MINSOL (MICHELLE) KIM

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EDUCATION

Wellesley College (GPA: 3.82) Wellesley, MA
Candidate for B.A. in Computer Science and B.A. in Data Science Sept 2020 - May 2024
Thesis: *Towards Translating Brain Activity into Drone Navigation: Brain-Computer Interfaces for Communication and Control*
Advisor: Dr. Christine Bassem, Dr. Nataliya Kosmyna
With the aim of enhancing lightweight machine control, the thesis explores the use of BCIs to stream EEG and EOG data for interpreting user actions. The focus is on a gamified Bitcraze drone control interface that responds to cognitive load and eye blinks.

- **Notable Courses***: Distributed Computing, Tangible User Interface, Human Computer Interaction, Multivariate Statistics, Regression Analysis and Statistical methods, Applied Data Analysis and Statistical Inference, Theory of Computation, Fundamentals of Algorithms, Differential Equations with Applied Linear Algebra, Classical Dynamics, Product Creation for All*
- **Upcoming Courses**: *Modeling for Computer Systems, Foundations of Computer Systems with Laboratory, Causal Inference*

Massachusetts Institute of Technology Cambridge, MA
Cross-registered Student Sept 2021 - Present

- **Notable Courses***: Intro to Machine Learning (6.036), Process Data Analytics (2.874), Project Engineering (6.914)*
- **Upcoming Courses:** *Computational Sensorimotor learning (6.884)*

RESEARCH EXPERIENCE

MIT-IBM Watson AI Lab Cambridge, MA
Machine Learning Research Intern (MIT UROP, CareerEd Grant) Feb 2023 - Present
Mentor: Dr. Li-wei Lehman

- Led development of Autoregressive Hidden Markov Model (AR-HMM) to predict fluid treatment response outcomes.
- Established data pipeline to efficiently process large scale minute-by-minute data of critical care unit patients, sourced from the encrypted Physionet MIMIC-II and MIMIC-III databases.

MIT Media Lab Fluid Interfaces Group Cambridge, MA
Research Assistant (MIT UROP) Feb 2023 - Present
Mentor: Dr. Nataliya Kosmyna

- Developed real-time facial recognition and imaging software to report blink counts, generating true labels as part of online Blink detection Software using Electro-oculography (EOG) analysis project, which I am currently leading.
- Resolved network and system issues for portable Brain-Computer Interfaces (BCI) and neural signal analysis, contributing to the successful interactive display for NEURALIMINAL exhibition at Boston Cyberarts Gallery.
- Provided comprehensive code inspection, user-centric design support, and troubleshooting for Panda3D gaming software involving joysticks, enabling seamless usage across various devices.
- Collaborated with NASA-National Aeronautics and Space Administration for recording EEG and EOG to record brain activity during parabolic flight and investigate neuroscience of group interactions in ecologically natural settings.

Wellesley Human-Computer Interaction Laboratory Wellesley, MA
Research Assistant (NSF funded) May 2022 -Aug 2022
Mentor: Dr. Orit Shaer

The Mobile Office: The Future of Work and Well-being in Automated Cars (National Science Foundation funded)

- Optimized driver experience, adapting user mental model after conducting elicitation study with 373 commands.
- Led 3-month development of remote controller for Augmented Reality Windshield display on automated cars

DISCOVRE: Distributed Immersive Scientific Collaboration Over Virtual Reef Environments

- Submitted pictorials at TEI, leading 50 user studies in Virtual Reality environment and analyzing data with Atlas.ti.
- Incorporated stakeholder and customer feedback, presenting a high-fidelity prototype for a mobile app.

MIT IDSS Device Realization Laboratory Cambridge, MA
Research Assistant (MIT UROP) Jan 2022- May 2022
Mentor: Dr. Brian Anthony

- Developed predictive control system for error detection in alignment and folding process of packaging machines.

MIT Center for Collective Intelligence Cambridge, MA
Research Assistant Oct 2021 - May 2022
Mentor: Dr. Thomas Malone

- Recruited and contributed to the study design for assessing GPT-3 performance in short story writing
- Enhanced inter-rater reliability in the pilot study, optimizing the testing process and quality metrics.

