

SAMUEL A. OLATUNJI

Department of Kinesiology and Community Health, College of Applied Health Sciences,
University of Illinois Urbana-Champaign, 1206 South Fourth Street, Champaign, Illinois, 61820,
United States of America. +1 313-466-1729, olatunji@illinois.edu

My expertise is human-robot interaction design.

My research interests are human-robot interaction, human factors, interaction design,
intelligent systems development, embedded systems, and automation.

EDUCATION

- Ph.D.** Intelligent Systems. Ben-Gurion University of the Negev (2017 – 2021), Beer-Sheva, Israel.
Advisors: Prof. Yael Edan and Prof. Tal Oron-Gilad
Dissertation: Assistive Robots to Support Older Adults - Interaction Design for Varying Levels
of Automation. This work was part of the EU HORIZON 2020 ITN, SOCRATES project on
social cognitive robotics in eldercare.
- M.Sc.** Electrical and Electronic Engineering. University of Ilorin (2012 – 2014), Ilorin, Nigeria.
Advisor: Dr. J.F. Opadiji.
Dissertation: Adaptive Cooperative Sensing in Cognitive Radio Systems
- B.Sc.** (Hons.) Electrical Engineering. University of Ilorin (2005 – 2010), Ilorin, Nigeria.
Advisor: Dr. J.F. Opadiji.
Final project: Development of a computer-aided learning system for an undergraduate course
in digital signal processing.

EMPLOYMENT HISTORY

- University of Illinois Urbana-Champaign** (May 2022-Date)
Human Factors and Aging Laboratory and McKechnie Family LIFE Home
College of Applied Health Sciences, University of Illinois Urbana-Champaign, Illinois, US.
Position: Post-doctoral research associate
Roles: - Research and developments in assistive robots and smart technology to support older adults.
- Supervising and mentoring of undergraduate and research students
- Providing technical expertise for smart home technology and projects at the LIFE Home
- Facilitating research communications and collaborations
- Ben-Gurion University of the Negev** (April 2021-April 2022)
ABC Robotics Initiative
Ben-Gurion University of the Negev, Be'er Sheva, Israel
Position: Post doctorate student
Roles: - Research and developments in assistive robots to support older adults.
- Co-supervising and mentoring of undergraduate and masters students
- Providing technical expertise for research projects
- Supporting research communications in the intelligent robotic laboratory
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Ben-Gurion University of the Negev

(2017-2021)

Department of Industrial Engineering and Management

Faculty of Engineering Sciences, Ben-Gurion University of the Negev, Be'er Sheva, Israel

Position: Ph.D. student, Research assistant

Early stage researcher, EU Horizon 2020 Framework Scholarship

Roles: - Research and developments in interaction design for varying levels of automation.

- Outreach activities and dissemination of research outputs through organized meetings with older adults, exhibitions, robot demonstrations, lab tours for interested members of the public, engineering students and high school students.
- Co-supervising and mentoring of undergraduate and masters students

University of Ilorin

(2014 – 2017)

Department of Computer Engineering,

Faculty of Engineering and Technology, University of Ilorin, Ilorin, Nigeria.

Position: Lecturer I

Roles: - Assistant in the teaching of Applied Computer Programming,
Assembly Language Programming, Bioinformatics.

- Developing lecture courseware and co-supervising undergraduate project students.

University of Ilorin

(2013 – 2014)

Department of Electrical and Electronics,

Faculty of Engineering and Technology, University of Ilorin, Ilorin, Nigeria.

Position: Teaching Assistant

Roles: - Assistant in the teaching of Applied Electrical Technology

- Assistant in the teaching of Procedural and Object Oriented
- Programming classes using JAVA, C++ and Visual BASIC
- Instructor in the Simulations of Digital Control Systems
- Developing lecture courseware and supervising practical sessions

Kahfit Consulting ICT Learning Centre

(Mar. – Dec. 2012)

11/12 Umaru Audi Rd, Ilorin, GRA. Ilorin, Nigeria.

