Otilia Stretcu

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Languages: Romanian (native), English (fluent), Spanish (beginner), German (beginner), Swedish (beginner)

RESEARCH AREAS

My research focuses on developing algorithms for machine learning, mainly focused on active learning, large language models, data-efficient training, human-in-the-loop. During my PhD I also worked on curriculum learning, semi-supervised learning, multitask learning, and graph-based problems. I am also passionate about applying machine learning methods in neuroscience, in order to study how the brain understands language and represents knowledge.

EDUCATION

2015 - 2021 **Carnegie Mellon University – Ph.D. in Machine Learning**   USA
- Co-advised by **Prof. Barnabàs Pòczos** and **Prof. Tom Mitchell**
- GPA: 4.0 (4.0 scale)
- Thesis topic: *Curriculum Learning*
- Thesis committee: Tom Mitchell, Barnabàs Pòczos, Ruslan Salakhutdinov, Rich Caruana

2015 - 2017 **Carnegie Mellon University – M.S. in Machine Learning**   USA
- Co-advised by **Prof. Barnabàs Pòczos** and **Prof. Tom Mitchell**
- GPA: 4.0 (4.0 scale)
- Thesis: *Understanding the Neural Basis of Speech Production Using Machine Learning*
- Master's degree requirements completed while working towards obtaining my Ph.D.

2014 - 2015 **University of Cambridge – Master of Philosophy (M.Phil.) in Advanced Computer Science**   UK
- Advised by **Prof. Pietro Lió**
- Thesis: *Machine Learning Methods for Computational Microscopy*
- Pass with Distinction

2010 - 2014 **Politehnica University of Timisoara - B.Eng. in Computer Science and Information Technology**   Romania
- GPA: 9.98 (10.0 scale)
- 1st out of 140 students

2012 - 2013 **Linköping University - Erasmus Exchange Student**   Sweden
- I spent the third year of my undergraduate studies as an Erasmus exchange student at Linköping University, Sweden.

WORK EXPERIENCE

2021-2023 **Senior Research Scientist at Google AI Research**   USA
- Full-time research scientist at **Google AI** in Mountain View, CA, USA.

2021-2023 **Research Scientist at Google AI Research**   USA
- Full-time research scientist at **Google AI** in Mountain View, CA, USA.

Spring 2019 **Student Researcher at Google AI Research**   USA
- Part time internship in the **Expander team** in **Google AI Research**.
- Research on deep learning models for graph-based semi-supervised learning, published at NeurIPS 2019.

Summer 2018 **Software Engineering Intern at Google AI Research**   USA
- **Expander team** in **Google AI Research**, Mountain View, CA, USA.
- Research on deep learning models for graph-based semi-supervised learning.

Summer 2016 **Software Engineering Intern at Google X**   USA
- **Self-Driving Car team** in **Google X** (current Waymo), Mountain View, CA, USA.
- Undisclosed machine learning project for the Google self-driving car.

Summer 2014 **Software Developer Intern at Microsoft**   USA
- **Cortana team** at **Microsoft**, Redmond, WA, USA.
- Undisclosed machine learning project for Cortana, Windows' digital personal assistant.

RESEARCH PUBLICATIONS

* denotes equal contribution and joint lead authorship.

WSDM · 2024

Scaling Up LLM Reviews for Google Ads Content Moderation

W. Qiao, T. Dogra, **O. Stretcu**, YH. Lyu, T. Fang, D. Kwon, CT. Lu, E. Luo, Y. Wang, C. Chia, A. Fuxman, N. Wang, R. Krishna, M. Tek

In Industry Day Proceedings of the 17th ACM International Conference on Web Search and Data Mining (WSDM) 2024.

NeurIPS · 2023

Benchmarking Robustness to Adversarial Image Obfuscations

F. Stimberg, A. Chakrabarti, CT. Lu, H. Hazimeh, **O. Stretcu**, W. Qiao, Y. Liu, M. Kaya, C. Rashtchian, A. Fuxman, M. Tek, S. Gowal

In Proceedings of the Thirty-Seventh Conference on Neural Information Processing Systems, 2023.

ICCV

Agile Modeling: From Concept to Classifier in Minutes

O. Stretcu*, E. Vendrow*, K. Hata*, K. Viswanathan, V. Ferrari, S. Tavakkol, W. Zhou, A. Avinash, E. Luo, N. G. Alldrin, MH. Bateni, G. Berger, A. Bunner, CT. Lu, J.A. Rey, G. DeSalvo, R. Krishna, A. Fuxman

In Proceedings of the IEEE/CVF International Conference on Computer Vision, ICCV 2023, Paris, France, October 2-6, 2023 2023.

NeurIPS · 2020

Modeling Task Effects on Meaning Representation in the Brain via Zero-Shot MEG Prediction.

M. Toneva*, **O. Stretcu***, B. Póczos, L. Wehbe, T. Mitchell

In Proceedings of the Thirty-Fourth Conference on Neural Information Processing Systems, 2020.

