

# Shardul Sapkota

Ph.D. Student, Computer Science Department  
Stanford University

[sapkota@stanford.edu](mailto:sapkota@stanford.edu)

[shardulsapkota.com](http://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 | <b>Stanford University</b> , Stanford, CA<br>Ph.D. in Computer Science<br>Advisors: Prof. James Landay & Prof. Scott Delp                                                                                                        |
| 2016–2020    | <b>Yale-NUS College</b> , Singapore<br>B.S. (Hons.) in Mathematical, Computational, and Statistical Sciences<br><i>Magna Cum Laude</i> , GPA: 4.81/5.00<br>Summer Coursework in Engineering, <b>Yale University</b> , USA (2017) |
| 2018         | <b>Massachusetts Institute of Technology</b> , Cambridge, MA<br>Visiting Student, Coursework in EECS and MIT Media Lab<br>GPA: 5.00/5.00                                                                                         |

## Research Experience

- |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2023–present | <b>Stanford University</b> , Stanford, CA<br><b>Mentors: James Landay, Scott Delp</b><br>Designed and implemented an LLM-based conversational agent to support physical activity behavior change.<br>Developed algorithm and pipeline for estimating human movement dynamics from single smartphone video.                                                                                                                                                                            |
| 2019–2020    | <b>NUS-HCI Lab, National University of Singapore</b> , Singapore<br><b>Mentors: Shengdong Zhao</b><br>Developed apps for smart glasses; co-first author on a paper quantifying the intrusiveness of wearable input techniques.<br>Designed experiments with a psychophysics attention task; applied signal processing on physiological data (EEG, skin conductance, heart rate).<br>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 Uhlich, 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. Uhlich, **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	<b>Head Teaching Assistant</b> , CS 147: Introduction to Human-Computer Interaction, Stanford University
2019	<b>Peer Tutor</b> , Software Engineering, Yale-NUS College

## Reviewing

2024	CHI
2022	CHI Late-Breaking Work
2021	IEEE Access

## 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 9, 2024