Samantha Chan

samanthachan.net

Overview

I am an Assistant Professor at Nanyang Technological University Singapore, College of Computing and Data Science. **I create technologies and explore how to extend human cognition with the ultimate goal of advancing human potential.** I bring novel human-centred technologies into reality through my skills in design, prototyping, and developing artificial intelligence (AI)-powered systems.

Education

Ph.D., Bioengineering — Mar 2018 to June 2022
University of Auckland (UoA), New Zealand
Augmented Human Lab. Supervisors: Suranga Nanayakkara, Haimo Zhang and Lynette Tippett.
Thesis: Augmenting Human Prospective Memory through Cognition-Aware Technologies

B.Eng., Engineering Product Development — May 2013 to Sep 2016
Singapore University of Technology and Design (SUTD), Singapore
Summa Cum Laude (1st Class Honours). Specialisation: Electrical Engineering.

Selected Research Projects

Improving Attention with Rhymthic Stimulation from Wearables — Apr 2023 to 2024
Project Co-Lead
- Conducted and analysed studies showing how sound, light and haptic stimuli from smartglasses and wristbands can improve attention. Resulted in a publication *[c5]*.
- Developed WearVibe smartwatch app to provide variable rhythmic vibrations.

Memoro: Wearable Audio-Based Memory Assistant — Jan 2023 to Sep 2023
Project Collaborator
- Conceptualised Large-Language-Model based prototype collaboratively and designed user studies showing that it can improve user recall confidence. Resulted in a publication *[c6]*.

TotalVREcall: Detecting Emotional Autobiographical Memory Recall — Aug 2020 to Sep 2021
Project Collaborator with Empathic Computing Lab
- Collected and analysed physiological signal (biosignal) data from user studies to build machine learning classifier that detects emotional autobiographical recall for supporting adaptive VR applications (e.g., changing therapy environments based on cognitive-affective states) *[c12, j2]*.

KinVoices: Using Voices of Friends and Relatives in Voice Interfaces — Mar 2020 to Sep 2020
Project Lead
- Conducted studies to design guidelines and understand people's perceptions on voice interfaces which use the voices of friends and relatives, resulting in a publication *[j3]*.
- Deployed AI voice cloning and synthesis tool on Google Cloud within a Django API (Python)
- Developed system to receive reminders in cloned voices on Amazon Echo Dot smart speakers.

Prompto (Prospero): Mobile and Wearable Memory Coach — Jan 2019 to Sep 2019
Project Lead
- Implemented chat-based Android/iOS applications that use biosignals to detect calmness (low stress) for opportunistic memory training.
- Conducted lab and field study with older adults, quantitative analysis of biosignals and questionnaires, and qualitative analysis of interviews.
- Published work showed increased receptivity to memory training during calm states *[j4, c15]*.

ProspecFit: Memory Training Technique on Mobile Application — Mar 2018 to Dec 2018
Project Lead
- Developed Android application to facilitate an effective memory training technique.
- Ran field study and usability testing with older adults, quantitative analysis using R, and qualitative analysis of interviews and diaries.
- Users showed improvements in memory tasks and work was published in a journal *[j5]*.

Experience

Assistant Professor, Nanyang Technological University — Jan 2025 to Present
Director of the Crafting Cognition Lab.

Postdoctoral Fellow, Massachusetts Institute of Technology (MIT) — Nov 2022 to Dec 2024
Fluid Interfaces Group (Prof. Pattie Maes), MIT Media Lab
Designing systems for memory and cognitive support

International Postdoctoral Scholar, Nanyang Technological University (NTU) — Oct 2022 to Dec 2024
School of Computer Science and Engineering

Visiting Researcher, National University of Singapore (NUS) — Jan 2022 to Sep 2022
Syntheraction Lab, previously NUS-HCI Lab (Prof. Zhao Shengdong)
- Contributed to research projects on heads-up computing, resulted in publication [c8]
- Mentored graduate and undergraduate students

Junior Researcher (Research Intern), Mercari Inc. — Sep 2021 to Sep 2022
Human-Computer Interactions, Inclusive Design and Accessibility R4D Team
- Developed AR app and implemented AI-enabled inpainting model to visualise decluttered spaces. Work resulted in a publication *[c9]*.

Creative Technologist, UoA — Jan 2019 to Nov 2019
Unleash Space - Makerspace, Centre for Innovation and Entrepreneurship
- Conducted training for fabrication equipment use (laser-cutters, 3D-printers, CNC machines).
- Advised students on developing their creative and entrepreneurial projects.
- Facilitated workshops on topics including Arduino, Makey-Makey robots and AR/VR in Unity.

