Jenny Ji Hyun Kim

jikimji@stanford.edu | +1 650 441 6216 | Palo Alto, CA

EDUCATION

ETH Zürich, Master's in Biomedical Engineering – Biomechanics, GPA: 5.39/6.00   *2020 - 2024*
McGill University, Bachelor of Mechanical Engineering, GPA: 3.55/4.00   *2013 - 2018*
Korea University, Exchange Semester Abroad   *2018*

RESEARCH EXPERIENCE

Life Science Research Professional, *Snyder Lab | Stanford School of Medicine,* Palo Alto   *Jan 2024 – Present*
Advisor: Michael Snyder, PhD

- Lead 'Beneficial Exposome' project to understand the impact of natural compounds on holistic human health; recruit and manage all communications with participants to ensure high-quality data collection
- Use statistical methods to analyze multi-omics, wearables, and survey data to evaluate the impact of environmental factors on individual health outcomes
- Write grant proposals to support funding for research projects
- Write review article summarizing the effects of various natural plant compounds on human health
- Supervise undergraduate and high school students, mentoring them in wet lab and dry lab techniques

Visiting Researcher, *Snyder Lab | Stanford School of Medicine,* Palo Alto   *July 2023 – Dec 2023*
Advisor: Michael Snyder, PhD

- Designed pilot project, 'Beneficial Exposome' and developed Institutional Review Board (IRB) protocol to conduct a human subject study on forty participants
- Utilized GC-MS methods for compound identification and quality assurance of essential oils
- Conducted cell-based assays (cell viability and immunoassays) to identify biomarkers influenced by natural compounds

Research Scholar, *Motion Analysis Lab | Harvard Medical School,* Boston   *Sept 2022 - June 2023*
Advisor: Paolo Bonato, PhD

- Collaborated with clinicians, from concept to study design, to create a LiDAR and video-based (RGBD) motion analysis and assessment tool for stroke telerehabilitation
- Developed IRB protocol
- Employed pose estimation algorithms, data analysis, and ML techniques to derive clinical score estimates (FMA)
- Utilized marker-based (VICON) and wearable sensor-based (Xsens) motion tracking to validate markerless body tracking
- Collect and synchronize multiple video (RGB), audio and wearable sensor data (IMU) for partial and full body tracking to estimate the recovery progress of stroke patients in home-based settings

Research Assistant, *Microsoft | Computer Vision and Geometry Group ETH Zürich,* Zürich   *May 2022 - Sept 2022*
Advisor: Marc Pollefeys, PhD

- Collected a multi-modal dataset (including ego-centric video; RGBD tracking, audio, and hand tracking) with Microsoft HoloLens 2; aimed at understanding complex human object manipulation to develop interactive AI assistants
- Recruited and collected data on over 30 participants
- Post-processed and performed quality checks on the collected data
- This work 'HoloAssist' was presented at ICCV 2023

Biomedical Research Student, *Center for Project-Based Learning | ETH Zürich,* Zürich   *Oct 2021 - Feb 2022*
Advisor: Michele Magno, PhD

- Designed wearable device with novel QVAR (charge-variation) capacitive sensor and inertial measurement unit (IMU) for human activity recognition and human pose estimation (further classified to detect posture within each activity)
- Acquired and annotated dataset to train traditional machine learning and deep learning models (RNN-LSTM, TCN)

Biomedical Research Student, *Balgrist University Hospital | ETH Zürich,* Zürich   *Apr 2021 - May 2022*
Advisor: Jonas Widmer, PhD

- Designed deep learning pipeline to aid surgeons in pre-operative planning and post-operative analysis of spinal surgeries
- Developed system for spinal parameter calculation and 3D-reconstruction of a patient-specific skeleton model from X-Rays
- Segmented region of interest using deep CNN based U-Net architecture implemented using TensorFlow
- Implemented CycleGAN to perform style transfer from Digitally Reconstructed Radiographs to X-Ray to improve model

EMPLOYMENT

Working Student, *Wingtra AG,* Zürich   *Apr 2021 - Apr 2022*

- Performed field tests on VTOL UAV, WingtraOne
- Quality assurance software updates; reported bugs and incidents that occurred in the field to responsible team leads

Teaching Assistant, *ETH Zürich,* Zürich   *Aug 2021 - Dec 2021*
- Assisted in curriculum design of the first-time course: Praktikum Medizintechnik, a course by the Department of Health Sciences and Technology (D-HEST)
- Aided 120 students in a practical course through CAD, FEA, and mechanical testing of a bone plate for a broken femur

