# Shiwali Mohan

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Webpages | Curriculum Vitae | Research Statement | Diversity Statement | Google Scholar

## EDUCATION

### PHD, CSE - AI
University of Michigan
2015 | Ann Arbor, MI
Thesis: From Verbs to Tasks - An Integrated Account of Learning Tasks from Situated Interactive Instruction [pdf]

### MASTER OF SCIENCE
University of Michigan
2009 | Ann Arbor, MI

### BACHELOR OF ENGINEERING
University of Delhi
2007 | New Delhi, India

## SKILLS

### EXPERTISE
Hybrid AI Systems: ML + KRR
Human-Centered AI/ML
Human-Machine Interaction
Computational Cognitive Science

### TOOLS
Programming: Python, Java, Objective C
Expert Systems: Soar, CLIPS
ML: PyTorch, TensorFlow
Statistics: R, Pandas, NumPy, SciPy
Visualization: Matplotlib, Seaborn

### COMMUNICATION
Scientific articles: AI, HCI, HRI
Patent applications
Research/funding proposals
Government stakeholder management

## SERVICE

### ADVISING
Preeti Ramaraj, UM
Will Hancock, Northwestern

### COMMUNITY
**Chair**: ACS, AAAI-DC
**SPC/PC**: AAAI, IJCAI, ACM: IUI, HRI, UpiComp, ICRA, IEEE RO-MAN
**Reviewer**: ACM TiiS, Autonomous Robots

## MEDIA

### INVITED TALKS
Tech & Society @ CUNY/UCB
Robotics Colloquium @ UW
MLUX
ACM IUI 2021

### PRESS
IEEE Spectrum, 2021. [link]
Outside Magazine, 2017. [link]

## EMPLOYMENT

### XEROX PARC | Intelligent Systems Lab
Senior Member of Research Staff — 2019 – Current | Palo Alto, CA

*Principal Investigator*, DARPA SAIL-ON — $4M, 2019-2023

- Leading research on design of intelligent systems that are robust to post-deployment novelties and domain shifts.
- Demonstrated that a hybrid AI system with model-based and machine learned components can adapt quickly to changes introduced in the environment during deployment.
- Managing a inter-disciplinary team of 7 at Xerox PARC, UPenn, and Ben Gurion University. Providing leadership in program-wide evaluation efforts.

*Principal Investigator*, DARPA GAILA — $1.7M, 2019-2022

- Leading research on embodied natural language processing (ELP) for robots
- Developing a neuro-cognitive architecture implementing CV, spatial reasoning, goal-oriented task management, inverse kinemantics, analogical reasoning & generalization, natural language processing (NLP), and dialog management.
- Managing an inter-disciplinary team of 4 at Xerox PARC.
- Created a patent (pending) portfolio for embodied language processing.

Member of Research Staff — 2015 - 2019 | Palo Alto, CA

- Proposed and integrated social science models in AI & ML systems. Prototyped novel human-computer interaction patterns. Conducted human participant studies for impact evaluation.
- **Health behavior change**: implemented AI scheduling algorithms for coaching leveraging cognitive theory of behavior change, evaluated impact through longitudinal, ecological human-participant studies.
- **Sustainable transportation**: extended multi-modal planning to incorporate user preferences estimated via a rational choice model, evaluated model through stated choice surveys, analyzed energy conservation using agent-based models.

### YAHOO! | Business Intelligence
Software Engineer — 2007 - 2008 | Bangalore, India

## SELECTED PUBLICATIONS

*12 journal articles | 2 book chapters | 16 conference publications | 9 patents pending or granted*

- **Shiwali Mohan**. Exploring the Role of Common Model of Cognition in Designing Adaptive Coaching Interactions for Health Behavior Change. ACM Transactions on Interactive Intelligent Systems. 2021. `cs.AI,cs.CY,cs.HC`
- Preeti Ramaraj, Charles Ortiz, **Shiwali Mohan**. Unpacking Human Teachers' Intentions for Natural Interactive Task Learning. IEEE International Conference on Robots & Human Interactive Communication 2021. `cs.RO,cs.HC`
- **Shiwali Mohan**, Matt Klenk, Matthew Shreve, Aaron Ang, Kent Evans, John Maxwell. Characterizing an Analogical Concept Memory for Architectures Implementing the Common Model of Cognition. Advances in Cognitive Systems. 2020. `cs.AI,cs.HC,cs.RO,cs.SC`
- **Shiwali Mohan**, Anusha Venkatakrishnan, Andrea Hartzler. Designing an AI Health Coach and Studiying its Utility in Promoting Regular Aerobic Exercise. ACM Transactions on Interactive Intelligent Systems. 2020. `cs.AI,cs.HC,cs.CY`
- **Shiwali Mohan**, Hesham Rakha, Matthew Klenk. Acceptable Planning: Influencing Individual Behavior to Reduce Transportation Energy Expenditure of a Cityhttps://preetiramaraj.github.io/. Journal of Artificial Intelligence Research. 2019. `cs.AI,cs.CY,cs.HC,cs.LG`
- John Laird and **Shiwali Mohan**. Learning Fast and Slow: Levels of Learning in General Autonomous Intelligent Agents. In Proceedings of the $32^{nd}$ AAAI Conference on Artificial Intelligence. AAAI 2018. Blue Sky Award