# Dr. Ing. Nicolo' Brandizzi

**AI Researcher**
**Research Scientist at Fraunhofer IAIS**

## CONTACTS

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📍 Bonn, Germany

🏠 nicofirst1.github.io

⚙ nicofirst1

in Nicolo' Brandizzi

👥 01/1995

## EXPERIENCE

### Programming

Python 10 year(s)  ●●●●●
LaTeX 8 year(s)  ●●●●●
HPC 5 year(s)  ●●●●○
Bash 8 year(s)  ●●●●○
HTML/CSS 3 year(s)  ●●●○○

### Artificial Intelligence

Deep Learning/ ML 8 year(s)  ●●●●●
Reinforcement Learning 6 year(s)  ●●●●●
NLP / LLMs 6 year(s)  ●●●●●
Data Engineer 1 year(s)  ●●●●○
AI Governance 1 year(s)  ●●●○○

### Operating Systems

MacOS 17 year(s)  ●●●●●
Linux 9 year(s)  ●●●●●
Windows 1 year(s)  ●●○○○

### Languages

| | |
|---|---|
| Italian | Native |
| English | C1 |
| Spanish | A2 |
| German | A2 |

## INTERESTS

○ Martial arts enthusiast 6 year(s)
○ RPG aficionado 13 year(s)
○ Drum player 5 year(s)

## 💼 WORK EXPERIENCE

### Research Scientist at Fraunhofer-IAIS
📅 03/2024 - Ongoing  📍 St. Augustin, Germany

Engaged in the research and development of scalable data pipelines for large language models, focusing on multilingual and multimodal data integration. Applied my expertise to standardize data processing workflows, ensuring efficiency and quality in data preparation.

### Research Collaborator
📅 02/2023 - 03/2024  📍 Sapienza University of Rome, Italy

Contracted for the AFORS "Trust your Agent" project, focusing on mixed human-machine cooperation based on model-based, hierarchical, and communication-augmented reinforcement learning. The project aimed to develop novel approaches for effective human-AI collaboration, with outcomes contributing to the field of trust and influence in AI systems.

### Research Scientist at Basis Health
📅 10/2022 - 04/2023  📍 Middletown, 19709, USA (Remote)

Conducted in-depth analysis of academic literature related to wearable data and health applications, with a focus on identifying cutting-edge solutions. Leveraged insights from research papers to drive innovation in industry applications. Collaborated with cross-functional teams to translate academic findings into practical approaches and techniques for data analysis, aiming to improve personal health outcomes.

### Teaching Assistant
📅 07/2020 - 09/2022  📍 Sapienza University of Rome, Italy

I have held several teaching assistant positions, including for the courses *Tecniche di Programmazione* and *Seminars in Artificial Intelligence*. In these roles, I was responsible for leading discussions, providing support to students, grading assignments and exams, and facilitating a positive learning environment.

### Research Collaborator
📅 07/2021 - 09/2021  📍 Sapienza University of Rome, Italy

Engaged in the MBDA project - Artificial Intelligence Techniques for Assisted Mission Planning. Authored a technical report on "Multi-agent Model Based Reinforcement Learning," showcasing expertise in this field and demonstrating the ability to effectively communicate complex technical concepts and results.

# 🎓 EDUCATION

**Ph.D.** Engineering in Computer Science 🗓 2020 - 2024
📍 Sapienza University of Rome, Italy

- **Ph.D. Thesis**: "Conversational Agents in Human-Machine Interaction: Reinforcement Learning and Theory of Mind in Language Modeling", under supervision of Prof. Luca Iocchi and Prof. Roberto Navigli.
- **Research Visit at UBT**: I completed a 10 months (04/2023 - 02/2024) research visit at the University of Bayreuth under the supervision of Prof. Daniel Buschek.
- **Research Visit at UvA**: I completed a 5 months (03/2022 - 08/2022) scientific visiting period at Amsterdam university under the supervision of Prof. Raquel Fernández.
- **Thesis Supervision**: I have provided supervision for several Master's students in their thesis writing.
- **Research Group**: I am part of the Ro.Co.Co. lab at DIAG ( Dipartimento di Ingegneria informatica, automatica e gestionale). My supervisor is Prof. Luca Iocchi.

