

# Melanie Sclar

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## Education

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<b>University of Washington</b> PhD in Computer Science <i>Advisors: Yejin Choi, Yulia Tsvetkov</i> Dissertation: <i>Structure-Guided Approaches for Robust Language Model Reasoning.</i> GPA: 3.98/4.0.	Sept 2021–present
<b>Universidad de Buenos Aires</b> Licenciatura en Ciencias de la Computación (6-year integrated Master's and Bachelor's degree) Dissertation: <i>Analysis and Prediction of Human Visual Search.</i> GPA: 9.42/10 (equiv. 3.96/4.0).	2017

## Work Experience

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<b>Visiting Researcher</b> <i>Meta FAIR (Fundamental AI Research), Superintelligence Labs</i> Developed robust evaluation and synthetic data generation methods for theory of mind in LLMs (ICLR 2025), interpretable personalized preference models (COLM 2025 Oral), and post-training for theory of mind in LLMs.	Sept 2023–Sept 2025
<b>Research Intern</b> <i>Carnegie Mellon University / Advisors: Yonatan Bisk, Graham Neubig</i> Designed first fully-symmetric multi-agent environment requiring theory of mind (ToM). Showed multi-agent RL models benefit from explicit ToM modeling but still achieve <50% of simple heuristics' performance (ICML'22).	Apr–Aug 2021
<b>Lead Machine Learning Engineer</b> <i>ASAPP</i> Built context-aware message suggestion system to speed up customer support interactions for Fortune 500 companies. Designed extensible architecture combining neural encoders with tree-based ranking, allowing rapid addition of new customer-vetted responses without model retraining (+15% CTR in the core company product).	Nov 2019–Apr 2021
<b>Lead Machine Learning Engineer</b> <i>BrightSector Algorithms</i> Led 5-person team researching and deploying NLP algorithms at scale for Mercado Libre (Latin America's largest e-commerce platform). Developed named entity recognition models for product attribute extraction, classification systems for item categorization, and clustering methods to consolidate 200M+ listings.	Jan 2018–Oct 2019
<b>Software Engineering Intern</b> <i>Facebook Inc.</i> (2016) Researched adaptive video stabilization to optimize compute while preserving video quality (2 patents). (2015) Built recommendation algorithms for Feed content using sentiment analysis and trending topic detection.	Jan–Apr 2016, Jan–Apr 2015

## Selected Honors & Awards

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### Mathematics Olympiads

- National Champion**, Argentine Mathematical Olympiad (2011)  
**Bronze Medal**, Ibero-American Mathematical Olympiad (2011)  
**Silver Medal**, South American Mathematical Olympiad (2010)  
Second place, Inter-University Argentine Mathematical Competition (CIMA) (2016)  
Bronze Medal, Ibero-American Youth Mathematics Competition (2008)

### Computer Science and Machine Learning Olympiads

- Latin America Champion**, ICPC World Finals (2015) – International Collegiate Programming Competition  
**Champion, South America South Regional ICPC** (2013, 2014); 3rd place (2012)  
**National Champion, Argentine ICPC Competition** (2014); 2nd place (2012); 3rd place (2013)  
First (2017) and second place (2018), Universidad de Buenos Aires Computing School ML nationwide competition

## Selected Publications

\*denotes equal contribution

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### Robustness, Model Behavior Quantification and Understanding

**Sclar, M.**, Choi, Y., Tsvetkov, Y., Suhr, A. (2024). Quantifying Language Models' Sensitivity to Spurious Features in Prompt Design or: How I learned to start worrying about prompt formatting. **ICLR 2024 (500+ cits)**.

**Sclar, M.\***, Dziri, N.\*., Lu, X.\*., et al. (2023). Faith and Fate: Limits of Transformers on Compositionality. **NeurIPS 2023, Spotlight (600+ citations)**.

Lu, X., **Sclar, M.**, [...], Choi, Y. (2025). AI as Humanity's Salieri: Quantifying Linguistic Creativity of Language Models via Systematic Attribution of Machine Text against Web Text. **ICLR 2025, Oral**.

Lin, B. Y., Ravichander, A., Lu, X., Dziri, N., **Sclar, M.**, [...], Choi, Y. (2024). The unlocking spell on base llms: Rethinking alignment via in-context learning. **ICLR 2024**.

### Theory of Mind Reasoning, Personalization, Modeling Human Behavior

**Sclar, M.**, Kumar, S., West, P., Suhr, A., Choi, Y., Tsvetkov, Y. (2023). Minding Language Models' (Lack of) Theory of Mind: A Plug-and-Play Multi-Character Belief Tracker. **ACL 2023, Outstanding Paper Award**. Awarded **Amazon Research Gift Grant (\$125,000)** based on this research to continue this line of work.

Li, SS., **Sclar, M.**, et al., PrefPalette: Personalized Preference Modeling with Latent Attributes. (2025). **COLM 2025, Oral**.

**Sclar, M.**, Yu, J., Fazel-Zarandi, M., Tsvetkov, Y., Bisk, Y., Choi, Y., Celikyilmaz, A. (2025). Explore Theory of Mind: Program-guided adversarial data generation for theory of mind reasoning. **ICLR 2025**.

**Sclar, M.**, Neubig, G., Bisk, Y. (2022). Symmetric Machine Theory of Mind. **ICML 2022**.

**Sclar, M.\***, Bujia, G.\*., Vita, S., Solovey, G., Kamienkowski, J.E. (2020). Modeling human visual search: A combined bayesian searcher and saliency map approach for eye movement guidance in natural scenes. **SVRHM NeurIPS Workshop 2020, Oral presentation; NVIDIA Diversity in AI Best Paper Award**.

## Patents

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Wolf, W.A., **Sclar, M.**, et al. (2024). Processing clusters with mathematical models for message suggestion. U.S. Patent 11,985,102.

**Sclar, M.**, et al. (2020). Neural network to optimize video stabilization parameters. U.S. Patent 10,582,211.

**Sclar, M.**, et al. (2019). Foreground detection for video stabilization. U.S. Patent 10,506,248.

## Selected Service, Outreach & Teaching

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**Teaching:** Head Teaching Assistant, University of Washington (two quarters); Teaching Assistant, Universidad de Buenos Aires (9 semesters; 2014–2017, 2019); Mathematics Olympiad Coach (2012–2016), plus others below.

**Organization:** Bridging Language, Agent, and World Models for Reasoning and Planning Workshop (NeurIPS 2025); South America Topcoder Open Regionals (2019); 20+ programming and mathematics competitions (2012–2018); Organizer & instructor at competitive programming training camps (2014–2018; Brazil & Argentina)

**Outreach:** Weekly programming instructor for underrepresented students in partnership with National University of San Martin, Argentina (2016–2018); Invited speaker at FemIT 2020, conference for Latin American women in tech (1500+ attendees); University of Buenos Aires' annual Computer Science Week Invited Speaker (2017–2020)

**Jury Member:** Argentine Informatics Olympiad (2018–present); Argentine Mathematics Olympiad (2020)

**Invited Speaker:** Visions of Language Modeling Workshop @ COLM (2025); Oracle ML (2024), CMU (2024), Universidad Torcuato di Tella (2024), among others.

## Skills

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**Programming:** Python (advanced); C++, Java, MATLAB, SQL (intermediate); R, Bash, PHP/Hack (basic)

**Languages:** Spanish (native), English (fluent, TOEFL 119/120), Portuguese (advanced), French (intermediate)