Soheil Habibian

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EDUCATION

Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA 2020–*Present*

Ph.D. Candidate, Mechanical Engineering
Dissertation: Exploring Communication-Driven Robot Learning for Human-Robot Collaboration

Bucknell University, Lewisburg, PA 2017–2020

M.Sc., Mechanical Engineering
Thesis: Analysis and Control of Fiber-Reinforced Elastomeric Enclosures

Qazvin Azad University, Qazvin, Iran 2009–2015

B.S., Mechanical Engineering
Honors Thesis: Design and Implementation of a Tele-operative Response Robot

RESEARCH EXPERIENCE

Graduate Research Assistant, Virginia Tech, Blacksburg, VA Dec 2020–*Present*
Collaborative Robotics Lab

- Created a communicative supervised learning framework to help novice robot users to enhance teaching tasks through kinesthetic demonstrations.
- Implemented a representation learning approach using recurrent neural networks to enable robots robustly influence new human partners.
- Developed a Bayesian-based optimization approach for encouraging human participation in robot teams by incorporating fairness and legibility of subtask allocations.
- Developed an active preference-based learning algorithm for transparent robot teaching.

Reserach Intern, Honda Research Institue, San Jose, CA Jan 2023–May 2023
Human Factors and Ergonomics Group

- Developed modeling framework to understand and predict human cognitive states for human-automation interactions.
- Created and validated tools to optimize system performance based on predicted human states.

Graduate Research Assistant, Bucknell University, Lewisburg, PA Aug 2017–Jan 2020
Integrated Design Manufacturing Robotics Lab

- Developed modeling framework to understand and predict human cognitive states for human-automation interactions.
- Developed a dynamic lumped-parameter model and a finite element model to study the practicability of a fiber-reinforced soft robotic actuator for use in robotic arms
- Developed a controller-based trajectory following algorithm for the soft actuator
- Conducted workspace analysis for a module of multiple soft actuators using FEA

Undergraduate Researcher, Qazvin Azad University, Qazvin, Iran Oct 2011–Jul 2017
Advanced Mobile Robotics Lab

- Managed projects and led an engineering team of 10+ to design and develop mobile response robots for real-life rescue missions.
- Designed and implemented a compact 7-DoF robot arm for dexterous mobile manipulation.
- Designed and implemented a tele-operative response robot for hazardous environments.
- Developed a lightweight throwable two-wheeled robot for reconnaissance missions.

JOURNAL PUBLICATIONS

A. A. Valdivia, **S. Habibian**, C. A. Mendenhall, F. Fuentes, R. Shailly, D. P. Losey, and L. H. Blumenschein, "Wrapping Haptic Displays Around Robot Arms to Communicate Learning," *IEEE Transactions on Haptics*, vol. 16, no. 1, pp. 57-72, 2023.

S. Habibian, A. Jonnavittula, D. P. Losey, "Here's What I've Learned: Asking Questions that Reveal Reward Learning," *ACM Transactions on Human-Robot Interaction*, vol. 11, no. 4, pp. 1-28, 2022.

S. Habibian, D. P. Losey, "Encouraging Human Interaction with Robot Teams: Legible and Fair Subtask Allocations," *IEEE Robotics and Automation Letters*, vol. 7, no. 3, pp. 6685-6692, 2022.

M. Dadvar, **S. Habibian**, "Contemporary Research Trends in Response Robotics," *Robomech*, vol. 9, no. 9, 2022.

S. Habibian, B. B. Wheatley, S. Bae, J. Shin, K. W. Buffinton, "Evaluation of Two Complementary Modeling Approaches for Fiber-Reinforced Soft Actuators," *Robomech*, vol. 9, no. 12, 2022.

S. Habibian, M. Dadvar, et al., "Design and Implementation of a Maxi-Sized Rescue Robot (Karo) for Rescue Missions," *Robomech*, vol. 8, no. 1, 2021.

REFEREED CONFERENCE PROCEEDINGS

S. Parekh, **S. Habibian**, "RILI: Robustly Influencing Latent Intent," in *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Kyoto, Japan, 23-27 October, 2022.

K. W. Buffinton, B. B. Wheatley, **S. Habibian**, J. Shin, B. H. Cenci, and A. E. Christy, "Investigating the Mechanics of Human-Centered Soft Robotic Actuators with Finite Element Analysis," in *Proceedings of IEEE International Conference on Soft Robotics (RoboSoft)*, New Haven, CT, 15 May - 15 July, 2020.

CONFERENCE PRESENTATIONS

"Encouraging Human Interaction with Robot Teams: Legible and Fair Subtask Allocations," *IEEE International Conference on Robotics and Automation (ICRA)*, London, United Kingdom, 29 May - 2 June, 2023.

