Melanie Sclar

PhD Student, University of Washington *msclar@cs.washington.edu*

Education

PhD in Computer Science, University of Washington 2021-present

Advised by Prof. Yejin Choi and Prof. Yulia Tsvetkov (GPA 3.98).

Licenciatura en Ciencias de la Computación, Universidad de Buenos Aires 2012-2017

Equivalent to Master + Bachelor in Computer Science. 9.42/10 (equivalent to GPA 3.96)

Dissertation: *Analysis and Prediction of Human Visual Search*, advised by Dr. Juan Kamienkowski and Dr. Guillermo Solovey.

Courses from *Mathematical Sciences* not included for the Computer Science degree (since double majors do not exist in Argentina). Geometry (2020); Mathematical Statistics (2019); Markov Processes applied to Deep Learning (2019); Game Theory (2017); Complex Analysis (2013); Advanced Calculus (2013); Calculus II (vector calculus, 2013); Advanced Linear Algebra (2012).

Work Experience

Research Intern at Carnegie Mellon University April 2021 - August 2021

Developed a fully-symmetric multi-agent environment with Profs. Yonatan Bisk and Graham Neubig, demonstrating that reinforcement learning agents with theory of mind modeling outperform those without–but showing that even our best models fail to succeed, justifying this environment as a suitable test for future research. Published in ICML'22.

Lead Machine Learning Engineer at ASAPP November 2019 - April 2021

Responsible for developing and improving models to suggest possible next utterances in a customer care-related conversation, given the context and wording preferences of each user. Also responsible for analyzing possible flaws in the current architecture, proposing alternative solutions, and productionizing models.

Lead Data Scientist at BrightSector Algorithms January 2018 - October 2019

(Data Scientist from January to July 2018, Lead Data Scientist since August 2018)

Lead the team of Data Science & ML, focused mainly on Named Entity Recognition of technical attributes of Mercado Libre's listings, the largest e-commerce in Latin America. Also responsible for clustering those user-published listings that refer to the same product to improve the search engine, among other NLP tasks.

Software Engineer Intern at Facebook Inc. January - April 2016

Worked in the Video Encoding Team on video stabilization algorithms. Researched methods to understand when stabilization is necessary and saving computing time while preserving video quality when it is not needed.

Software Engineer Intern at Facebook Inc. January - April 2015

Developed algorithms to improve the recommendation system of videos and articles in the Facebook feed. These algorithms were based on sentiment analysis and trending topic detection.

Teaching Assistant at University of Buenos Aires 2014 - 2017 and August 2019

(2019) *Natural Language Processing* at UBA's Winter School, with Dr. Germán Kruszewski (visiting prof).

(2015-2017) Algorithms and Data Structures III (graph theory, dynamic programming, related topics).
(2016, 2nd semester) Problems, Algorithms and Programming; (2016, 1st semester) Programming Paradigms; (2014) Algorithms and Data Structures I. *Total of 9 semesters, 10 hours of workload per week.*

Coach for Mathematics Olympiads March 2012 - November 2016

Schools: Argentine Model (2013-2016), Martin Buber (2013), Carlos Pellegrini (2012). Also private coach.

Publications

Conference and Journal publications

Sclar, M., Kumar, S., West, P., Suhr, A., Choi, Y., Tsvetkov, Y., 2023. Unlocking Language Models' Theory of Mind: A Plug-and-Play Multi-Character Belief Tracker. *In submission to Annual Meeting of the Association for Computational Linguistics.*

Sclar, M., West, P., Kumar, S., Tsvetkov, Y. and Choi, Y., 2022. Referee: Reference-Free Sentence Summarization with Sharper Controllability through Symbolic Knowledge Distillation. In Empirical Methods in Natural Language Processing (pp. 9649-9668). ACL.

Sclar, M., Neubig, G. and Bisk, Y., 2022. Symmetric Machine Theory of Mind. In International Conference on Machine Learning (pp. 19450-19466). PMLR.

Sclar, M.*, Bujia, G.*, Vita, S., Solovey, G. and Kamienkowski, J.E., 2020. Modeling human visual search: A combined Bayesian searcher and saliency map approach for eye movement guidance in natural scenes. **Oral presentation at SVRHM NeurIPS Workshop 2020 (top 10%, 2nd highest scoring paper. NVIDIA Diversity in AI Best Paper Award)**. Full work published to Frontiers in Systems Neuroscience.

