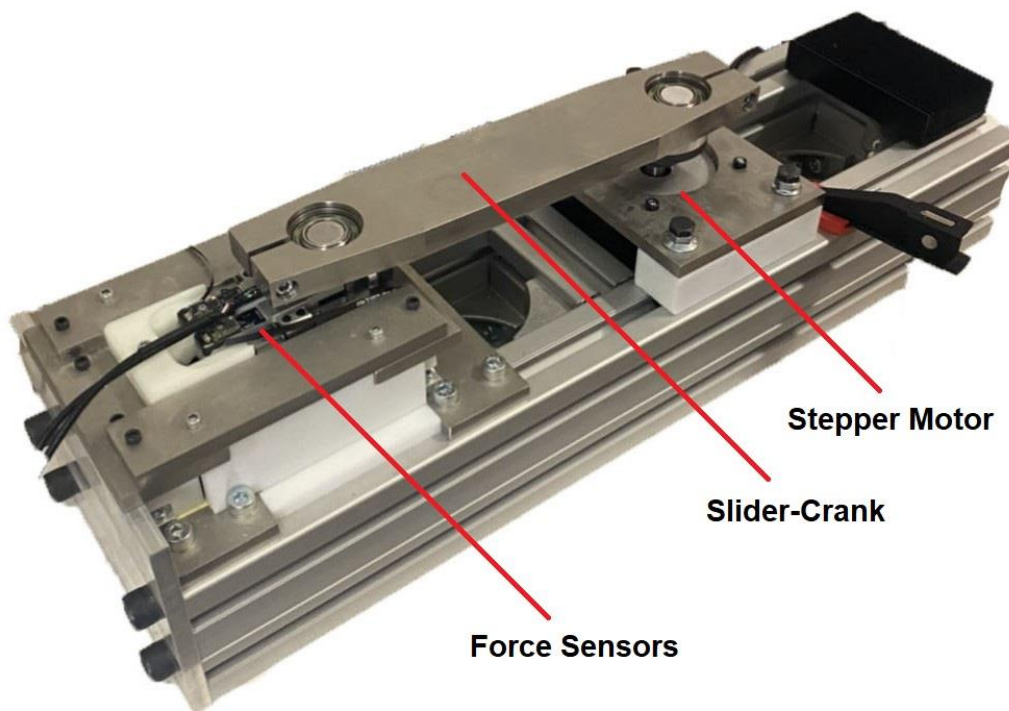
Designed in 45-nm technology with Cadence Virtuoso



Extended Lifecycle Automated Force Sensor Testing Fixture

Forcen Inc.