"Leveraging Roles in Robot Teams to Encourage Human Participation," *Southeast Controls Conference*, Blacksburg, VA, 29 November - 30 November, 2021.

"Finite Element Analysis of Fiber Reinforced Elastomeric Enclosures," *3rd Toyota Research Institute Workshop*, Ann Arbor, MI, 16-17 January , 2019.

AWARDS & SCHOLARSHIPS

- Dean's List, Fall 2002 through Spring 2005, Science College — 2002 – 2005
  For attaining a semester GPA of at least 3.75.
- Undergraduate Researcher Award, Science College — May 2005
  For outstanding scientific contributions in the fields of lasers and climate change.
- Chess Tournament, First Prize, Science College — Mar 2003
  Awarded at the Tenth Annual Chess Tournament held during Open House.
- International Science Scholarship, — Dec 2001
  Global Science, Technology, Engineering, and Mathematics Foundation
  Full-tuition scholarship with stipend for undergraduate studies. One of 42 awardees in the world.

PROFESSIONAL AFFILIATIONS & ACTIVITIES

Joint Society of Earth Scientists and Global Think Tank on Climate Resiliency, North Attleborough, Massachusetts, USA

- Member — 2009 – Present

CAMPUS ACTIVITIES

First Volunteers Club, First American University

- President — Aug 2006 – Aug 2007
  - Lorem ipsum dolor sit amet, consectetur adipiscing elit.
  - Curabitur vitae laoreet velit, vel ultricies est. Nam nec elit ac ante facilisis ultrices.
  - Integer sit amet turpis dolor. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nunc at orci eu leo vulputate finibus sed et sem.
  - Suspendisse volutpat sapien et mi cursus, gravida ornare mauris sollicitudin.

OTHER WORK EXPERIENCE

Alpha Engineering Firm, Oakland, Ohio, USA

- Project Officer, Department of Meteorological Sciences, Research & Development Division — Oct 2007 – Jan 2008
  - Nullam venenatis egestas nisl eget elementum.
  - Nulla finibus justo vel turpis efficitur, non lacinia orci maximus. Proin rhoncus, felis vel hendrerit lacinia, enim ipsum ultricies massa, sit amet interdum nisi massa sit amet justo.
  - Etiam vitae eros mollis, consectetur quam quis, molestie massa.

LANGUAGES

- English: Native language.
- Spanish: Fluent (speaking, reading, writing).
- Latin: Intermediate (reading); basic (speaking, writing).

SKILLS

TeX, LaTeX, XeLaTeX, MATLAB, Mathematica, Maple, R, Tableau, Adobe Photoshop, Adobe Illustrator, Microsoft Word, Microsoft Excel, Microsoft PowerPoint.

INTERESTS

Digital photography, typography, swimming.

REFERENCES

- **Professor Jonathan Public**
  Professor of Geology and Mechanical Engineering
  First American University
  1000 First Avenue, Springfield, Massachusetts 22222, USA
  jonathanpublic@example.com • +1 (555) 222-2222

- **Dr Alice Bob Carol**
  Director, Research & Development
  Alpha Engineering Firm
  20 North Street, Oakland, Ohio 33333, USA
  alicebobcarol@example.com • +1 (555) 333-3333