Researcher - Robotics, SUTD-MIT International Design Centre — May 2015 to Aug 2016
Undergraduate Research Opportunities Programme
- Developed mobile wireless control for amphibious rolling robot via MIT AppInventor and Arduino.
- Designed flexible 3D-printed sleeve in Solidworks to enhance robot's land and water movement.
- Work resulted in a publication, was demoed in Europe Maker Faire '15 and featured on Discovery Channel Canada.

Researcher - Participatory Action Research, SUTD — Jan 2015 to Apr 2016
Ho Chi Minh Community Design Project - Vietnam
- Conducted community design workshops, feedback and interviews with residents of Phu Xuan.
- Co-designed and built community space including a bamboo playground with residents, project team and students from local Vietnamese universities.
- Project resulted in a design report booklet and received the ***SUTD Humanitarian Award.***

Awards and Honours

Nanyang Technological University College of Engineering International Postdoctoral Fellowship — 2022
Full fellowship with funding to pursue postdoctoral training at MIT and NTU

UoA Distinguished Graduate Award — 2021
Awarded for leadership and community engagement services to the UoA community.

Best Design Awards, Gold Pin Award and Public Good Award Finalist — 2020
In recognition of project *Prospero* by Designers Institute of New Zealand as the best in category.

Fast Company World Changing Ideas Award, Honorable Mention, Student Category — 2020
In recognition of project *Prospero*.

Female Founders Prize by UniServices — 2019
In recognition of project *Prospero* for excellent venture idea at UoA Velocity Innovation Challenge.

Auckland Bioengineering Institute Doctoral Scholarship — 2018
Full scholarship with stipend awarded by UoA to pursue doctoral studies.

SUTD President's Graduate Fellowship — 2017
Full scholarship with stipend awarded by SUTD to pursue doctoral studies.

SUTD Humanitarian Award — 2016
Awarded for outstanding humanitarian work in *Ho Chi Minh Community Design Project*.

Habitat for Humanity Dedicated Service Award 2015
Awarded by Habitat for Humanity Singapore for service as *Treasurer* of its SUTD Campus Chapter.

Selected Publications

I publish in premier international venues in the field of Human-Computer Interactions (HCI), including CHI (Acceptance Rate (AR): 17-24%, CORE: A*), CSCW (AR: 20-25%, CORE: A) and IMWUT/Ubicomp (AR: 20-25%, CORE: A*).

Journal Papers

j1. Danry, V., Villa, E., **Chan, S. W. T.**, Maes, P. 2025. ReLive: Walking into Virtual Reality Spaces from Video Recordings of One's Past Can Increase the Experiential Detail and Affect of Autobiographical Memories. IEEE Transactions on Visualization and Computer Graphics (IEEE TVCG). 20 Pages. https://doi.org/10.1109/TVCG.2025.3549845 [🏆 ***Best Paper Award***]

j2. Gupta, K. **Chan, S. W. T.**, Pai, Y.S., Strachan, N., Su, J., Sumich, A., Nanayakkara, S. and Billinghurst, M. 2022. Total VREcall: Using Biosignals to Recognize Emotional Autobiographical Memory in Virtual Reality. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 6, 2, Article 55 (June 2022), 21 pages. https://doi.org/10.1145/3534615 [🏆 ***Distinguished Paper Award***]

j3. **Chan, S. W. T.**, Gunasekaran, T. S., Pai, Y. S., Zhang, H., Nanayakkara, S. 2021. KinVoices: Using Voices of Friends and Relatives in Voice Interfaces. Proceedings of ACM on Human Computer Interaction (CSCW 2021). 5, CSCW2, Article 446 (October 2021), 25 pages. https://doi.org/10.1145/3479590

j4. **Chan, S. W. T.**, Sapkota, S., Mathews, R., Zhang, H. and Nanayakkara, S. 2020. Prompto: Investigating Receptivity to Prompts Based on Cognitive Load from Memory Training Conversational Agent. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (Ubicomp 2021). 4, 4, Article 121 (December 2020), 23 pages. https://doi.org/10.1145/3432190

j5. **Chan, S. W. T.**, Buddhika, T., Zhang, H., Nanayakkara, S. 2019. ProspecFit: In Situ Evaluation of Digital Prospective Memory Training for Older Adults. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (Ubicomp 2019). 3, 3, Article 77 (September 2019), 20 pages. https://doi.org/10.1145/3351235

j6. Sridhar, P. K., **Chan, S. W. T.**, Chua, Y., Quin, Y. W., Nanayakkara, S. 2019. Going beyond performance scores: Understanding cognitive-affective states in Kindergarteners and application of framework in classrooms. International Journal of Child-Computer Interaction (IJCCI), Volume 21, 2019, Pages 37-53, ISSN 2212-8689. https://doi.org/10.1016/j.ijcci.2019.04.002