Position: Instructor

Role: - Teaching of Computer Aided Design, Computer Engineering and
JAVA programming

- Designing comprehensive teaching and practical manuals

Egypro Nigerian Limited

(Mar. – Oct. 2011)

1237A Tiamiyu Road, Victoria Island, Lagos, Nigeria.

Position: Base transmission station Maintenance Engineer (Brass Site)

Roles: - Servicing of TRX and all communication equipment

- Site routine maintenance and repair of faulty equipment
- Maintenance of power supply equipment

Basic Junior Secondary School, Beletiemba

(2010 – 2011)

Twon-Brass, Brass, Bayelsa State, Nigeria.

National Youth Service Corps (NYSC) primary posting.

Position: Teacher

Roles: - Teaching and Instructing in Mathematics, Introductory Technology, Art and Design, French.

- Coordination of Clubs and Societies
- Supporting students through counselling and tutorial sessions

World Health Organization

(Oct. – Nov. 2010)

Immunization Plus Days Nigeria, Brass, Bayelsa, Nigeria.

Position: Independent Monitor

Roles: - House – to – house monitoring and supervision

- Outside monitoring of settlements, sites and localities.

National Population Commission

(Nov. – Dec. 2010)

Twon-Brass, Brass, Bayelsa, Nigeria.

Position: Area Supervisor

Roles: - Supervising the numbering and labelling of houses within the town

- Birth and Death rate data collection from the inhabitants
- Birth certificate preparation.

PROFESSIONAL MEMBERSHIPS

- Institute of Electrical and Electronic Engineers (IEEE): Member (94808033)
- Human Factors and Ergonomics Society (HFES): Member (17934)
- Council for the Regulation of Engineering in Nigeria (COREN): Registered Engineer (R. 33,751)
- Nigerian Society of Engineers (NSE): Corporate Member (35585)

SCHOLARSHIPS AND PRIZES

- Early-stage researcher, European Commission Horizon 2020 Framework Scholarship (MSCA-ITN-SOCRATES, 2017-2021)
- Cowbell Mathematics Award, 3rd Place Price (2004)
- NYSC Editorial Board Merit Award for *Outstanding performance in Inter-School Debate Competition* (2004)
- West African Milk Company (WAMCO) Scholarship for *Excellent Performance* (2002)

RESEARCH EXPERIENCE

Research assistant in the Intelligent Robotics Laboratory, BGU, Israel.

Co-supervising and mentoring of undergraduate and masters students.

International collaboration with EU SOCRATES Innovative Training Network.

ROBOTICS EXPERTISE

Simulations and real-world developments with ROS for mobile robots, manipulators, and mobile-manipulators.

Development with other proprietary software platforms for other forms of robots such as social robots, pet-like robots, and telepresence robots.

COMPUTER, TECHNICAL AND SOFTWARE SKILLS

Computer Programming in Python, Java, C, C++, MATLAB, Visual Basic, Cisco Certified Network Professional (CCNP), Computer Aided Design and Drafting, Web Design, Computer Systems Engineering, Basic knowledge in Data Base Management.

PERSONAL AND COMMUNICATION SKILLS

- Understanding of research methods and techniques
- Analytical and independent thinking
- Analytical writing
- Ability to work in international and professional team environments.
- Effective oral and written communication skills
- Ability to work independently and in team while meeting deadlines
- Commitment to quality work and strong attention to details

LANGUAGES

English (Understanding, Speaking, Writing) - proficient

Hebrew (Understanding, speaking, writing) - basic

French (Understanding, speaking, writing) – basic

Mother tongue: Yoruba.

HOBBIES

Playing musical instruments (guitar, drums)

Sports (soccer, running)