Patents

Wolf, W., **Sclar, M.**, Rosenbaum, C.G.B., Fox, C.D. and Weinberger, K.Q., ASAPP Inc, 2021. *Processing clusters with mathematical models for message suggestion*. U.S. Patent Application 17/246,263.

Sclar, M., Puntambekar, A., Coward, M.H. and Parsons-Keir, W.D., Facebook Inc, 2020. Neural network to optimize video stabilization parameters. U.S. Patent 10,582,211.

Sclar, M., Puntambekar, A., Coward, M.H. and Parsons-Keir, W.D., Facebook Inc, 2019. Foreground detection for video stabilization. U.S. Patent 10,506,248.

Honors and Awards

International Awards

- **Latin American Champion and First to Solve Problem F Award in the 39th Annual World Finals of the ACM International Collegiate Programming Contest (ACM-ICPC) in Marrakech, Morocco (2015).**
- Champion in the South America/South Regional Contest of the ACM-ICPC (2013 and 2014, 3rd place in 2012).
- Honorable Mention in the XXIV Asian Pacific Mathematics Olympiad (2012).
- **Bronze Medal in the 26th Ibero-American Mathematical Olympiad (2011) in San Jose, Costa Rica.**
- **Silver Medal in the 21st South American Mathematical Olympiad (2010) in São Paulo, Brazil.**
- Bronze Medal, Honorable Mention in the Ibero-American Youth Mathematics Competition (2008, 2009 resp.).

Selected National Awards in Argentina

- Second place in the Inter-University Argentine Mathematical Competition (CIMA) (2016). (equiv. to Putnam)
- **First, third and second place in Argentine Programming Tournament (TAP) (2014, 2013 and 2012 resp.).**
- **National Champion in Argentine Olympiad in Mathematics (OMA) (2011).**
- National 3rd place in the Mathematics & Computer Science Tournament (CyM) (2011).
- National Subchampion in Argentine Olympiad in Mathematics (OMA) (2008).
- **Distinguished Student, University of Buenos Aires (2015, 2016, for all the awards in Olympiads).**

Awards and Scholarships in Machine Learning

- Selected student with a full scholarship to attend the *Latin American Meeting In Artificial Intelligence (Khipu)* and poster presenter (November 2019).
- First place and second place in Almundo's ECI competition (2017 and 2018 respectively). ECI is the University of Buenos Aires' Winter Computing School, that has nationwide reach and currently has an AI track.

Other scholarships

- *2019 Google I/O Travel Award*, given by Google to the top contestants of their *Codejam to I/O* coding competition.
- *2017 Academic Merit Award*, by Santander Bank, 2017.
- *Bicentennial Scholarship*, by the Ministry of Education, Presidency of the Argentine Nation, 2012-2017.
- *Award-Scholarship City of Buenos Aires*, by the Buenos Aires City Government, 2007-2011.

Other achievements

- 2019 First Ascent International world finalist. (top 20 students on CS, Math and Data Science qualifiers)
- Certificate of Achievement by the Upsilon Pi Epsilon honor society, for the awards at ACM-ICPC 2015.

Service

Reviewer 2022 - present
MMMPIE Workshop, COLING 2022.

Member of the jury of the Argentinian Informatics Olympiad 2018 - present
Also member of the jury for the 2020 Argentinian Mathematics Olympiad.

Invited speaker at Meetups / Conferences, spreading Machine Learning to larger audiences 2019 - present
Data Science Argentina Virtual Meetup 2020, *FemIT 2020 [conference for Latin American women in tech, +1500 attendees]*, *Google Tensorflow Meetup Buenos Aires 2019*, among other talks.

Organizer of 20+ programming and mathematical competitions 2012 - present
Among many others, I was the main organizer of the 2019 South America Topcoder Open Regionals.

Invited speaker at U. Buenos Aires' yearly week of Computer Science 2017 - 2020

Organizer and teacher of programming competitions' training events 2014 - 2018
Invited to teach in four two-week intensive algorithmic *Training Camps* for undergraduates (Uberlandia [Brazil]; Bahia Blanca, Resistencia, Buenos Aires [Argentina]), as well as several events aimed at high school students.

Teacher of a weekly programming workshop for students from underrepresented groups 2016 - 2018
In partnership with the National University of San Martin, directed to low-income students and minorities.

Skills

Programming Languages Python, C++, Java (advanced); MATLAB, SQL, Athena (intermediate); R, Bash, PHP/Hack (basic).

Natural Languages Spanish (native); English (advanced, iBT 119); Portuguese (advanced); French (intermediate).