Hooman Hedayati

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Mission: My goal is to improve human-computer & human-robot experience using wide variety of new technologies e.g., mix reality, new sensing technology, etc.

Research Interests

- Human-Robot Interaction
- Assistive Free-Flying Robots
- Virtual and Augmented Reality
- Human-Robot Conversational Groups

Education

Dec. 2021 — PhD in Computer Science, **University of Colorado Boulder**, USA, (Gpa: 4.0/4.0)
Funded by NASA ECF Award (NNX16AR58G PI: Szafir)
Thesis: *"Improving Human-Robot Conversational Groups"*
Daniel Szafir (Chair), Bilge Mutlu, Mark Gross, Takayuki Kanda, and Bradly Hayes

Dec. 2015 — M.Sc in Computer Science, **East Carolina University**, USA (Gpa: 4.0/4.0)
Thesis: "MRSL: Neural Network based Positioning System" | Advisor: MHN Tabrizi

July 2012 — B.Sc in Electrical Engineering, **Lahijan Azad University**, IRAN

Research Experience

Postdoctoral Researcher at *Kyoto University*
Feb. 2022 to *present*
Elevating the realm of human-robot interaction, my work centers on enhancing the real-world experience within a hat shop in a bustling shopping mall. By seamlessly integrating robots into the shop environment, I aim to empower both shopkeepers and customers, optimizing assistance to the shopkeeper and elevating the overall shopping experience for customers.

Postdoctoral Researcher at *North Carolina University at Chapel Hill*
Sep. 2021 to *Dec. 2021*
Design algorithms to improve robots' behavior in human-robot conversational groups.

Research Assistant, Interactive Robotics and Novel Technologies Lab
University of Colorado Boulder
Aug. 2016 to *Dec. 2021*
Improving human-robot interaction by using new technologies e.g., Augmented Reality, Designing new arieal robots, and improving the human-robot conversational groups.

Research & Development Lab Associate at *Disney Research*
May. 2019 to *Aug. 2019*
Research, studying multi-party conversational groups. By collecting data and analyzing it we tried to a computational model to detect and categorize F-formations

Research Intern at *Microsoft Research*
May. 2018 to *Aug. 2018*
Research and developing an algorithm to help robots detect F-formations and conversational groups.

Teaching Experience

Spring 2021	"Computational Foundations II" Teaching Assistant, CU Boulder, USA
Fall 2016	"Software Methods and Tools" Teaching Assistant, CU Boulder, USA
Spring 2015	"Introduction to computer Science" Instructor , ECU, USA

Selected Publications

Summary: First Author (9), Awarded Paper (1), HRI (4), IROS (3), CHI (2). 625 citations and 9 h-index and 8 i10-index since 2017, based on Google Scholar.

13. *"Augmented Reality and Robotics: A Survey and Taxonomy for AR-enhanced Human-Robot Interaction and Robotic Interfaces"* R.Suzuki, A.Karim, T.Xia, **H.Hedayti**, N.Marquardt – Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'22) - Acceptance rate 26.3%

12. *"Predicting Positions of People in Human-Robot Conversational Groups"* **H.Hedayti**, D.Szafir – Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI'22) - Acceptance rate 24.8%

11. *"Designing Expandable-Structure Robots for Human-Robot Interaction"* **H.Hedayti**, R.Suzuki, W.Rees, D.Leithinger, D.Szafir – Frontiers in Robotics and AI, V9, April 2022 - 2021 Scopus' CiteScore: 4.4

10. *"What Information Should a Robot Convey?"* **H.Hedayti**, M.Gross, D.Szafir – Proceedings of the 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'21) - Acceptance rate 45%

9. *"PufferBot: Actuated Expandable Structures for Aerial Robots"* **H.Hedayti**, R.Suzuki, D.Leithinger, D.Szafir – Proceedings of the 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'20) - Acceptance rate 47%

8. *"REFORM: Recognizing F-formations for Social Robots"* **H.Hedayti**, A.Muehlbradt, D.Szafir, S.Andrist – Proceedings of the 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'20) - Acceptance rate 47%