Gardening

PUBLICATIONS

ORCID ID: 0000-0002-0535-2780

Web of Science Researcher ID: AAQ-7651-2021

<https://scholar.google.com/citations?user=3zQC25EAAAAJ&hl=en>

Journal Articles

- J1. **Olatunji, S.A.**, Nguyen, V., Edsinger, A., Kemp, C.C., Rogers, W.A., & Mahajan, H.P. (in press). Immersive participatory design of assistive robots to support older adults. *Ergonomics*. <https://doi.org/10.1080/00140139.2024.2312529>
- J2. Gutman, D., **Olatunji, S.**, Markfeld, N., Givati, S., Sarne-Fleischmann, V., Oron-Gilad, T., & Edan, Y. (2023). Evaluating levels of automation and feedback in an assistive robotic table clearing task for eldercare. *Applied Ergonomics*, 106. <https://doi.org/10.1016/j.apergo.2022.103859>
- J3. **Olatunji, S.**, Hussaini, H., Blocker, K., Uppalapati, N., Krishnan, G., & Rogers, W. (2022). Investigating Older Adults' Perspectives on Telehealth Robotics. *Innovation in Aging*, 6(Supplement_1), 841-841. <https://doi.org/10.1093/geroni/igac059.3016>
- J4. **Olatunji, S.A.** & Rogers, W.A. (2022). Development of a design framework to support pleasurable robot interactions for older adults. *Gerontechnology*, 21(s),760s <https://doi.org/10.4017/gt.2022.21.s.760.opp3>

- J5. **Olatunji, S.**, Potenza, A., Oron-Gilad, T., Kiselev, A., Loutfi, A., & Edan, Y. (2022). Levels of automation for a mobile robot tele-operated by a caregiver. *ACM Transactions on Human-Robot Interaction (THRI)*, 11(2), 1-21.
- J6. **Olatunji, S.A.**, Oron-Gilad, T., Markfeld, N., Gutman, D., Sarne-Fleischmann, V. & Edan, Y. (2021). Levels of automation and transparency: interaction design considerations in socially assistive robots for older adults. *IEEE Transactions on Human-Machine Systems*, 51(6), 673-683. <https://doi.org/10.1109/THMS.2021.3107516>
- J7. Gutman, D., **Olatunji, S.**, & Edan, Y. (2021). Evaluating Levels of Automation in Human-Robot Collaboration at Different Workload Levels. *Applied Sciences*, 11(16), 7340. <https://doi.org/10.3390/app11167340>
- J8. **Olatunji, S.**, Oron-Gilad, T., Sarne-Fleischmann, V., & Edan, Y. (2020). User-centered feedback design in person-following robots for older adults. *Paladyn, Journal of Behavioral Robotics*, 11(1), 86-103. <https://doi.org/10.1515/pjbr-2020-0007>.
- J9. Avioz-Sarig, O., **Olatunji, S.**, Sarne-Fleischmann, V. & Edan, Y. 2020. Robotic system for physical training of older adults. *International Journal of Social Robotics*, 1-16. <https://link.springer.com/article/10.1007/s12369-020-00697-y>
- J10. Fajemilehin, T.O., Opadiji, J.F., & **S.A. Olatunji.** (2020). Optimizing Energy Utilization in Unequally Spaced Linear Array for Smart Antenna. *Arid Zone Journal of Engineering, Technology & Environment*. 16(2), 231-242.
- J11. Fajemilehin, T.O., **Olatunji, S.A.**, & Opadiji J.F. (2019). Improved Energy Detection Algorithm for Cognitive Radios in Cooperative Spectrum Sensing. *International Journal of Information Processing and Communication (IJIPC)*. 7 (1); 148-163, Published by Faculty of Communication and Information Sciences, University of Ilorin, Nigeria.
- J12. **Olatunji, S. A.**, Fajemilehin, T. O., & J. F. Opadiji (2019). Reduction of Computational Time for Cooperative Sensing Using Reinforcement Learning Algorithm. *African Journal of Computing & ICT*, ISSN 2006-1781.12 (2); 90 -108
- J13. Opadiji, J.F., Fajemilehin, T. O., & **Olatunji, S. A.** (2019). Performance Evaluation of Equally Spaced Linear Array Antenna by Optimizing the Radiation Pattern Using Two Optimization Techniques. *African Journal of Computing & ICT*, ISSN 2006-1781.12 (2).
- J14. Opadiji, J.F., **Olatunji, S.A.**, & Fajemilehin, T.O. (2019). Development of Adaptive Sensing Algorithm for Minimizing Energy and Bandwidth Consumption in Cooperative Spectrum Sensing Technology. *Arid Zone Journal of Engineering, Technology and Environment*. Published by the Faculty of Engineering, University of Maiduguri, Nigeria. p-ISSN: 1596-2490 | e-ISSN: 2545-5818.
- J15. Honig, S. S., Oron-Gilad, T., Zaichyk, H., Sarne-Fleischmann, V., **Olatunji, S.**, & Edan, Y. (2018). Toward Socially Aware Person-Following Robots. *IEEE Transactions on Cognitive and Developmental Systems*, 10(4), 936-954. <https://doi.org/10.1109/TCDS.2018.2825641>