Conference Papers

c1. Pataranutaporn, P., Archiwaranguprok, C., **Chan, S. W. T.**, Loftus, E. and Maes, P. 2025. Synthetic Human Memories: AI-Edited Images and Videos Can Implant False Memories and Distort Recollection. In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25). Association for Computing Machinery, New York, NY, USA, Article 538, 1–20. https://doi.org/10.1145/3706598.3713697 [🏆 ***Best Paper Award***] [CORE: A*]

c2. Fang, C.M., Chua, P., **Chan, S. W. T.**, Leong, J., Bao, A., and Maes, P. 2025. Leveraging AI-Generated Emotional Self-Voice to Nudge People towards their Ideal Selves. In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25). Association for Computing Machinery, New York, NY, USA, Article 58, 1–20. https://doi.org/10.1145/3706598.3713359 [CORE: A*]

c3. Pataranutaporn, P., Archiwaranguprok, C., **Chan, S. W. T.**, Loftus, E. and Maes, P. 2025. Slip Through the Chat: Subtle Injection of False Information in LLM Chatbot Conversations Increases False Memory Formation. In Proceedings of the 30th International Conference on Intelligent User Interfaces (IUI '25). Association for Computing Machinery, New York, NY, USA, 1297–1313. https://doi.org/10.1145/3708359.3712112 [CORE: A]

c4. Maniar, N., **Chan, S. W. T.**, Zulfikar, W., Ren, S., Xu, C., and Maes, P. 2025. MemPal: Leveraging Multimodal AI and LLMs for Voice-Activated Object Retrieval in Homes of Older Adults. In Proceedings of the 30th International Conference on Intelligent User Interfaces (IUI '25). Association for Computing Machinery, New York, NY, USA, 993–1015. https://doi.org/10.1145/3708359.3712151 [CORE: A]

c5. **Chan, S. W. T.***, Whitmore*, N.W., Zhang, J., Chwalek, P., Chin, S. and Maes, P. 2024. Improving Attention Using Wearables via Haptic and Multimodal Rhythmic Stimuli. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24), May 11–16, 2024, Honolulu, HI, USA. ACM, New York, NY, USA, 14 pages. https://osf.io/preprints/psyarxiv/w5eds (*co-first authors) [CORE: A*]

c6. Zulfikar, W., **Chan, S. W. T.**, and Maes, P. 2024. Memoro: Using Large Language Models to Realize a Concise Interface for Real-Time Memory Augmentation. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24), May 11–16, 2024, Honolulu, HI, USA. ACM, New York, NY, USA, 18 pages. https://doi.org/10.1145/3613904.3642450 [🏆 ***Best Paper Award Honorable Mention***][CORE: A*]

c7. **Chan, S. W. T.**, Zhang, H. and Nanayakkara, S. 2023. Eye Movement Analysis of Human Visual Recognition Processes with Camera Eye Tracker: Higher Mean and Variance of Fixation Duration for Familiar Images. In Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems (CHI EA '23), April 23–28, 2023, Hamburg, Germany. ACM, New York, NY, USA, 8 pages. https://doi.org/10.1145/3544549.3585782 [CORE: A*]

c8. Janaka, N., Zhao, S. and **Chan, S. W. T.** 2023. NotiFade: Minimizing OHMD Notification Distractions Using Fading. In Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems (CHI EA '23), April 23–28, 2023, Hamburg, Germany. ACM, New York, NY, USA, 9 pages. https://doi.org/10.1145/3544549.3585784 [CORE: A*]

c9. **Chan, S. W. T.**, Ryskeldiev, B., and Nanayakkara, S. (2022, October). DeclutterAR: Mobile Diminished Reality and Augmented Reality to Address Hoarding by Motivating Decluttering and Selling on Online Marketplace. In 2022 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct) (pp. 870-874). IEEE. https://doi.org/10.1109/ISMAR-Adjunct57072.2022.00187 [CORE: A*]

