OTILIA STRETCU

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

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 interested in creating AI agents that can understand language and reason, therefore I am also working on Natural Language Processing with a focus on question answering and problem solving.

EDUCATION

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

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
- Grade: Pass with Distinction

2010-14 **Politehnica University of Timisoara – B.Eng. in Computer Science and Information Technology** Romania
- GPA: 9.98 (scale 10.0)
- 1st out of 140 students

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

RESEARCH EXPERIENCE

11/17-now **Monte Carlo methods for question answering** USA
- Carnegie Mellon University, Pittsburgh, PA, USA
- Advised by **Dr. Barnabàs Pòczos**
- Using Monte Carlo Tree Search to answer natural language questions, using background knowledge represented as a graph.

05/17-now **Machine Learning for understanding how the brain produces speech** USA
- Carnegie Mellon University, Pittsburgh, PA, USA
- Advised by **Prof. Tom Mitchell** and **Dr. Barnabàs Pòczos**
- 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.

11/16-05/17 **Machine Learning for understanding meaning representation in the brain** USA
- Carnegie Mellon University, Pittsburgh, PA, USA
- Advised by **Dr. Barnabàs Pòczos** and **Prof. Tom Mitchell**
- Developed Machine Learning models that combine neural activity time series of different modalities. The goal was to use brain activity recordings, such as fMRI, EEG and MEG, to understand how the brain processes language. I focused on Deep Learning models, such as recurrent neural networks.

2014-15 **Computer Vision for unsupervised object discovery in video** Romania
- Advised by **Dr. Marius Leordeanu**, from the Institute of Mathematics of the Romanian Academy
- Unsupervised object discovery in video based on multiple frames matching. We also proposed a fast method for detecting the main object of interest in a video, titled VideoPCA.

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

- École Polytechnique Fédérale de Lausanne, Laboratory for Probabilistic Machine Learning
- Advised by **Dr. Matthias Seeger**
- 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 was responsible with applying various machine learning models and parallelizing the code in order to scale well.

Summer 2011 **Research for Undergraduates Program** Romania

- Politehnica University of Timisoara, Romania
- Advised by **Prof. Emilia Petrisor**
- 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.

WORK EXPERIENCE

Summer 2016 **Software Engineering Intern at Google X** USA

- **Self-Driving Car team** in **Google X**, 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 Corporation**, Redmond, WA, USA
- Undisclosed Machine Learning project for Cortana, Windows Phone's digital personal assistant.

TEACHING EXPERIENCE

Fall 2017 **Teaching Assistant for Topics in Deep Learning** USA

- Graduate level deep learning class (10-707 Topics in Deep Learning), taught by **Prof. Ruslan Salakhutdinov** at Carnegie Mellon University.
- Mentored groups of students working on class projects, graded homeworks and exams.

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.

RESEARCH PUBLICATIONS AND CONFERENCES

- *Efficient Multitask Feature and Relationship Learning* – H. Zhao, **O. Stretcu**, R. Negrinho, A. Smola, G. Gordon. Poster presentation at the *Learning with Limited Labeled Data: Weak Supervision and Beyond* workshop at the Neural Information Processing Systems (**NIPS**) Conference, 2017.
- *BRAINZOOM: High Resolution Reconstruction from Multi-modal Brain Signals* – **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, 2017.
- *Multiple Frames Matching for Object Discovery in Video* – **O. Stretcu**, M. Leordeanu. Oral presentation at the British Machine Vision Conference (**BMVC**), 2015.
- *A multi-method driven evaluation of molecular imaging techniques* - **O. Stretcu**, Yoli Shavit, Pietro Lió. Poster presentation at the European Molecular Imaging Meeting (**EMIM**), Tubingen, 2015
- *A multi-method driven evaluation of molecular imaging techniques* - **O. Stretcu**, Yoli Shavit, Pietro Lió. Poster presentation and **best abstract award** at the Oxbridge Women in Computer Science Conference, Oxford, 2015.

HONORS AND AWARDS

SCHOLARSHIPS

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

AWARDS

- 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)

COMPUTER SKILLS

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

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.

LEADERSHIP AND VOLUNTEERING ACTIVITIES

2016-now	President of the Romanian Students Association at Carnegie Mellon University
2016-now	Member of the Education Review Committee of the Machine Learning Department at Carnegie Mellon University, which aims to improve the PhD program
2011-12	Student representative in the faculty leadership board at Politehnica University
2010-11	Volunteer for AIESEC, international youth organization
2010-12	Volunteer for Liga AC, student organization at Politehnica University

OTHER INTERESTS

- Sports: squash, volleyball, tennis, climbing, hiking
- Hobbies: traveling, painting, movies