**M.Sc.** of Engineering in Artificial Intelligence and Robotics 🗓 2017 - 2020
📍 Sapienza University of Rome, Italy

- **Grade** : 110 with honors /110 (GPA 4/4).
- **M.Sc. Thesis**: "Reinforcement Lupus: Cooperation through emergent communication in The Werewolf social deduction game", under supervision of Prof. Luca Iocchi.
- **Erasmus Program**: I completed a 10 months (10/2019 - 08/2020) Erasmus program in the University of Groningen, Netherlands, under the supervision of Prof. Davide Grossi.

**B.Sc.** of Computer and Autonomous System Engineering 🗓 2014 - 2017
📍 Sapienza University of Rome, Italy

- **Grade** : 101/110 (GPA 2.97/4).
- **B.Sc. Thesis**: "Comparison Between Segmentation Methods", under supervision of Prof. Fiora Pirri.
- **Internship** : I completed a 7 months internship (05/2017 - 01 /2018) in the ALCOR Lab under the supervision of Dr. Luigi Freda working on the TRADR EU project.

# 🏴 CERTIFICATIONS, GRANTS AND AWARDS

## Grants & Fellowships

*09/2023 - 09/2023*   **RWTH Aachen University**: "Future of AI" Summit in Aachen   %

*07/2023 - 07/2023*   **TAILOR**: Connectivity Fund   %

*06/2023 - 12/2023*   **University Van Amsterdam**: Research Engineering Support Grant   %

*09/2022 - 09/2022*   **COST Action EU**: Multi3Generation Training School   %

*10/2021 - 10/2022*   **Sapienza University of Rome**: Research scholarship (Avvio di ricerca)   %

## Awards

🏆 2021 - Spotlight paper in Adaptive and Learning Agents Workshop [ALA21] at AAMAS.

🏆 2020 - First classified for Ph.D. scholarship at Sapienza University of Rome, Italy.

## Certifications

*08/2022 - 11/2022*   **BlueDot Impact - AI Safety Fundamentals**: AI Governance   %

# 👥 CONFERENCES, SUMMER SCHOOLS & WORKSHOPS

## Organizer

07/2024      Organizer at **AI-Mind Workshop 2.0:**   R2Net AI Research & Mental Well-Being Workshop at ESSAI2024   %

04/2024      Lead Guest Editor at **MultiTTrust:**   Sepcial Issue at Journal of Interaction Studies   %

| 12/2023 | Organizer at **MultiTTrust Workshop:** | Multidisciplinary Perspectives on Human-AI Team Trust  %|

12/2023    Organizer at **MultiTTrust Workshop:**    Multidisciplinary Perspectives on Human-AI Team Trust  %

07/2023    Organizer at **AI-Mind Workshop:**    R2Net AI Research & Mental Well-Being Workshop at ESSAI2023  %

12/2022    Organizer at **Weights and Biases Workshop:**    Workshop at Sapienza University

09/2022    Local Chair at **AI4UAM PhD School:**    Artificial Intelligence for Urban Air Mobility  %

## Invited Talks

03/2025    Speaker at **Data Technology Seminar :**    Data processing at scale for the Teuken model  %

07/2024    Speaker at **AI-Mind Workshop 2.0:**    Advancing Generative and Trustworthy AI: Key Projects at Fraunhofer IAIS.  %

07/2024    Speaker at **Solarpunk Conference:**    Federated Approaches to Data Challenges in Ethical AI  %

06/2024    Presenter at **4th TAILOR Conference:**    Trustworthy AI from lab to market  %

11/2023    Speaker at **Fraunhofer IAIS:**    Minds and Machines: Towards Aligned Human-AI Interaction

10/2023    Speaker at **CLAIRE Rome Office Launch:**    Safeguarding the Future: Higher Level AI Education  %

05/2022    Speaker at **AIhub:**    New voices in AI  %

05/2022    Speaker at **Lightning Talks:**    CLAIRE Rising Researchers Network  %

01/2021    Speaker at **Sapienza University of Rome:**    Machine Learning Seminars  %

## Attendee

07/2023    Attendee at **Summer School:**    European Summer School on Artificial Intelligence  %

09/2022    Attendee at **Training School:**    Representation mediated Multimodality  %

01/2022    Attendee at **Winter School:**    DeepHealth Winter School  %

## Others

06/2023    Student Volunteer at **HHAI2023:**    Conference on Hybrid Human-Artificial Intelligence  %