AAAI · 2020

Contextual Parameter Generation for Knowledge Graph Link Prediction

G. Stoica*, **O. Stretcu***, E.A. Platanios*, T. Mitchell, B. Póczos

In Proceedings of the Thirty-Fourth AAAI Conference on Artificial Intelligence, 2020.

ICLR

Coarse-to-Fine Curriculum Learning

O. Stretcu, E.A. Platanios, T. Mitchell, B. Póczos

In International Conference on Learning Representations (ICLR) Workshop on Bridging AI and Cognitive Science (BAICS), 2020.

NeurIPS · 2019

Graph Agreement Models for Semi-Supervised Learning

O. Stretcu, K. Viswanathan, D. Movshovitz-Attias, E.A. Platanios, S. Ravi, A. Tomkins

In Proceedings of the Thirty-third Conference on Neural Information Processing Systems, 2019.

NeurIPS

Contextual Parameter Generation for Knowledge Graph Link Prediction

G. Stoica*, **O. Stretcu***, E.A. Platanios*, T. Mitchell, B. Póczos

In Neural Information Processing Systems Workshop on Graph Representation Learning, 2019.

UAI

Efficient Multitask Feature and Relationship Learning.

H. Zhao, **O. Stretcu**, R. Negrinho, A. Smola, G. Gordon.

In Proceedings of the 2019 Annual Conference on Uncertainty in Artificial Intelligence 2019.

HBM

Investigating Task Effects on Brain Activity During Stimulus Presentation in MEG.

O. Stretcu*, M. Toneva*, B. Póczos, and T. Mitchell.

Accepted for poster presentation at the Human Brain Mapping Conference, 2019.

NAACL

Competence-based Curriculum Learning for Neural Machine Translation.

E A. Platanios, **O. Stretcu**, G. Neubig, B. Póczos, and T. Mitchell.

Oral presentation at the Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), 2019.

JNeuro

Subthalamic nucleus and sensorimotor cortex activity during speech production.

A. Chrabaszcz, W. J. Neumann, **O. Stretcu**, W.J. Lipski, A. Bush, C. Dastolfo-Hromack, D. Wang, D. J. Crammond, S. Shaiman, M. Walsh Dickey, L.L. Holt, R. S. Turner, J.A. Fiez, and R. M. Richardson

The Journal of Neuroscience : the Official Journal of the Society for Neuroscience, 2019.

SDM · 2017

BRAINZOOM: High Resolution Reconstruction from Multi-modal Brain Signals

X. Fu*, K. Huang*, **O. Stretcu***, H. Song*, E.E. Papalexakis, P. Talukdar, N.D. Sidiropoulos, C. Faloutsos, T. Mitchell, and B. Póczos.

Oral presentation at SIAM International Conference on Data Mining (SDM), 2017

NeurIPS

Efficient Multitask Feature and Relationship Learning

H. Zhao, **O. Stretcu**, R. Negrinho, A. Smola, G. Gordon.

NeurIPS Workshop on Learning with Limited Labeled Data: Weak Supervision and Beyond, 2017

CMU

Understanding the neural basis of speech production using Machine Learning

O. Stretcu.

Master's Thesis in Machine Learning at Carnegie Mellon University, 2017

BMVC	**Multiple Frames Matching for Object Discovery in Video.** **O. Stretcu**, M. Leordeanu. *In British Machine Vision Conference (BMVC), 2015.*	2015
EMIM	**A multi-method driven evaluation of molecular imaging techniques.** **O. Stretcu**, Y. Shavit, and P. Lio *Poster presentation at the 10th Annual Meeting of the European Society for Molecular Imaging (ESMI), 2015.*	

OTHER RESEARCH EXPERIENCE

2014 - 2015 **Independent Research Project in Computer Vision**   Romania

- Research project in collaboration with **Dr. Marius Leordeanu** from the Institute of Mathematics of the Romanian Academy (IMAR).
- Research on unsupervised object discovery in video based on multiple frames matching, published at BMVC 2015.

Summer 2013 **Research Internship in Machine Learning at EPFL**   Switzerland

- Research internship at École Polytechnique Fédérale de Lausanne, Laboratory for Probabilistic Machine Learning, advised by **Dr. Matthias Seeger**.
- I used topic models to explore the correlation between social media messages from Twitter and user locations, with applications to content recommendation, user profiling and topic tracking. I applied various machine learning models and parallelized the code in order to scale well.

Summer 2011 **Research for Undergraduates Program**   Romania

- Advised by **Prof. Emilia Petrisor** at Politehnica University of Timisoara, Romania.
- I implemented algorithms for spectral clustering of nodes in a graph, based on minimum graph cut, with applications to data mining and statistics, such as clustering information from documents on the Web and medical images segmentation.

