Otilia Stretcu

Date of Birth: January 25th, 1991
Nationality: Romania
Languages: Romanian (native), English (fluent), German (beginner), Spanish (beginner), Swedish (beginner)
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RESEARCH AREAS

My PhD research focuses on developing machine learning methods applied in neuroscience, with the goal of understanding how the brain understands language and controls speech. I am also passionate about drawing inspiration from the human brain and intuition in order to develop new methods for machine learning (mainly focused on semi-supervised and curriculum learning).

EDUCATION

2015-now **Carnegie Mellon University – Ph.D. in Machine Learning** — USA
- Co-advised by **Prof. Barnabàs Pòczos** and **Prof. Tom Mitchell**
- GPA: 4.0

2014-15 **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

2010-14 **Politehnica University of Timisoara - B.Eng. in Computer Science and Information Technology** — Romania
- GPA: 9.98/10
- 1st out of 140 students

2012-13 **Linköping University - Erasmus Exchange Student** — Sweden

WORK EXPERIENCE

Spring 2019 **Software Engineering Intern at Google AI Research** — USA
- Part time internship in the **Expander team** in **Google AI Research**.
- Research in applying deep learning models on graph problems. Publication under review.

Summer 2018 **Software Engineering Intern at Google AI Research** — USA
- **Expander team** in **Google AI Research**, Mountain View, CA, USA.
- Research in applying deep learning models on graph problems.

Summer 2016 **Software Engineering Intern at Google X** — USA
- **Self-Driving Car team** in **Google X** (currently Waymo), Mountain View, CA, USA.
- Undisclosed Machine Learning projects 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 Phone's digital personal assistant.

RESEARCH PUBLICATIONS

HBM — **Investigating Task Effects on Brain Activity During Stimulus Presentation in MEG.** — 2019
O. Stretcu*, M. Toneva*, B. Poczos, 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. Poczos, and T. Mitchell.
Oral presentation at the Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), 2019.

JNeurosci — **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 **BRAINZOOM: High Resolution Reconstruction from Multi-modal Brain Signals** 2017
O. Stretcu*, X. Fu*, K. Huang*, H. Song*, E.E. Papalexakis, P. Talukdar, N.D. Sidiropoulos, C. Faloutsos, T. Mitchell, and B. Poczos.
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.** 2015
O. Stretcu, M. Leordeanu.
In British Machine Vision Conference (BMVC), 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 PROJECTS

05/17-now **Machine Learning for understanding how the brain produces speech** USA
- Developing Machine Learning models that analyze neural activity signals (ECoG and Local Field Potentials) in order to understand how different properties of speech are represented in the brain, which can have major consequences for the treatment of many neurological disorders, such as Parkinson's disease.
- Advised by **Prof. Tom M. Mitchell** and **Prof. Barnabàs Pòczos**.

2018 **Monte Carlo methods for knowledge graph link prediction** USA
- A method for predicting missing links in a knowledge graph. The model is trained by doing random walks in the graph, guided by Monte Carlo Tree Search.
- Advised by **Prof. Barnabàs Pòczos**.

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 the location of the users, with applications to user profiling, topic tracking and content recommendation. 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

- 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**.

2013-14 **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.

SERVICES

- **Program Committees:** ICML (2019), AISTATS (2019), ICLR-LLD (2019), ICLR (2018)
- **Conference Workshops Organized:** Adaptive & Multitask Learning at ICML 2019
- **Other leadership and volunteering activities:**
  - 2018–present: Founding member of the AI+ Club at Carnegie Mellon University (CMU).
  - 2018–present: Treasurer of the Romanian Students Association at CMU.
  - 2016–present: Member of the Doctoral Review Committee of the Machine Learning Department at CMU.
  - 2016–2018: President of the Romanian Students Association at CMU.
  - 2016–now: Member of the Education Review Committee of the Machine Learning Department at CMU, which aims to improve the PhD program.
  - 2011–12: Student representative in the faculty leadership board at Politehnica University of Timisoara.
  - 2010–11: Volunteer for AIESEC, international youth organization.
  - 2010–12: Volunteer for Liga AC, student organization at Politehnica University.

COMPUTER SKILLS

- **Programming languages**: C, C++, Python, 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 they supported such a 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, painting, movies.