11/2021    Mentee at **Virgilio Project:**    Mentoring for Young Entrepreneurs and Start-ups  %

# 🏭 PROFESSIONAL EXPERIENCES

### Co-investigator    📅 07/2023 - Ongoing    📍 Institute for Biomedical Research of the Italian National Research Council (IRIB-CNR), Italy

Collaborating on the research project "Stress-Related Difficulties and Neurodiversity Traits in People Working in Artificial Intelligence" aimed at understanding and addressing the mental health challenges faced by AI researchers. Responsible for the development and deployment of an online questionnaire to gather data on work-related stress and neurodiversity traits among AI professionals. The project is funded by the "Ministry of Enterprises and Made in Italy" (MIMIT) and adheres to ethical guidelines, with approval from the Hospital of Palermo.

### Lead Developer    📅 11/2021 - 03/2025    📍 Bayreuth University, Germany

Led the conceptualization, design, and implementation of the CorpusCompass project within the DFG-funded "Modernity, Migration and Minorities" research project, resulting in CorpusCompass securing the UvA Research Software Engineering grant (where I am a Co-Principal Investigator) and acceptance at Clic-IT 2023.

### PhD student representative    📅 11/2021 - 10/2023    📍 Sapienza University, Rome, Italy

Acted as a liaison between the PhD student body and university administration, advocating for student needs and promoting a positive academic environment. Successfully negotiated and secured complimentary AI writing software licenses for the entire department, enhancing research productivity and resources.

## Member of the Department Council  📅 06/2021 - 10/2023  📍 DIAG, Sapienza University, Rome, Italy

Played a key role in shaping department policies, collaborating with council members and faculty to support departmental success and growth.

## Project Developer  📅 07/2021 - 07/2022  📍 Rotaract Club, Rome, Italy

Coordinated the Save Your Life project to raise breast cancer awareness, launching an informative website and organizing public events and outreach.

# 🔗 COMMUNITY ENGAGEMENT

## Z-Inspection® Affiliate  📅 11/2024 - Ongoing  📍 Online

Joining the Z-Inspection® initiative, focused on evaluating trustworthy AI. Contributing to the development of responsible AI assessment frameworks and collaborating with international experts to ensure that AI systems are aligned with ethical standards, human rights, and societal values.

## CAIRNE│SIG on Ethical, Legal, and Social Aspects of AI Member  📅 10/2024 - Ongoing  📍 Online

Member of the CAIRNE Special Interest Group on Ethical, Legal, and Social Aspects of Artificial Intelligence. Engaged in:
- **Ethical Discussions and Dilemma Reflection**: Contributing to discussions on ethical dilemmas in AI, such as bias and fairness, and reflecting on societal impacts of AI technologies.
- **Workshops and Seminars**: Participating in and contributing to workshops on responsible AI practices and legal compliance.
- **Collaboration on Ethical AI**: Collaborating with group members to integrate ethical, legal, and social aspects into ongoing AI projects, ensuring adherence to European standards.

## CAIRNE│R2net Kernel member  📅 12/2022 - Ongoing  📍 Online

Promoted to kernel member within CAIRNE│Rising Researcher Network, serving as the first line of contact between CAIRNE and R2Net members. Managed a network of 300 students. Involved in:
- **Annual Paper Award**: Organized and promoted a yearly award to showcase outstanding papers by network members on CAIRNE's platforms.
- **Resource Coordination**: Managed R2Net's calendar of events, open calls, grants, and handbook.
- **Workshops and Events**: Coordinated AI research and mental well-being workshops, dissertation support groups, and joint events with ESSAI Summer School.
- **Community Engagement**: Presented a talk on R2Net opportunities and benefits, and launched a private LinkedIn group for enhanced networking and knowledge exchange.

## Volunteer at ADI  📅 11/2021 - 01/2024  📍 Rome, Italy

Volunteered with ADI (Associazione dottorandi in Italia) to support fellow doctoral students across Italy, contributing to initiatives aimed at enhancing the doctoral candidate experience.

## Rotaract Club volunteer  📅 04/2018 - 01/2024  📍 Rome, Italy

As an active member of the Rotaract Club RTMM, worked as an informatics consultant to design and implement technology solutions supporting club initiatives focused on community service and leadership development. I was also the President of the Internal Commission (06/2017 - 06/2018) where I was responsible for internal member coordination and the organization of social events.