- J16. Opadiji, J.F., Ajiboye, A.T., **Olatunji, S.A.**, & A. Ayeni (2011). Improving Pedagogy in a Digital Signal Processing Course Using CAL Systems. *African Journal of Computing & ICT*, ISSN 2006-1781. 4 (3); 7-18

Manuscripts under review/in revision/in preparation

- JP1. Keidar, O., Parmet, Y., **Olatunji, S.**, & Edan, Y. (revision to be submitted 2/16/24). Comparison of Proactive and Reactive Interaction Modes in a Mobile Robotic Telecare Study. *Applied Ergonomics*
- JP2. **Olatunji, S.A.**, Hussaini, H., Blocker, K.A., Uppalapati, N.K., Krishnan, G., Rogers, W. A. (in prep). Understanding older adults' perceptions and attitudes towards a telehealth robot. *Gerontechnology*.
- JP3. **Olatunji, S.A.**, Bayles, M. A., Liu, S., Hasan, A., Driggs-Campbell, K. & Rogers, W. A. (in prep). Developing wayfinding robotic support for older persons with vision impairments. *Journal of Blindness Innovation and Research*.
- JP4. **Olatunji, S.**, Oron-Gilad, T., & Edan, Y. (in prep) Evaluating quality of interaction (QoI) in robotic applications.
- JP5. **Olatunji S.**, Bass, E.J., Oron-Gilad, T., & Edan Y. (in prep), Spatial Awareness in Telepresence: Operator Knowledge and Trust of Autonomous Robot Position.

Book Chapters

- B1. Opadiji, J.F., & **Olatunji, S.A.** (2015): Computer Engineering Discipline. Chapter in Book: *An Introduction to Engineering Disciplines*. Faculty of Engineering and Technology, University of Ilorin, Nigeria (ed.)50 – 61.
- B2. Opadiji, J.F., Ajiboye, A.T., **Olatunji, S.A.**, Ayinla, S.L., Ajayi, A.R., Yusuf, O.A., Labiran, O.O., Mahmud, H.O., & Adebayo, O.F. (2017): Undergraduate computer engineering laboratory manual (Vol. 2): measurement & instrumentation; digital electronic circuits; data communication & networks; Published by Department of Computer Engineering, University of Ilorin, Ilorin, Nigeria, ISBN: 978-978-8090-55-3.
- B3. Opadiji, J.F., Ajiboye, A.T., **Olatunji, S.A.**, Ayinla, S.L., Ajayi, A.R., Yusuf, O.A., Mahmud, H.O., & Adebayo, O.F. (2018): Undergraduate computer engineering laboratory manual (Vol. 3): microprocessor system interfacing; prototyping and packaging; artificial intelligence applications; Published by Department of Computer Engineering, University of Ilorin, Ilorin, Nigeria, ISBN: 978-978-8090-66-4.
- B4. Opadiji, J.F. & **Olatunji, S.A.** (2019): Introduction to Computer Engineering, "Introduction to Engineering Disciplines", D.S. Ogunniyi, J.O. Olaoye, J.O. Aweda and M.O. Sunmonu (eds.), Second Edition, Faculty of Engineering and Technology, University of Ilorin, Ilorin, pp.44-53. ISBN: 978-978-53588-0-3

Proceedings Papers

- C1. **Olatunji, S. A.**, Nguyen, V., Cao, Y., Evans, H., Evans, J., Edsinger, A., Kemp, C. C., & Rogers, W. A. (2023). Advancing the design of trustworthy robots for older adults in home environments: A participatory design approach. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 67(1), 2545-2551.
<https://doi.org/10.1177/21695067231205566>