MULTILINGUAL UNICODE EXAMPLES

- Assortment of unicode characters from http://www.ltg.ed.ac.uk/~richard/unicode-sample.html
  Latin Extended-A Ā ā Ă ă Ą ą Ć ć Ĉ ĉ Ċ ċ Č č Ď ď Đ đ Ē ē Ĕ ĕ Ė ė Ę ę Ě ě Ĝ ĝ Ğ ğ Ġ ġ Ģ ģ Ĥ ĥ Ħ ħ Ĩ ĩ Ī ī Ĭ ĭ Į į İ ı Ĳ ĳ Ĵ ĵ **Latin Extended-B** ƀ Ɓ Ƃ ƃ Ƅ ƅ Ɔ Ƈ ƈ Ɖ Ɗ Ƌ ƌ ƍ Ǝ Ə Ɛ Ƒ ƒ Ɠ Ɣ ƕ Ɩ Ɨ Ƙ ƙ ƚ ƛ Ɯ Ɲ ƞ Ɵ Ơ ơ Ƣ ƣ Ƥ ƥ Ʀ Ƨ ƨ Ʃ ƪ ƫ Ƭ ƭ Ʈ Ư ư Ʊ Ʋ Ƴ ƴ Ƶ **Latin Extended Additional** Ḁ ḁ Ḃ ḃ Ḅ ḅ Ḇ ḇ Ḉ ḉ Ḋ ḋ Ḍ ḍ Ḏ ḏ Ḑ ḑ Ḓ ḓ Ḕ ḕ Ḗ ḗ Ḙ ḙ Ḛ ḛ Ḝ ḝ Ḟ ḟ Ḡ ḡ Ḣ ḣ Ḥ ḥ Ḧ ḧ Ḩ ḩ Ḫ ḫ Ḭ ḭ Ḯ ḯ Ḱ ḱ Ḳ ḳ Ḵ ḵ **Greek** ʹ ͵ ͺ ; ΄ ΅ Ά · Έ Ή Ί Ό Ύ Ώ ΐ Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω Ϊ Ϋ ά έ ή ί ΰ α β γ δ ε ζ η θ **Cyrillic** Ё Ђ Ѓ Є Ѕ І Ї Ј Љ Њ Ћ Ќ Ў Џ А Б В Г Д Е Ж З И Й К Л М Н О П Р С Т У Ф Х Ц Ч Ш Щ Ъ Ы Ь Э Ю Я а б в г д е ж з **Hebrew** א ב ג ד ה ו ז ח ט י ך כ ל ם מ ן נ ס ע ף פ ץ צ ק ר ש ת װ ױ ײ ״ **Armenian** Ա Բ Գ Դ Ե Զ Է Ը Թ Ժ Ի Լ Խ Ծ Կ Հ Ձ Ղ Ճ Մ Յ Ն Շ Ո Չ Պ Ջ Ռ Ս Վ Տ Ր Ց Ւ Փ Ք Օ Ֆ ՙ ՚ ՛ ՜ ՝ ՞ ՟ ա բ գ դ ե զ **Thai** ก ข ฃ ค ฅ ฆ ง จ ฉ ช ซ ฌ ญ ฎ ฏ ฐ ฑ ฒ ณ ด ต ถ ท ธ น บ ป ผ ฝ พ ฟ ภ ม ย ร ฤ ล ฦ ว ศ ษ ส ห ฬ อ ฮ ฯ ะ ั า ำ ิ

THIS IS A SECTION WITH USAGE NOTES

THIS IS A SUBSECTION

- Use **\Section{a}{b}{c}** and **\SubSection{a}{b}{c}** to create sections and subsections, where **a** is the heading displayed on the page, **b** is the PDF bookmark heading, and **c** is the internal PDF link (must be unique). Sections and subsections will appear in the PDF bookmarks. Note the CamelCase command names.
- Use **\Entry**, **\BulletItem**, **\SubBulletItem**, **\Item**, **\SubItem**, **\NumberedItem**, etc., to create entries in the main body of the CV.
- Enclose entry details between **\begin{Detail}** and **\end{Detail}** so that they are typeset in a smaller font.
  This is an example of entry detail text enclosed in a **Detail** environment.
- Use **\Gap** and **\BigGap** to insert vertical spaces between entries to improve layout.

THIS IS ANOTHER SUBSECTION

This is a plain **\Entry**, followed by an **\hfill** and a date range Oct 2015 – Dec 2015

- This is a **\BulletItem**.
  This is an **\Item**, which has no bullet. Note the alignment with the **\BulletItem** above.
  - This is a **\SubBulletItem**.
    This is a **\SubItem**, which has no bullet. Note the alignment with the **\SubBulletItem** above.

[42] This is a **\NumberedItem**. Change the value of the macro **\MaxNumberedItem** to adjust the indentation width.

LINE, PARAGRAPH, AND PAGE BREAKS

- To create a new line within the same paragraph (i.e., preserving the same paragraph indentation), use **\newline** instead of \\; the latter will reset the paragraph indentation.
- To create a new paragraph, use **\par** or simply leave an empty line. Paragraph indentations (from **\Entry**, **\BulletItem**, **\SubBulletItem**, **\Item**, **\SubItem**, **\NumberedItem**, etc.) do not carry across different paragraphs.
- To create a new page, use **\newpage**.

DATES

- Use the following macros to specify and display dates consistently:
  - **\DatestampYMD{yyyy}{MM}{dd}** (e.g., **\DatestampYMD{2008}{01}{15}**)
  - **\DatestampYM{yyyy}{MM}** (e.g., **\DatestampYM{2008}{01}**)
  - **\DatestampY{yyyy}** (e.g., **\DatestampY{2008}**)
- Change the date format option passed to the document class to adjust how dates are displayed throughout the document:
  - **MMMyyyy** (“Jan 2008”)
  - **ddMMMyyyy** (“15 Jan 2008”)
  - **MMMMyyyy** (“January 2008”)
  - **ddMMMMyyyy** (“15 January 2008”)
  - **yyyyMMdd** (“2008-01-15”)
  - **yyyyMM** (“2008-01”)
  - **yyyy** (“2008”)

[*CV compiled on 2023-10-03 for Acme Corporation*]