## CAIRNE│R2Net volunteer  📅 01/2022 - 12/2022  📍 Online

Joined CAIRNE│Rising Researcher Network, aiding in organizing partnerships, social events, and summer schools for Ph.D. students interested in Artificial Intelligence.

## Erasmus Student Network volunteer  📅 03/2021 - 10/2022  📍 Rome, Italy

Organized and coordinated tandem language exchange programs and multiple large-scale events, each attended by over 200 participants. Gained extensive experience in event management, cross-cultural communication, and serving as a primary contact for incoming Erasmus students.

# ✏️ PEER REVIEWS

2024  **Springer Nature:**  Autonomous Agents and Multi-Agent Systems

2024  **IROS:**  IEEE/RSJ International Conference on Intelligent Robots and Systems

2023  **Journal:**  AI Communications

2023  **EACL:**  The 17th Conference of the European Chapter of the Association fo Computational Linguistics

2022  **CSAE:**  The 6th International Conference on Computer Science and Application Engineering

2022  **Emergent Communication Workshop:**  International Conference on Learning Representations [ICLR]

# PUBLICATIONS

## Journal Articles

[1] **N. Brandizzi**, "Toward More Human-Like AI Communication: A Review of Emergent Communication Research". In: *IEEE Access* 11 (2023), pp. 142317–142340. DOI: 10.1109/ACCESS.2023.3339656.

[2] S. Pepe, S. Tedeschi, **N. Brandizzi**, S. Russo, L. Iocchi, C. Napoli, "Human Attention Assessment Using A Machine Learning Approach with GAN-based Data Augmentation Technique Trained Using a Custom Dataset". In: *OBM Neurobiology* 06.03 (Sept. 2022), p. 139. ISSN: 2573-4407. DOI: 10.21926/obm.neurobiol.2203139. URL: https://doi.org/10.21926/obm.neurobiol.2203139.

[3] **N. Brandizzi**, D. Grossi, L. Iocchi, "RLupus: Cooperation through emergent communication in The Werewolf social deduction game". In: *Intelligenza Artificiale* 15 (2021), pp. 55–70. ISSN: 2211-0097. DOI: 10.3233/IA-210081. URL: https://doi.org/10.3233/IA-210081.

## Conference Papers

[4] G. Contino, R. Cipollone, F. Frattolillo, A. Fanti, **N. Brandizzi**, L. Iocchi, "Modeling a Trust Factor in Composite Tasks for Multi-Agent Reinforcement Learning". In: *Proceedings of the 12th International Conference on Human-Agent Interaction*. HAI '24. Swansea, United Kingdom: Association for Computing Machinery, 2024, pp. 195–203. DOI: 10.1145/3687272.3688325. URL: https://doi.org/10.1145/3687272.3688325.

[5] M. Adnan, **N. Brandizzi**, "CorpusCompass: A Tool for Data Extraction and Dataset Generation in Corpus Linguistics". In: *Proceedings of the 9th Italian Conference on Computational Linguistics*. Ed. by F. Boschetti, G. E. Lebani, B. Magnini, N. Novielli, vol. 3596. CEUR Workshop Proceedings. Venice, Italy: CEUR Workshop Proceedings, 2023, pp. 16–27. URL: http://ceur-ws.org/Vol-3596/.

[6] **N. Brandizzi**, D. Brunori, F. Frattolillo, A. Trapasso, L. Iocchi, "Mixed Human-UAV Reinforcement Learning: Literature Review and Open Challenges". In: *Proceedings of the 1st International Conference on Cognitive Aircraft Systems (ICCAS 2022)*. INSTICC. SciTePress, 2023, pp. 38–42. ISBN: 978-989-758-657-6. DOI: 10.5220/0011955100003622.

[7] **N. Brandizzi**, C. Centeio Jorge, R. Cipollone, F. Frattolillo, L. Iocchi, A.-S. Ulfert-Blank, "MULTITTRUST: 2nd Workshop on Multidisciplinary Perspectives on Human-AI Team Trust". In: *Proceedings of the 11th International Conference on Human-Agent Interaction*. HAI '23. Available online at https://multittrust.github.io/2ed/. Gothenburg,Sweden: Association for Computing Machinery, 2023, pp. 496–497. DOI: 10.1145/3623809.3623978. URL: https://doi.org/10.1145/3623809.3623978.