Mechanical Engineer, *Mosaic Manufacturing,* Toronto   *Apr 2019 - Apr 2020*
- Created an automated, high throughput multi-material 3D printing system and industrial-level 3D printer
- Designed assembly in Solidworks, employing design for assembly (DFA) and design for manufacturing (DFM) practices
- Created detailed 2D drawings with comprehensive application of GD&T principles to ensure precise design specifications
- Reduced production costs by 80% by working with a contract manufacturer in China

Supply Chain Management Intern, *Rolls Royce Canada,* Montreal   *Sept 2017 - Dec 2017*
- Worked in scheduling to optimize database management of pending, active, and completed jobs in different teams
- Improved efficiency of workflow on the shop floor through tool developed using VBA to increase visibility and communication leading to an increase in reliability of schedule by 60%

Junior Mechanical Developer, *Quanser Consulting Inc.,* Toronto   *May 2015 - Sept 2015*
- Designed an add-on to the company's fundamental product, QUBE-Servo, to illustrate gear kinematics to students
- Experimented with Solidworks and 3D printing to produce pre-assembled, planetary gearboxes
- Presented at a conference (National Instruments (NI) Week) in Austin, Texas

PUBLICATION

Lang, S., Jokeit, M., **Kim, J. H.**, Urbanschitz, L., Fisler, L., Torrez, C., Cornaz, F., Snedeker, J. G., Farshad, M., & Widmer, J. (2024). Anatomical landmark detection on bi-planar radiographs for predicting spinopelvic parameters. *Spine Deformity*.

Lang, S., **Kim, J. H.**, Jokeit, M., Urbanschitz, L., … Widmer, J. (2024). *Automatic Prediction of Spinopelvic Parameters from Bi-Planar Radiographs.* International Meeting on Advanced Spine Techniques (SRS IMAST).

Kim, J. H., Corniani, G., & Bonato, P. (2023, Oct 9). *Recover-on-Track: A LiDAR and Video-based Tool for Stroke Telerehabilitation.* Body Sensor Networks - Sensors and Systems for Digital Health (IEEE BSN).

Jokeit, M., **Kim, J. H.**, Snedeker, J. G., Farshad, M., & Widmer, J. (2022, April 22). *Mesh-based 3D Reconstruction from Bi-planar Radiographs.* Medical Imaging with Deep Learning (MIDL).

Berends, W., **Kim, J.,** Wunderlich, B. (2016, Oct 3). *Contact Resistance versus Pressure of Electrical Connections Used in Aluminium Smelter Potlines.* International Committee for Study of Bauxite, Alumina & Aluminum (ICSOBA).

AWARD

Best Poster Award: IEEE Body Sensor Networks - Sensors and Systems for Digital Health   *2023*
Best Pitch Award: ETH Sustainable Development Goal Pitch Event   *2021*
Best Pitch Award: AI + X Summit   *2021*

OTHER EXPERIENCE

InCube Challenge Participant, *ETH Entrepreneur Club | Microsoft,* Zürich & Lugano   *Oct 2021*
- Lived in a glass cube on campus with teammates for one week to solve a challenge presented by Microsoft: 'How can we leverage space technology to improve local quality of life?'
- Developed 'KALDI', a risk management tool utilizing satellite data and AI, designed to help coffee roasters minimize the impact of climate change on the coffee supply chain

Technical Director/Mechanical Designer, *McGill Baja Racing Team*   *Sept 2015 - Feb 2018*
- Optimized the suspension of the 2017 and 2018 Baja with focus on validation and design cycle completion (Designed geometry using Optimum Kinematics; Built CAD assembly and performed FEA using NX); reduced turning radius by 20%
- Operated CNC machines, executed carbon fiber layups and conducted simple machining processes
- Managed the team's engineering drawings to be sent to manufacturing sponsors and raw material suppliers
- Offered technical support to team members and overviewed system integration
- Drove vehicle, placed: 3rd in Hill Climb, 6th in Acceleration, 3rd Dynamics, 12th Overall out of 108 teams

Events Coordinator of POWE (Promoting Opportunities for Women in Engineering) McGill   *Sept 2014 - Sept 2015*
- Assisted in planning all POWE's social and personal/professional development events
- Spearheaded social media advertising and designed posters using Adobe InDesign & Illustrator, enhancing brand visibility

SKILLS & INTEREST

Software: Python, MATLAB, Solidworks, Siemens NX, Fusion 360, Optimum Kinematics, OpenSim, Unity, Blender

Interests: Painting, Yoga (Yoga Alliance RYT 500 Certified), Rock Climbing (Korea University Alpine Club, Akademischer Alpenclub Zürich, Harvard Mountaineering Club)