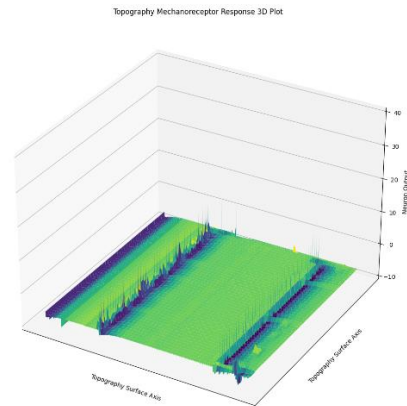
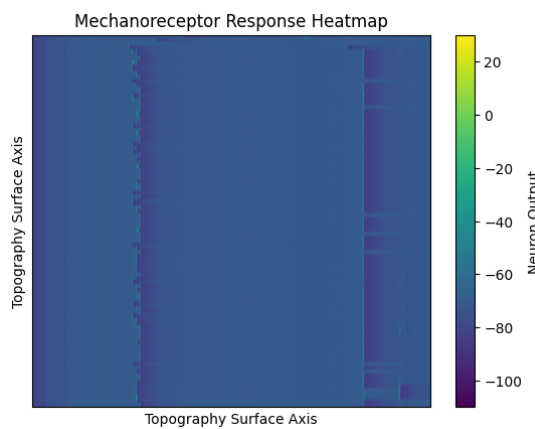
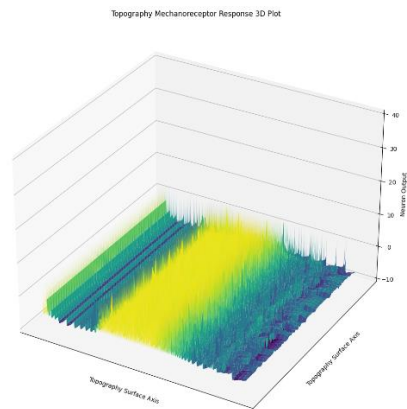
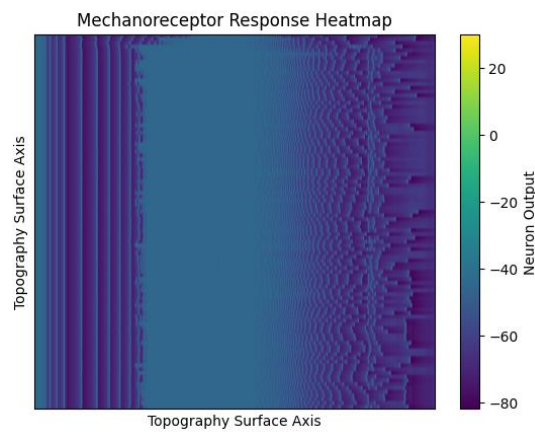
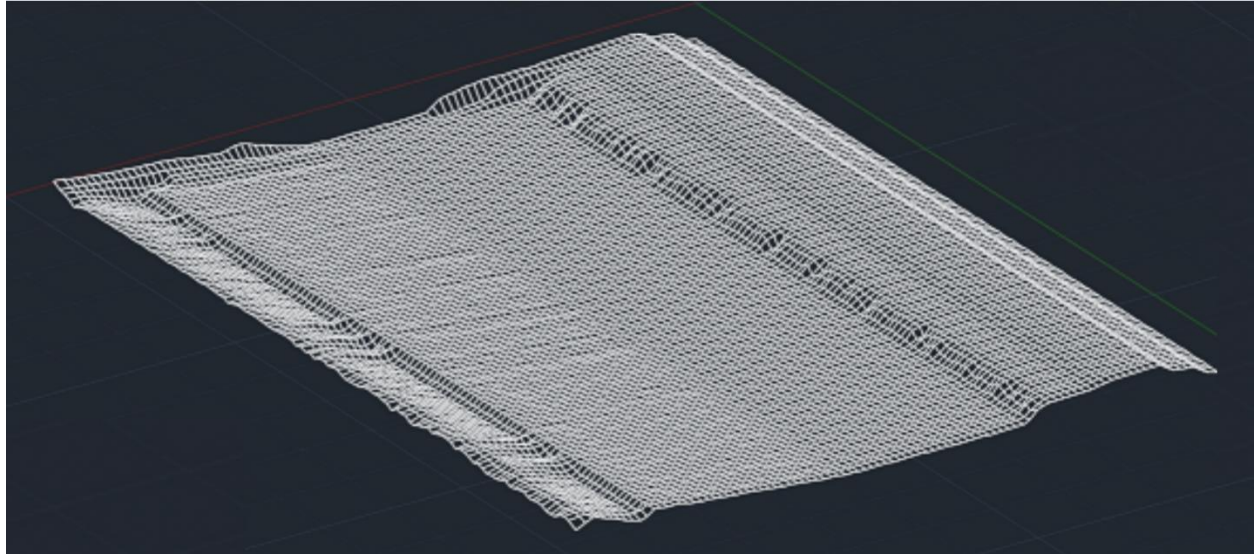
Cyclic 1-DOF bi-directional force loading for over 1 million cycles.