[8] E. Takmaz, **N. Brandizzi**, M. Giulianelli, S. Pezzelle, R. Fernández, "Speaking the Language of Your Listener: Audience-Aware Adaptation via Plug-and-Play Theory of Mind". In: *Findings of the Association for Computational Linguistics: ACL 2023, Toronto, Canada, July 9-14, 2023*. Ed. by A. Rogers, J. L. Boyd-Graber, N. Okazaki, Association for Computational Linguistics, 2023, pp. 4198–4217. DOI: 10.18653/V1/2023.FINDINGS-ACL.258. URL: https://doi.org/10.18653/v1/2023.findings-acl.258.

[9] **N. Brandizzi**, A. Fanti, R. Gallotta, S. Russo, L. Iocchi, D. Nardi, C. Napoli, "Unsupervised Pose Estimation by Means of an Innovative Vision Transformer". In: *Artificial Intelligence and Soft Computing - 21st International Conference, ICAISC 2022, Zakopane, Poland, June 19-23, 2022, Proceedings, Part II*. Ed. by L. Rutkowski, R. Scherer, M. Korytkowski, W. Pedrycz, R. Tadeusiewicz, J. M. Zurada, vol. 13589. Lecture Notes in Computer Science. Springer, 2022, pp. 3–20. DOI: 10.1007/978-3-031-23480-4. URL: https://doi.org/10.1007/978-3-031-23480-4.

## Workshop Papers

[10] J. Adler, C. Scholle, D. Buschek, **N. Brandizzi**, M. Adnan, "User-Centered Design of Digital Tools for Sociolinguistic Studies in Under-Resourced Languages". In: *Proceedings of the 3rd Workshop on NLP Applications to Field Linguistics (Field Matters 2024)*. Ed. by O. Serikov, E. Voloshina, A. Postnikova, S. Muradoglu, E. Le Ferrand, E. Klyachko, E. Vylomova, T. Shavrina, F. Tyers, Bangkok, Thailand: Association for Computational Linguistics, Aug. 2024, pp. 12–27. URL: https://aclanthology.org/2024.fieldmatters-1.3.

[11] **N. Brandizzi**, C. C. Jorge, F. Frattolillo, L. Iocchi, A. Ulfert-Blank, eds. *Proceedings of the 2nd International Workshop on Multidisciplinary Perspectives on Human-AI Team Trust co-located with 11th International Conference on Human-Agent Interaction (HAI 2023), Gothenburg, Sweden, December 4-7, 2023*. Vol. 3634. CEUR Workshop Proceedings. CEUR-WS.org, 2024. URL: https://ceur-ws.org/Vol-3634.

[12] S. Di Rienzo, F. Frattolillo, R. Cipollone, A. Fanti, **N. Brandizzi**, L. Iocchi, "Developing Targeted Communication through a Trust Factor in Multi-Agent Reinforcement Learning". In: *Proceedings of HHAI 2024 Workshops*. Ed. by P. Ericson, N. Khairova, M. D. Vos, vol. 3825. CEUR Workshop Proceedings. Published under Creative Commons License Attribution 4.0 International (CC BY 4.0). Malmö, Sweden: CEUR-WS.org, June 2024, pp. 171–175. URL: http://ceur-ws.org/Vol-3825/.

[13] F. Frattolillo, **N. Brandizzi**, R. Cipollone, L. Iocchi, "Towards Computational Models for Reinforcement Learning in Human-AI Teams". In: *Proceedings of the 2nd International Workshop on Multidisciplinary Perspectives on Human-AI Team Trust*. Vol. 3634. CEUR Workshop Proceedings. Gothenburg, Sweden, 2023, pp. 41–51. URL: https://ceur-ws.org/Vol-3634/.

[14] **N. Brandizzi**, L. Iocchi, "Emergent communication in human-machine games". In: *Emergent Communication Workshop at ICLR 2022*. 2022. URL: https://openreview.net/forum?id=rqLgeQWCXZ9.

