Shardul Sapkota

Ph.D. Student, Computer Science Department
Stanford University

sapkota@stanford.edu
shardulsapkota.com
353 Jane Stanford Way, Room 386, Stanford CA 94305

Research Interests

Human-Computer Interaction (HCI), Ubiquitous Computing, Human-Centered Artificial Intelligence, Wearables, Computer Vision

Education

2023–present **Stanford University**, Stanford, CA
Ph.D. in Computer Science
Advisors: Prof. James Landay & Prof. Scott Delp

2016–2020 **Yale-NUS College**, Singapore
B.S. (Hons.) in Mathematical, Computational, and Statistical Sciences
Magna Cum Laude, GPA: 4.81/5.00
Summer Coursework in Engineering, **Yale University**, USA (2017)

2018 **Massachusetts Institute of Technology**, Cambridge, MA
Visiting Student, Coursework in EECS and MIT Media Lab
GPA: 5.00/5.00

Research Experience

2023–present **Stanford University**, Stanford, CA
Mentors: James Landay, Scott Delp
Designed and implemented an LLM-based conversational agent to support physical activity behavior change.
Developed algorithm and pipeline for estimating human movement dynamics from single smartphone video.

2019–2020 **NUS-HCI Lab, National University of Singapore**, Singapore
Mentors: Shengdong Zhao
Developed apps for smart glasses; co-first author on a paper quantifying the intrusiveness of wearable input techniques.
Designed experiments with a psychophysics attention task; applied signal processing on physiological data (EEG, skin conductance, heart rate).
Implemented machine learning models to classify ”in the zone” states in real time (81% accuracy).

2019 **Augmented Human Lab, University of Auckland**, New Zealand
Mentors: Samantha Chan, Tharindu Kaluarachchi, Suranga Nanayakkara
Developed a conversational agent for prospective memory lapses using physiological data.
Built a cognitive load detection tool using an eye-tracker and CNN classifier.
Programmed a display driver for an OLED display in a smart watch for hearing impairments.

2018 **Fluid Interfaces Group, MIT Media Lab**, Cambridge, USA
Mentors: Tomás Vega
Conducted experiments using jaw-teeth gestures for hands-free mobile interactions.
Built a gesture recognition tool; developed machine learning models with 96% accuracy.

Work Experience

2020–2023 **Shopee (SEA Group)**, Singapore
Senior Machine Learning Engineer, Recommendation and Ads (Jan 2023–Aug 2023)
Implemented deep sequential models and conducted feature engineering for e-commerce product ranking.
Machine Learning Engineer, Recommendation (Aug 2020–Dec 2022)
Developed data pipelines and collaborative filtering models to improve real-time recommendations.

Publications

Refereed Conference & Journal Papers

[1] Keenon Werling, Janelle Kaneda, Alan Tan, Rishi Agarwal, Six Skov, Tom Van Wouwe, Scott Uhlrich, Nicholas Bianco, Carmichael Ong, Antoine Falisse, **Shardul Sapkota**, Aidan Chandra, Joshua Carter, Ezio Preatoni, Benjamin Fregly, Jennifer Hicks, Scott L. Delp, C. Karen Liu. "AddBiomechanics Dataset: Capturing the Physics of Human Motion at Scale". In: *European Conference on Computer Vision*. 2024.

[2] Nuwan Nanayakkarawasam Peru Kandage Janaka, Shengdong Zhao, **Shardul Sapkota**. "Can icons outperform text? understanding the role of pictograms in ohmd notifications". In: *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. 2023, pp. 1–23.

[3] **Shardul Sapkota***, Ashwin Ram*, Shengdong Zhao. "Ubiquitous Interactions for Heads-Up Computing: Understanding Users' Preferences for Subtle Interaction Techniques in Everyday Settings". In: *Proceedings of the 23rd International Conference on Mobile Human-Computer Interaction*. 2021, pp. 1–15.

[4] Shan Zhang*, Zihan Yan*, **Shardul Sapkota**, Shengdong Zhao, Wei Tsang Ooi. "Moment-to-moment continuous attention fluctuation monitoring through consumer-grade EEG device". In: *Sensors* 21.10 (2021), p. 3419.

[5] Samantha WT Chan, **Shardul Sapkota**, Rebecca Mathews, Haimo Zhang, Suranga Nanayakkara. "Prompto: Investigating receptivity to prompts based on cognitive load from memory training conversational agent". In: *Proceedings of the ACM on interactive, mobile, wearable and ubiquitous technologies* 4.4 (2020), pp. 1–23.

Posters, Works in Progress, Demonstrations

[6] Matthew Jörke, **Shardul Sapkota**, Lyndsea Warkenthien, Niklas Vainio, Paul Schmiedmayer, Emma Brunskill, James Landay. "Supporting Physical Activity Behavior Change with LLM-Based Conversational Agents". In: *arXiv preprint arXiv:2405.06061* (2024).

[7] Scott D. Uhlrich, **Shardul Sapkota**, Antoine Falisse, Scott L. Delp. "OpenCap Monocular: Human Movement Dynamics from a Single Smartphone Video". In: *American Society of Biomechanics Oral Abstract*. 2024, p. 93.

[8] Tharindu Indrajith Kaluarachchi, **Shardul Sapkota**, Jules Taradel, Aristée Thevenon, Denys JC Matthies, Suranga Nanayakkara. "EyeKnowYou: A DIY toolkit to support monitoring cognitive load and actual screen time using a head-mounted webcam". In: *Adjunct publication of the 23rd international conference on mobile human-computer interaction*. 2021, pp. 1–8.

[9] Tomás Vega Gálvez, **Shardul Sapkota**, Alexandru Dancu, Pattie Maes. "Byte. it: discreet teeth gestures for mobile device interaction". In: *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*. 2019, pp. 1–6.

* denotes equal contribution

Honors & Awards

2020	Singapore-HCI Paperthon Most Promising Paper
2019	Yale-NUS Student-Initiated Summer Research Fund
2018	JY Pillay Global-Asia Programme Summer Internship Award
2016	Outstanding Cambridge Learner Award: Top in the world in Mathematics, AS Level

Teaching

Fall 2024	**Head Teaching Assistant**, CS 147: Introduction to Human-Computer Interaction, Stanford University
2019	**Peer Tutor**, Software Engineering, Yale-NUS College

Reviewing

2024	CHI
2022	CHI Late-Breaking Work
2021	IEEE Acess

University and Departmental Service

2024–present	HCI lunch co-organizer, Stanford HCI Group
2023	CS Ph.D. Student-Applicant Support Program (SASP) Reviewer

Last updated: October 8, 2024