HONORS AND AWARDS

FELLOWSHIPS

- **Center for Machine Learning and Health (CMLH)** Fellowship in Digital Health (2018)

SCHOLARSHIPS

- **Gates Cambridge Scholarship** (2014)
- **Google Anita Borg Memorial Scholarship** (2013)
- **GE (General Electric) Foundation Scholar Leaders Program** (2012)

AWARDS

- Best poster award at the *Eastern European Machine Learning Summer School* in Bucharest, Romania (2019).
- Machine Learning Department Teaching Assistant Award (2018)
- Carnegie Mellon University Neurohackathon: 2nd place (2017)
- KTH University Programming Challenge, Sweden: Top 10 contestants (2013)
- ACM International Collegiate Programming Contest (**ACM-ICPC**):
  - Honorable Mention in Southeastern European Regional (2013, 2012, 2011)
- **Microsoft Imagine Cup**:
  - Top 20 in the World Finals (2012)
  - 1st team in the Romanian National Finals (2012)
- **Romanian National Olympiad in Informatics**:
  - Gold Medal (2008)
  - Bronze Medal (2010)
  - 1st Place (2004)
  - 2nd Place (2005)
  - Honorable Mention (2010, 2008, 2007, 2003)
- Kangaroo International Mathematical Competition: 2nd in Romanian National Finals (2009, 2010)

TEACHING EXPERIENCE

Spring 2018 **Teaching Assistant for Graduate Machine Learning.**   USA
- Graduate level introduction to machine learning class 10-701 Graduate Machine Learning at Carnegie Mellon University.
- Taught by **Prof. Pradeep Ravikumar** and **Prof. Manuela Veloso**
- I was awarded a Machine Learning Department Teaching Assistant Award.

Fall 2017 **Teaching Assistant for Topics in Deep Learning.**   USA
- Graduate level deep learning class 10-707 Topics in Deep Learning at Carnegie Mellon University.
- Taught by **Prof. Ruslan Salakhutdinov**.

2013 - 2014 **Teaching algorithms for competitive programming.**   Romania
- Co-organized a competitive programming seminar at Politehnica University of Timisoara for university and high-school students interested to train for algorithmic competitions (e.g. ACM-ICPC, informatics olympiad).
- Taught algorithms and data structures used in competitive programming, designed and solved practice problems and internal competitions.

INVITED TALKS

- Lecture on "Jointly modeling images and text" at the Polytechnic University of Bucharest, Romania, as a guest lecturer in the Computer Vision class, part of the Master's program in AI.
- Invited talk at the Quantitative Research Colloquium (QRC) hosted by Morgan Stanley (2021).
- Invited talk at Health@Scale on Graph Agreement Models for Semi-Supervised Learning (2020).
- Represented CMU at the MIDAS Data Science Annual Symposium at the University of Michigan (2019).
- Talk at the CMU AI Seminar on Contextual Parameter Generation for Knowledge Graph Link Prediction (2019).

SERVICES

- **Mentorship:**
  - Mentor in the "Mind the gap" program organized by Google, which aims to increase representation of girls in tech.
  - Mentor for the CMU AI mentoring program (2019 - now)
  - Mentor for junior PhD students at CMU (2019 - now)
- **Program Committees:** I was a reviewer for the following journals, conferences and workshops: NeurIPS (2023, 2022, 2021, 2020), ICML (2019), AISTATS (2020, 2019), ICLR (2020, 2018), ICLR-LLD (2019), PLOS ONE (2019), ICML-GRL (2020), AAAI (2021).
- **Conference Workshops Organized:** Adaptive & Multitask Learning at ICML 2019
- **Other leadership and volunteering activities:**
  - 2018 - now: Founding member of the AI+ Club at Carnegie Mellon University (CMU).
  - 2016 - now: Member of the Doctoral Review Committee of the Machine Learning Department at CMU, which aims to improve the PhD program.
  - 2018 - 2019: Treasurer of the Romanian Students Association at CMU.
  - 2016 - 2018: President of the Romanian Students Association at CMU.
  - 2011 - 2012: Student representative in the faculty leadership board at Politehnica University of Timisoara.
  - 2010 - 2011: Volunteer for AIESEC, international youth organization.
  - 2010 - 2012: Volunteer for Liga AC, student organization at Politehnica University.

COMPUTER SKILLS

- **Programming languages**: Python, C, C++, Matlab, Java.
- **Data Structures and Algorithms**: Familiarity with concepts used in algorithmic competitions and machine learning research.
- **Frameworks**: TensorFlow, NumPy, SciPy, Pandas.
- **Database Systems**: MySQL.

TECHNICAL PROJECTS

- **LiveX Learning Platform**: Tutoring system for kindergarten and school children based on a software platform that runs in the cloud, Windows Phone 7 devices and a set of electronic learning cubes called "IQubes" (our hardware invention) as part of team IQube that competed in the world finals of the Microsoft Imagine Cup competition.
- **Face and Hand Gesture Recognition for Human - Computer Interaction**: Framework for C++ developers to extend their graphical user interfaces with more natural means of communication. Works in real-time using a computer web camera.
- **Public Transport Route Recommendation**: Python application for the Timisoara city public transport system using real-time information from GPS devices installed on public transport vehicles. Overlays optimal routes suggestions on Google Maps (before Google supported this feature).

■ **Handwritten digits recognition**: C library implementing various linear algebra methods for handwritten digits recognition.

OTHER INTERESTS

■ Sports: squash, volleyball, tennis, climbing, hiking.
■ Hobbies: traveling, reading (especially fantasy), painting, movies, arts and crafts, learning languages on Duolingo.