

# Amit Singh

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## PROFILE

Ph.D. candidate in Cognitive Science with a strong interdisciplinary background in human–robot interaction, multimodal behaviour modeling, and experimental research. Experienced in designing and analyzing human-centered studies using eye-tracking, Bayesian modeling (Stan), and machine learning (Python).

## EDUCATION

**Paderborn University, Germany**  
Ph.D. in Cognitive Science

Expected November 2025

**FernUniversität in Hagen, Germany**  
Certificate in Mathematical and Computer Science Fundamentals

March 2025 - Ongoing

**University of Hyderabad, India**  
M.Sc. in Cognitive Science (Graduated with Distinction; GPA: 9.12/10)

2018-2020

**Jawaharlal Nehru University, India**  
B.A. in Linguistics

2014-2015

## PROJECTS

### **Contextualized and online parametrization of attention in human–robot explanatory dialog**

Sep. 2021 – Present

*Project Associate & Researcher*

*Paderborn, Germany*

- Designed and conducted experiments to parameterize human attention (eye movements) using mobile and remote eye trackers during (semi-)automated explanatory dialogues with NAO robot.
- Developed and applied Bayesian models using the Stan framework to predict gaze behavior in real-time during verbal explanation generation.
- Collaborated with multi-institutional partners across Germany to coordinate experimental design and deliver project outcomes
- Implemented an ELAN-based annotation scheme and integrated it with OpenCV to recognize multimodal features (e.g., gestures) during critical interaction windows.

## EXPERIENCE

**Software Engineering Research Center (SERC), IIIT Hyderabad** July. 2019 – Sept. 2019  
*Research Intern* *Hyderabad, India*

- Contributed to the development and testing of JavaScript-based speech processing application.
- Gained hands-on experience with version control systems (Git/GitHub) for collaborative open-source development.
- Involved in end-to-end implementation, debugging, and feature enhancement of research software.

**Amazon Development Center, Bangalore**  
*(Full-Time) Catalogue Associate, RBS*

June. 2017 – Sep. 2018  
*Bangalore, India*

- Data management, ensuring data integrity and consistency across the catalog prominently for DE Marketplace.
- Using in-house Amazon tools and Excel to perform bulk uploads, edits, and data audits.
- Coordinating with internal teams (e.g., category managers, vendor managers), reporting issues or process gaps.

## SKILLS

**Human-Centered Methods:** Eye-tracking (Tobii, Pupil Labs), ELAN, User Study Design, Annotation Pipelines

**Machine Learning:** Python (Scikit-learn, TensorFlow, PyTorch), Bayesian Modeling (Stan)

**Programming & Tools:** OpenCV, Mediapipe, Git, MATLAB, Docker

**Languages:** English (Fluent), German (C1), Hindi (Native)

## Certifications

- **Natural Language Processing with Classification and Vector Spaces**  
*DeepLearning.AI (Coursera)* Issued: May 2021  
Credential ID: CDFKLXTK2QVF
- **Advanced NLP with Python for Machine Learning**  
*LinkedIn Learning* Issued: April 2021  
Credential ID: AXXQF2kU2eUZdYzc6ZmeDhhkh5Elu
- **Applied Machine Learning: Algorithms**  
*LinkedIn Learning* Issued: April 2021  
Credential ID: AXvE9YvI3OzUq9V1bcBFqQAaYH6q

## Selected Publications

### Conference Talks (Accepted / To Appear)

- Singh, A., & Rohlfing, K.J. (2024). *Coupling of Task and Partner Model: Investigating the Intra-Individual Variability in Gaze during Human-Robot Explanatory Dialogue*. 26th ACM International Conference on Multimodal Interaction (ACM ICMI 2024), San Jose, Costa Rica.
- Singh, A., & Rohlfing, K.J. (2025). *Embedding Psycholinguistics: An Interactive Framework for Studying Language in Action*. 6th Biannual Conference of the German Society for Cognitive Science (KogWis 2025), Ruhr-University Bochum, Germany. (Accepted)

### Peer-Reviewed Journal Articles

- Singh, A., & Rohlfing, K.J. (2023). *Contrastive verbal guidance: A beneficial context for attention to events and their memory?* *Cognitive Science*. \*(Under review)\*
- Groß, A., Singh, A., Banh, N. C., Richter, B., Scharlau, I., Rohlfing, K. J., & Wrede, B. (2023). *Scaffolding the human partner by contrastive guidance in an explanatory human-robot dialogue*. *Frontiers in Robotics and AI*, 10.

### Conference Contributions (Peer-Reviewed)

- Singh, A., Wrede, B., Richter, B., Groß, A., & Rohlfing, K.J. (2025). *Manners Matter: Action history guides attention and repair choices during interaction*. IEEE International Conference on Development and Learning (ICDL). (Accepted)
- Singh, A., & Rohlfing, K.J. (2023). *Contrastiveness in the context of action demonstration: An eye-tracking study on its effects on action perception and action recall*. Proceedings of the 45th Annual Meeting of the Cognitive Science Society.
- Singh, A., & Rohlfing, K.J. (2022). *Does contrastive attention guidance facilitate action recall? An eye-tracking study*. In Ferstl et al. (Eds.), Proceedings of KogWis 2022, Albert-Ludwigs-Universität Freiburg, Germany.
- Singh, A., & Rohlfing, K.J. (2022). *Negation processing in action: How action path is interpreted in a negated context?* In Frau et al. (Eds.), Book of Abstracts - XPRAG 2022. \*(Poster and Abstract Presentation)\*