[15] R. Aureli, **N. Brandizzi**, G. De Magistris, R. Brociek, "A Customized Approach to Anomalies Detection by using Autoencoders". In: *Proceedings of the Scholar's Yearly Symposium of Technology, Engineering and Mathematics (SYSTEM 2021), Catania, Italy, July 27-29, 2021*. Ed. by R. Fazzolari, A. A. Jaber, vol. 3092. CEUR Workshop Proceedings. CEUR-WS.org, 2021, pp. 53–59. URL: http://ceur-ws.org/Vol-3092/p09.pdf.

[16]   **N. Brandizzi**, V. Bianco, G. Castro, S. Russo, A. Wajda, "Automatic RGB Inference Based on Facial Emotion Recognition". In: *Proceedings of the Scholar's Yearly Symposium of Technology, Engineering and Mathematics (SYSTEM 2021), Catania, Italy, July 27-29, 2021*. Ed. by R. Fazzolari, A. A. Jaber, vol. 3092. CEUR Workshop Proceedings. CEUR-WS.org, 2021, pp. 66–74. URL: http://ceur-ws.org/Vol-3092/p11.pdf.

[17]   **N. Brandizzi**, A. Fanti, R. Gallotta, C. Napoli, "FEFFuL: a Few-Examples Fitness Function Learner". In: *Proceedings of the Scholar's Yearly Symposium of Technology, Engineering and Mathematics (SYSTEM 2021), Catania, Italy, July 27-29, 2021*. Ed. by R. Fazzolari, A. A. Jaber, vol. 3092. CEUR Workshop Proceedings. CEUR-WS.org, 2021, pp. 75–79. URL: http://ceur-ws.org/Vol-3092/p12.pdf.

[18]   **N. Brandizzi**, S. Russo, R. Brociek, A. Wajda, "First Studies to Apply the Theory of Mind Theory to Green and Smart Mobility by Using Gaussian Area Clustering". In: *Proceedings of the International Conference of Yearly Reports on Informatics, Mathematics and Engineering, Online, July 9, 2021*. Ed. by R. Fazzolari, A. A. Jaber, vol. 3118. CEUR Workshop Proceedings. CEUR-WS.org, 2021, pp. 71–76. URL: http://ceur-ws.org/Vol-3118/p10.pdf.

## Preprints

[19]   M. Ali, M. Fromm, K. Thellmann, J. Ebert, A. Arno, R. Rutmann, C. Jain, M. Lübbering, D. Steinigen, J. Leveling, K. Klug, J. Schulze, L. Jurkschat, H. Abdelwahab, B. Jörg, K.-H. Sylla, P. Denisov, **N. Brandizzi**, Q. Saleem, B. Anirban, C. John, P. Ortiz, M. Ostendorff, A. Jude, L. Manjunath, S. Weinbach, C. Penke, S. Asaadi, F. Barth, R. Sifa, F. Küch, R. Jäkel, G. Rehm, S. Kesselheim, J. Köhler, N. Flores-Herr, *Progress Report: Towards European LLMs*. 2024. arXiv: 2410.03730 [cs.CL]. URL: https://arxiv.org/abs/2410.03730.

[20]   **N. Brandizzi**, "Extended Abstract: Conversational Agents in Human-Machine Interaction, Reinforcement Learning and Theory of Mind in Language Modeling". In: May 2024, p. 4. DOI: 10.13140/RG.2.2.29722.25287. URL: https://www.researchgate.net/publication/380396634_Extended_Abstract_Conversational_Agents_in_Human-Machine_Interaction_Reinforcement_Learning_and_Theory_of_Mind_in_Language_Modeling.

[21]   **N. Brandizzi**, H. Abdelwahab, A. Bhowmick, L. Helmer, B. J. Stein, P. Denisov, Q. Saleem, M. Fromm, M. Ali, R. Rutmann, F. Naderi, M. S. Agy, A. Schwirjow, F. Küch, L. Hahn, M. Ostendorff, P. O. Suarez, G. Rehm, D. Wegener, N. Flores-Herr, J. Köhler, J. Leveling, *Data Processing for the OpenGPT-X Model Family*. Oct. 2024. arXiv: 2410.08800 [cs.CL]. URL: https://arxiv.org/abs/2410.08800.

## Other

[22]   **N. Brandizzi**, "Conversational Agents in Human-Machine Interaction: Reinforcement Learning and Theory of Mind in Language Modeling". PhD thesis. 2024. URL: https://hdl.handle.net/11573/1709118.