Mechanoreceptor Surface Scanning Model

Research Project

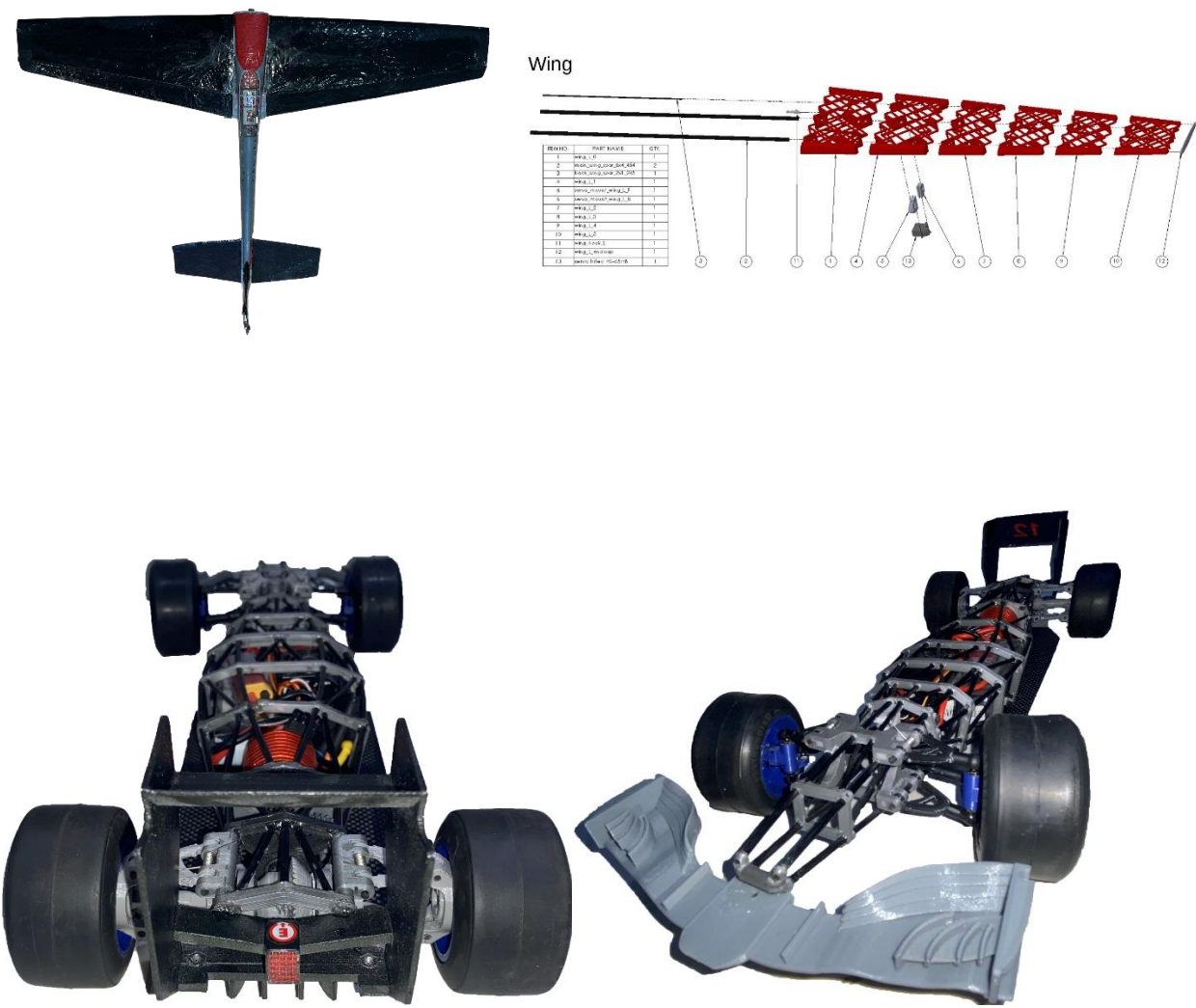
Developed an end-to-end model for the mapping fingertip scans of 3D topographical features to encoded FAI and SAI mechanoreceptor responses, comparing Izhikevich and multi-compartmental dynamic models for real-time efficiency and signal quality.



3D Printed Composite Aerodynamic Vehicles

Personal Project

3D-printed quasi-spaceframe chassis utilizing carbon fiber tubing. CFD and FEA optimized.



QCM200 Oscillator Circuit Replacement

Personal Project

Design and fabricate a PCB for a low-cost replacement of an oscillator circuit for a 5 MHz commercial quartz crystal microbalance (QCM) device, using a compensated pierce oscillator.



Medical Screening Devices Product Design

Sterasure Inc.

Integration of mm-wave radar-based contactless vital sign monitoring, SPO2 finger clip, and IR-based contactless SPO2 diagnostic tool for triaging applications.