c10. Messerschmidt, M., **Chan, S. W. T.**, Wen, E., and Nanayakkara, S. "Toro: A Web-based Tool to Search, Explore, Screen, Compare and Visualize Literature" (2022). SIGHCI 2022 Proceedings. 13. https://aisel.aisnet.org/sighci2022/13

c11. Wei, J., Kim, Y., **Chan, S. W. T.**, and Dingler, T. 2022. Design and Prototype Conversational Agents for Research Data Collection. In Companion Proceedings of the 2022 Conference on Interactive Surfaces and Spaces (ISS '22). Association for Computing Machinery, New York, NY, USA, 57–58. https://doi.org/10.1145/3532104.3571467 [CORE: A]

c12. Gupta, K., **Chan, S. W. T.**, Pai, Y. S., Sumich, A., Nanayakkara, S., Billinghurst, M. 2021. Towards understanding physiological responses on emotional autobiographical memory recall in Mobile VR scenario. Proceedings of the ACM International Conference on Mobile Human-Computer Interaction (MobileHCI '21). ACM, New York, NY, USA, 8 pages.https://doi.org/10.1145/3447527.3474864 [AR: 24%][CORE: B]

c13. Cao, J., **Chan, S. W. T.**, Garbett, D. L., Denny, P., Nassani, A., Scholl, P. M. and Nanayakkara, S. 2021. Sensor-Based Interactive Worksheets to Support Guided Scientific Inquiry. Proceedings of the ACM Conference on Interaction Design and Children (IDC '21). ACM, New York, NY, USA, 7 pages. https://doi.org/10.1145/3459990.3460716 [🏆 ***Best Paper Award***] [CORE: B]

c14. **Chan, S. W. T.** 2020. Biosignal-Sensitive Memory Improvement and Support Systems. In Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems (CHI EA '20). ACM, New York, NY, USA, 1–7. https://doi.org/10.1145/3334480.3375031 [CORE: A*]

c15. **Chan, S. W. T.**, Zhang, H., Nanayakkara, S. 2019. Prospero: A Personal Wearable Memory Coach. Proceedings of Augmented Human International Conference 2019 (AH '19), March 11–12, 2019, Reims, France. ACM, New York, NY, USA, 5 pages. https://doi.org/10.1145/3311823.3311870

c16. Buddhika, T., Zhang, H., **Chan, S. W. T.**, Dissanayake, V., Nanayakkara, S., Zimmermann, R. 2019. fSense: Unlocking the Dimension of Force for Gestural Interactions using Smartwatch PPG Sensor. Proceedings of Augmented Human International Conference 2019 (AH '19), March 11–12, 2019, Reims, France. ACM, New York, NY, USA, 5 pages. https://doi.org/10.1145/3311823.3311839

c17. Sridhar, P.K., **Chan, S. W. T.**, Nanayakkara, S. 2018. Going beyond performance scores: understanding cognitive-affective states in kindergarteners. Proceedings of the ACM Conference on Interaction Design and Children (IDC '18). ACM, New York, NY, USA, 253-265. https://doi.org/10.1145/3202185.3202739 [AR: 29%][CORE: B]

c18. Elvitigala, D. S., **Chan, S. W. T.**, Howell, N., Matthies, D. J. C., Nanayakkara, S. 2018. Doodle Daydream: An Interactive Display to Support Playful and Creative Interactions Between Co-workers. Proceedings of the Symposium on Spatial User Interaction (SUI '18). ACM, New York, NY, USA, 186-186. https://doi.org/10.1145/3267782.3274681 [AR: 31%]

c19. Satria, S., Lee, J. W., **Chan, S. W. T.** 2015. Portable Amphibious Spherical Rolling Robot with Live-Streaming Capability for Ground and Aquatic Deployment. IRC Conference on Science, Engineering and Technology (13 May 2015, National University of Singapore, Singapore). http://ircset.org/main/conference-2015/downloadss4/

Teaching Experience

I completed the Kaufman Teaching Certificate Program in 2024 by the MIT Teaching + Learning Lab.

Teaching Assistant, College of Computing and Data Science, NTU — 2025 to Present
Digital Systems Design. Conducting tutorial classes and labs.

Co-Instructor, Program for Media Arts and Sciences, MIT — Feb 2024 to May 2024
Cognitive Augmentation. Co-developed curriculum and conducted classes.

Graduate Teaching Assistant, Creative Arts and Industries, UoA — Jun to Nov 2020
Design and Assistive Technologies. Co-developed curriculum. Lectured on Memory and Learning.