- C2. Olatunji, S. A., Nguyen, V., Evans, H., Evans, J., Garverick, A., Cakmak, M., Edsinger, A., Kemp, C. C., & Rogers, W. A. (2023). A participatory design project to evaluate benefits and workload costs for a domestic assistive robot. *Proceedings of the International Symposium on Human Factors and Ergonomics in Health Care*, 12(1), 11-11. <https://doi.org/10.1177/2327857923121002>
- C3. Keidar, O., **Olatunji, S.**, & Edan, Y. (2022). Push and Pull Feedback in Mobile Robotic Telepresence-A Telecare Case Study. In 2022 31st IEEE International Conference on Robot and Human Interactive Communication (RO-MAN) (pp. 693-698). IEEE.
- C4. Markfeld, N., **Olatunji, S.**, & Edan, Y. (2021). Evaluating Feedback Modalities in a Mobile Robot for Telecare. In *Annual Conference Towards Autonomous Robotic Systems* (pp. 136-146). Springer, Cham. https://doi.org/10.1007/978-3-030-89177-0_14
- C5. **Olatunji S.**, Markfeld N., Gutman D., Givati S., Oron-Gilad T., Edan Y. (2019). Improving the Interaction of Older Adults with a Socially Assistive Table Setting Robot. *International conference on Social Robotics* (pp 568-577) In: Salichs M. et al. (eds) Social Robotics. ICSR 2019. Lecture Notes in Computer Science, vol 11876. Springer, Cham. https://doi.org/10.1007/978-3-030-35888-4_53
- C6. **Olatunji, S.**, Oron-Gilad, T., & Edan, Y. (2018). Increasing the Understanding between a Dining Table Robot Assistant and the User. *International Ph.D. Conference On Safe and Social Robotics*, Madrid, 2018. http://www.socrates-project.eu/internal-documents/SSR_2018/SSR_2018_paper_24.pdf
- C7. Opadiji, J.F., **Olatunji, S.A.**, & Fajemilehin, T.O. (2015). On Energy Detection of Cognitive Radios in Cooperative Spectrum Sensing. *International Union of Radio Science Nigeria (URSI-NG) Conference*.
- C8. J.F. Opadiji, T.O. Fajemilehin, & **S.A. Olatunji** (2015). Improving the Performance of Unequally Spaced Linear Array for Smart Antenna. *International Union of Radio Science Nigeria (URSI-NG) Conference*.

Peer Reviewed Paper for Conference Poster

- P1 **Olatunji, S.A.**, Hussaini, H., Blocker, K.A., Uppalapati, N.K., Krishnan, G., Rogers, W. A. (2022). Investigating Older Adults' Perspectives on Telehealth Robotics. *The Gerontological Society of America (GSA) 2022 Annual Scientific Meeting*.
- P2 **Olatunji, S.**, Potenza, A., Oron-Gilad, T., Kiselev, A., Loutfi, A., & Edan, Y. (2020). Usability Testing for the Operation of a Mobile Robotic Telepresence System by Older Adults. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 64(1), 1191–1195. <https://doi.org/10.1177/1071181320641284>

Workshops in Robotics Conferences (with paper publication)

- W1. **S. Olatunji**, V. Sarne-Fleischmann, S. S. Honig, T. Oron-Gilad, & Y. Edan, “Feedback Design to Improve Interaction of Person-following Robots for Older Adults,” in *Mobile Robot Assistants for the Elderly, Workshop at the International Conference on Robotics and Automation (ICRA)*,

Montreal, Canada, May 20-24, 2019.