TEACHING & LEADERSHIP EXPERIENCE

Massachusetts Institute of Technology Cambridge, MA
Engineering Leader II (Team Coach), Gordon-MIT Engineering Leadership Program Sept 2021 - Present

- Cultivated leadership and management skills for driving successful engineering teams in a selective 2-year program.
- Coached teams of five students in the program every week, leading debrief sessions and providing progress reports.
- Developed class material and led Inquiring & Dialoguing lab section of 50 students and managed 8 industry guests.
- Actively deployed structured communication and architected solution concepts in engineering contexts.

Wellesley College Wellesley, MA
Teaching Assistant
CS 235 Theory of Computation Sept 2023 - Present

- Led lab every week, creating support documents, explaining Java concepts, and troubleshooting software.

CS 320 Tangible Interfaces Jan 2022 - May 2023

- Guided MVP developments, assisting in A-Frame AR & VR, Flora, Arduino, Sewable Circuits, and DALL-E.

CS 230 Data Structures Jan 2022 - May 2022

- Led lab every week, creating support documents, explaining Java concepts, and troubleshooting software.

INDUSTRY EXPERIENCE

WUD' V (Second-hand fashion market Startup) Chicago, IL
Co-founder, Brand Manager Jul 2022 - Feb 2023

- Headed development of business strategy and organizational relationships, managing projects using tools such as project backlog across cross-functional teams of design, web programming, and marketing.
- Acquired 3x signups, redefining Ads and go-to-market strategy based on Gen-Z customer journeys.
- Instrumented company dashboard with Qualtrics, analyzing website A/B testing and user feedback.
- Increased CVR by 15%, improving UX/UI and selecting & featuring sellers according to brand strategy.

BlueCapCan Inc. (EV battery component manufacturer) Seoul, South Korea
Technical Product manager Intern Dec 2021 - Feb 2022

- Established 10+ partnerships including with Mercedes-Benz and Ford, creating pitch decks.
- Created and communicated timelines using ClickUp, sharing corporate priorities across three teams.

PUBLICATIONS / CONFERENCES

1. Nataliya Kosmyna, Daniel Hails, Eugene Hauptmann, Christopher Markus, Zoe Lee, Gun Bolukbasi and **Minsol Kim**. "Using Wearable Brain Sensing Glasses during Zero-G Flight for Hyperscanning: Preliminary Study," AIAA 2023-4656. ASCEND 2023. October 2023.

2. **Minsol Kim**, Li-wei Lehman. "Characterizing Dynamics of Vital-Sign Signals Using Switching State Space Modeling to Assess Fluid Responsiveness in ICU Patients," American Medical Informatics Association (AMIA) [preprint]. September 2023.

3. Monsurat Olaosebikan, Claudia Aranda Barrios, Katie Gdula, **Michelle Kim,** Josephine Ramirez, Jennifer Enriquez, Angelora Cooper, Lenore Cowen, Orit Shaer. "Embodied Notes: Re-imagining note-taking for academic discovery and learning in VR," ACM International Conference on Tangible, Embedded and Embodied Interaction [preprint]. August 2022.

RECOGNITIONS

Award: *Best Use of Framer and TypeDream,* MLH Frey Hacks (1st/700 participants, 75+ projects) Jun 2022

- Led 48-hour web-app development, visualizing AI-based illness prediction and vacation recommendation.
- Developed a mobile app sharing least-resource-requiring recipes, tackling college food insecurities.

Award: *Silver Medal,* International Young Physicists' Tournament (35 national teams) Aug 2018 - Jul 2019

- Led team of 5 for 11 months, modeling and testing 17 real-world open-ended engineering problems.
- Received the highest score (10/10) in presentation and debate, focusing on data and model visualization.

SKILLS

Programming: *Proficient in Python, Java, HTML/CSS, JavaScript, Familiar with C++, GoLang*
Data Analysis: *R, MATLAB, PyTorch, TensorFlow, Atlas.ti, MySQL*
Libraries: *OpenCV, Scikit, Numpy, Pandas, Panda3D, OpenAI, Bleak, tqdm, click*
Prototyping and Modeling: *Figma, InVision, OnShape, Solidworks, Vercel, Flora, Arduino, A-Frame, Oculus SDK, Unity3D*
Language: *Fluent in Korean and English, Elementary Spanish and French*