Graduate Teaching Assistant, Creative Arts and Industries, UoA — Mar to Jun 2020
Design Methods and Processes. Assisted instructor during classes. Advised students.

Graduate Teaching Assistant, Chemical and Materials Engineering, UoA — Mar to Jul 2019
Applied Chemistry: Conductive Polymers. Facilitated lab sessions. Marked reports.

Graduate Teaching Assistant, Engineering Product Development, SUTD — Jan to Apr 2017
Systems and Control. Assisted instructors during tutorials. Advised students.

Teaching Assistant, SUTD — May to Aug 2013
Chemistry: From Atoms To Crystals. Co-developed supplementary class curriculum.

Academic and Leadership Service

Associate Chair, Program Committee, Full Papers, MobileHCI '22 & '23, CHI '25
Associate Chair, Program Committee, Late-Breaking Work, CHI '22, '23
Associate Chair, Program Committee, Posters, CSCW '21
Student Volunteer Co-chair, Organising Committee, MobileHCI '22
Virtual Conference Co-chair, Organising Committee, MobileHCI '21
Reviewer: 60 papers in CHI, UIST, IMWUT, ISMAR, MobileHCI, DIS, CSCW, ETRA, HRI. Outstanding Review Recognitions: CSCW '21, CHI '24, '25
Student Volunteer: MobileHCI '20, CHI '21 (SV Award), CSCW '21 (Day Captain)

Vice-President (Founding Member), Executive Committee, UoA — May 2019 to Jun 2021
Led pioneering team to establish the Engineering Postgraduate Students Association.

Delegate, United Nations, University Scholars Leadership Symposium, Bangkok — Aug 2017
Humanitarian Affairs Asia and United Nations Development Programme

Treasurer (Founding Member), Executive Committee, SUTD — Sep 2013 to Aug 2016
Established Habitat for Humanity Singapore Student Campus Chapter. ***Dedicated service award.***

Students Mentored

Tamil Selvan, Masters, Empathic Computing Lab, UoA (Now PhD Candidate at UoA) — 2021
Jovana Lazarevic, Undergraduate, University of Novi Sad — 2020
Rebecca Matthews, Undergraduate, Manipal Institute of Technology (Masters at University College Dublin) — 2019
Shardul Sapkota, Undergraduate, Yale-NUS College (Now PhD Student at Stanford University) — 2019
Adrian Robertson, Undergraduate, Carleton University — 2018

Press

Prototypes for Humanity Dubai, Awarded for and showcased Project MemPal	Oct 2024
Prototypes for Humanity Dubai, Awarded for and showcased Project KinVoices	Dec 2022
CNA Singapore, Research and Innovation, International Postdoctoral Fellowship	Sep 2022
University College London Seminar, Augmenting Human Memory through AI Based Technologies	Jan 2022
95bFM Radio Talk, Ready, Steady, Learn with Samantha Chan	Feb 2021
30-Second Thesis, Augmenting Human Memory through AI Based Technologies	Feb 2021
Best Design Awards - Student Digital Gold Pin Award, Awarded for Project Prompto	Oct 2020
Best Design Awards - Public Good Award Finalist, Awarded for Project Prompto	Oct 2020
Fast Company World Changing Ideas Awards, Awarded for Project Prompto	Apr 2020
Innovation Challenge Female Founders Prize, Awarded for Project Prompto	May 2019
Discovery Channel Canada, Salamander Rolling Robot on Daily Planet [c19]	Apr 2016
Lianhe Zhaobao, My Treehouse @ National Library Singapore	Sep 2016

Skills and Tools

Programming: Python, Java, JavaScript, C/C++, C#
Prototyping and Research Analysis: MATLAB, Unity, Arduino, R, NVivo
Machine Learning: TensorFlow, PyTorch, Scikit-learn, WEKA
Design: SolidWorks, Rhino, Fusion 360, Adobe Creative Suite (Photoshop, Illustrator, Premiere Pro, After Effects)
Bassist, Ukulelist and Guitarist: Performed with Delta Infinity SUTD Band '13 to '16 and for 30+ external events
Film-Maker: Made seven short-films. Received three awards.

References

Dr. Pattie Maes	Dr. Suranga Nanayakkara	Dr. Joel Yang	Dr. Mark Billinghurst
Professor	Associate Professor	Professor	Professor
MIT	NUS	SUTD	University of Auckland
pattie@media.mit.edu	suranga@ahlab.org	joel_yang@sutd.edu.sg	mark.billinghurst@auckland.ac.nz