https://morobae.github.io/papers/morobae_p03_olatumji.pdf

- W2. Markfeld, N., **Olatumji, S.**, Gutman, D., Givati, S., Sarne-Fleischmann, V., & Edan, Y. (2021). Feedback modalities for a table setting robot assistant for elder care. *Quality of Interaction in Socially Assistive Robots (QISAR) Workshop International Conference on Social Robotics (ICSR'19)* - Madrid, Spain, November 26-29, 2019.
- W3. Kumar, S., Itzhak, E., **Olatumji, S.**, Sarne-Fleischmann, V., Tractinsky, N., Nimrod, G., & Edan, Y. (2021). Exploratory evaluation of politeness in human-robot interaction. *Quality of Interaction in Socially Assistive Robots (QISAR) Workshop International Conference on Social Robotics (ICSR'19)* - Madrid, Spain, November 26-29, 2019.
- W4. **Olatumji, S.**, Fleischmann-Serna, V., Honig, S. S., Zaichyk, H., Markovich, T., Oron-Gilad, T., & Edan Y. (2018). User preferences for socially acceptable person-following robots: environmental influence case studies. *Assistance and Service Robotics in a Human Environment Workshop, IEEE/RSJ International Conference on Intelligent Robots and Systems.*, 2018.
- W5. Honig, S. S., Oron-Gilad, T., Fleischmann-Serna, V., **Olatumji, S.**, & Edan, Y. (2018). A User-Needs based Approach for Designing Human-Robot Interaction. *Workshop on Robotic Co-workers 4.0: Human Safety and Comfort in Human-Robot Interactive Social Environments, IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2018.

Conference Presentations

- CP1. Ranganeni, V., Nguyen, V., Evans, H., Evans, J., Mehu, J., **Olatumji, S.**, Rogers, W., Edsinger, A., Kemp, C., & Cakmak, M. (2024). Robots for Humanity: In-Home Deployment of Stretch RE2. In Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction (HRI '24).
- CP2. Nguyen V., **Olatumji S.A.**, Cakmak M., Edsinger A., Kemp C.C., Rogers W.A., Enhancing a Care Partner-Recipient Dyad's Self-Care, Productivity, and Leisure with a Mobile Manipulator Robot. ACRM, 2023
- CP3. Nguyen, V., **Olatumji, S.**, Cakmak, M., Edsinger, A., Kemp, C., Rogers, W.A. 2022. Improving Robot-Assisted Care Using Participatory Design, Human Factors and Ergonomics 2022, Atlanta. Late breaking result presentation.
- CP4. Avioz-Sarig O., **Olatumji S.**, Sarne-Fleischmann V., Edan Y. 2019. Robotic system for physical training of older adults, Robotics: Science and Systems, RSS 2019 - June 23, 2019 Freiburg, Germany. Extended abstract, poster presentation.
- CP5. Avioz-Sarig O., **Olatumji S.**, Sarne-Fleischmann V., Edan Y. 2019. Robotic system for physical training of older adults, ICR 2019 – 6th Israeli Conference of Robotics, July 2019, Herzelia, Israel. Abstract, oral presentation.
- CP6. Gutman, D., Markfeld, N., **Olatumji, S.**, Sarne-Fleischmann, V., Oron-Gilad, T., & Edan, Y. Evaluating Fluency in Robot- Assisted Table Setting for Older Adults, ICR 2019 – 6th Israeli Conference of Robotics, July 2019, Herzelia, Israel. Abstract, oral presentation.

Invited Presentations

Krull, J., **Olatumji S.A.**, Rogers, W.A., (January, 2024), AGAT Strand Spotlight: Aging, Everywhere, All at Once, With Assistive Technology. Assistive Technology Industry Association (ATIA) conference 2024.

Mahajan H., **Olatunji S.A.**, , Rogers, W.A., (January, 2024), Harnessing a Home Simulation Space to Advance Assistive Technology Design. Assistive Technology Industry Association (ATIA) conference 2024.

Olatunji S.A., & Rogers, W.A. (October, 2023), Designing Robots to Support Health & Wellness for Older Adults. Geriatrics AI – International Conference on Intelligent Robots and Systems (IROS) 2023

Olatunji S.A. (December, 2023), Human-Robot Teaming to Support Health and Aging. MITRE, Human-Machine Teaming Community of Practice (HMT CoP).

Olatunji S.A. & Rogers, W.A. (February, 2023), Designing Robot Teams to Support Health & Wellness for Older Adults. Human-AI-Robot Teaming (HART) Technical Group of HFES