7. *"RoomShift: Room-scale Dynamic Haptics for VR with Furniture-moving Swarm Robots"* R.Suzuki, **H.Hedayti**, , C.Zheng, J.Bohn, D.Szafir, E.Do, M.Gross , D.Leithinger – Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI'20) - Acceptance rate 24%

6. *"Comparing F-Formations Between Humans and On-Screen Agents"* **H.Hedayti**, D.Szafir, J.Kennedy – Proceedings of the CHI EA '20: Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems

5. *"Robot Teleoperation with Augmented Reality Virtual Surrogates"* M.Walker*, **H.Hedayti***, D.Szafir – Proceedings of the ACM/IEEE International Conference on Human Robot Interaction (HRI'19) - Acceptance rate 24%

4. *"Recognizing F-Formations in the Open World"* **H.Hedayti**, D.Szafir, S.Andrist – Proceedings of the ACM/IEEE International Conference on Human Robot Interaction (HRI'19)

3. *"HugBot: A soft robot designed to give human-like hugs"* **H.Hedayti**, S.Bhaduri, T,Sumner, D.Szafir, M.Gross – Proceedings of the 18th ACM International Conference on Interaction Design and Children (IDC'19)

2. 🏆 *"Improving Collocated Teleoperation with Augmented Reality"* **H.Hedayti**, M.Walker, D.Szafir – Proceedings of the ACM/IEEE International Conference on Human Robot Interaction (HRI'18) - Best Paper Award Nominee (Top 10 in 217 submissions)

1. 🏆 *"Communicating Robot Intent with Augmented Reality"* M.Walker, **H.Hedayti**, J.Lee, D.Szafir – Proceedings of the ACM/IEEE International Conference on Human Robot Interaction (HRI'18) - Best Paper Award (Top 4 in 217 submissions)

Honors and Awards

2021 Outstanding Research Excellence Award at University of Colorado Boulder
2021 Dissertation Completion Fellowship at University of Colorado Boulder
2021 Ralph J. Slutz Student Excellence Award
2018 Outstanding Research Excellence Award at University of Colorado Boulder
2018 Best Paper Award ACM/IEEE HRI '18
2018 Best Paper Award Nominee ACM/IEEE HRI '18
2015 Outstanding Graduate Student Award at East Carolina University
2015 Best Research award in ECU Research week at East Carolina University
2015 Golden Key International Honor Society
2015 PHI KAPPA PHI Honor Society

Skills

Programming: C#, C++, Java, Python, Processing
Operating system: Linux, Windows
Software and Services: ROS, Matlab, R, Jump, TensorFlow
Physical Prototyping: Arduino, electronics (basic), laser-cutting, 3D printing
VR/AR Prototyping: Unity3D, Vuforia, Kinect

Selected Press Coverage

TechXplore *"A new approach that could improve how robots interact in conversational groups"*
Interesting Engineering *"Pufferfish Mimicking Drones to Improve Aerial Safety"*
Hackster *"PufferBot Is an Aerial Robot That Can Change Shape In-Flight"*
TechXplore *"PufferBot: A flying robot with an expandable body"*
Tech Explorist *"PufferBot: Pufferfish-inspired robot could make flying drones safer"*
IEEE Spectrum *"Augmented Reality Makes Robots Better Coworkers"*

Invited Talks

2022 Improving Human-Robot Conversational Groups
King's College London
Middle East Technical University
Koç University
Yildiz Technical University
2023 Telephone in HRI
Hokkaido University, hosted by **Daisuke Sakamoto**
Ben Gurion University, hosted by **Shelly Levy-Tzedek**

Professional Activities Service

Associated Editor: IROS'23
Student Volunteer: CHI'17, HRI'18, DIS'19, HRI'21
Invited Conference Reviewer: ICRA'19, HRI'19-20, ROMAN'18-20 IROS'20-21, THRI'19, THRI'21, CHI22-23, UIST 22, HAI'22,ICRA'23,HRI'23, ROMAN'23
Invited Journal Reviewer: Frontiers In Virtual Reality'22
Workshop Organization: HRI'23 Symbiotic Society with Avatars: Beyond space and time (SSA) HRI'23