

Xinlei Yu

Xinlei's Website(click here)	Los Angeles, California, United States	xinleiyu@usc.edu/leoyuusc@gmail.com
Education	University of Southern California , Los Angeles, CA, United States Master of Science in Computer Engineering Current GPA:3.54/4.0	January 2022-Present Graduation: December 2023
	Iowa State University , Ames, IA, United States Bachelor of Science in Computer Engineering with Cum Laude	January 2018-December 2021
On-Going Work	Wearable Electro-tactile Stimulation Device <ul style="list-style-type: none">Working on a haptic project focused on understanding how humans perceive and emotionally respond to electro-tactile stimulation. The ultimate aim is to create a device that offers personalized and pleasant electro-tactile feedback, integrating smoothly with visual and auditory stimuli.	
Presentations	<i>Electro-tactile Stimulation as a Modality for Sensation Illusion on the Arm, Irvine, CA, United States.</i> Southern California Robotics Symposium, Oral Presentation, September 2023 (SCR '23). <i>Tummy Time Toy, Los Angeles, CA, United States</i> NSF DARE conference, Demo at Lab Tour, March 2023 (DARE '23).	
Research Experience	USC HaRVI Lab with Prof. Heather Culbertson Worked on a <i>electro-tactile stimulation device</i> project as the co-leading researcher and presented preliminary results at the Southern California Symposium 2023 (SCR'23). <ul style="list-style-type: none">Presented preliminary results on the effect of the perception of Electro-tactile feedback on the forearm about factors such as location, frequency, and skin moisture based on previous studies at SCR'23.Designed a reinforcement learning-based Electro-tactile calibration method using a multi-armed bandit algorithm to discover the unknown human perception of the electro-tactile stimulation and find the optimal and personalized signal parameters for rendering pleasant electro-tactile stimulation.Participated in presenting a research poster at the World Haptics Conference 2023. USC Brain-Body Dynamics Lab with Prof. Francisco Valero-Cuevas Worked on <i>Tummy Time Toy: Infant Motor Learning Assistant Toy</i> project. <ul style="list-style-type: none">Developed the "Tummy Time Toy," a computer vision-assisted infant toy pending patent, designed to promote prone motor skills by rewarding head lifts with stimuli, and aimed at improving voluntary muscle control and tummy time duration. The toy features an interactive front end and a back end with computer vision and control logic.Implemented a computer vision algorithm to track infant head motion with OpenCV-Python, and constructed a full-stack web application using HTML, CSS, JavaScript, and Python Flask for remote research monitoring, data collection, and toy control.Developed a portable, microcomputer-controlled base for the tummy time toy, incorporating relay circuits and a custom 3D-printed housing.Demonstrated the Tummy Time Toy at NSF DARE conference 2023 as part of lab tour.	
Grad Research Course Projects	EE 675 Data Analysis and Control Techniques for Neurotechnology Design with Prof. Maryam Shanechi The main research question is whether the use of the Kalman filter and smoothing can enhance the accuracy of EEG in recognizing emotions, especially considering prior work has demonstrated high accuracy. The project utilized SEED dataset provided from BCMI@SJTU. EE 554 Cyber-Physical Systems , with Prof. Paul Bogdan Wrote a course paper evaluates Dijkstra's, Bellman-Ford, and Floyd-Warshall algorithms for the shortest path problem, using LLVM for graph generation and Gephi for visualization and property analysis; increasing input nodes significantly boosts graph size while maintaining stable clustering and modularity coefficients.	

Teaching Experience	CprE 308 Operating System August 2021-December 2021 Undergraduate Teaching Assistant with Prof. Mai Zheng <ul style="list-style-type: none"> Teaching assistant for the CprE308 Operating System: Principle and Practice. Conducted weekly lab sessions with 25 students, graded homework and lab assignments throughout the semester, and hosted weekly office hours.
Technical Skills	Programming Languages: Python, Java, C++/C, C# Tools and Frameworks: OpenCV, PyTorch, GitHub Web Development: HTML, CSS, JavaScript, React, Flask, NodeJS Software: MATLAB, VS Code, Unity, ModelSim, Quartus Hardware: Embedded system, Circuit design, Signal processing, Analog electronics
Other Experience	ISU Dependable Networking and Computing Lab September 2020-December 2020 Undergraduate Researcher Prof. Hongwei Zhang <ul style="list-style-type: none"> Participated the ARA project proposal for a NSF research grant on rural broadband, reaching the finalist stage.
Awards	2018 Gold Merited Scholarship, Office of Admission, Iowa State University – \$32,000
Community Involvement	IEEE-HKN@ISU, <i>Student Member</i>