

Arya D. McCarthy

CONTACT INFORMATION

Department of Computer Science
Johns Hopkins University
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EDUCATION

Johns Hopkins University
Ph.D. in Computer Science

Ongoing

Affiliation: Center for Language and Speech Processing
Advisor: David Yarowsky

Southern Methodist University

2017

M.S. in Computer Science

Thesis: The Leximin Method for Hierarchical Community Detection
Advisor: David W. Matula

Southern Methodist University

2017

B.S. in Computer Science, Mathematics

Honors in the Liberal Arts, University Honors Program

Single terms of study at the University of Edinburgh (2015) and Stanford University (2014)

EMPLOYMENT

Darwin Deason Institute for Cyber Security

October 2015 – May 2016

Research Assistant

Host: Mitch Thornton, Ph.D.

FELLOWSHIPS

Robert Mayer Interdisciplinary Fellowship

Awarding body: SMU Dedman College Interdisciplinary Institute

Amount: \$1,500

Supervisor: Scott Norris, Ph.D. and Matthew Wilson, Ph.D.

Coming Together, Mathematically: Dynamical Models for Increased Uniformity and Polarization in American Politics.

Hamilton Undergraduate Research Fellowship

Awarding body: Southern Methodist University

Amount: \$3,000

Supervisor: Scott Norris, Ph.D.

Implemented and extended waveform relaxation solver for modeling interrelated differential equations without loss of accuracy.

Harvard–Amgen Scholarship

Awarding body: Harvard University; Amgen Foundation

Amount: \$4,500

Supervisor: Stuart Shieber, Ph.D.

Toward coreference resolution shared task, adapted multithreaded feature extraction code in Java to serialize and deliver features to Torch neural network.

TEACHING

Southern Methodist University

Spring 2018

Doing Data Science (MSDS 6306)

Role: Teaching Assistant

Professor: Faizan Javed

For two sections, I assisted weekly synchronous sessions and graded reports in SAS, Python, and R. Part of SMU's Master's of Science in Data Science program.

Southern Methodist University

Fall 2017

Quantifying the World (MSDS 7333)

Role: Grader

Professor: Owen Martin, John Verostek

Southern Methodist University

Fall 2014

Fundamentals of Algorithms (CSE 3353)

Role: Teaching Assistant

Professor: Tyler Moore, Ph.D.

Led 2 office hours weekly, answered questions via Piazza, and graded all assignments and exams for 30 students.

AWARDS

- President's Scholarship. Highest merit scholarship at SMU. Full tuition, study abroad, and dinners with Tate Lecture speakers. One of 21 in class of 2017.
- Campus Community Award. Full room and board scholarship awarded for leadership and impact on campus. Approximately 90 chosen each year.
- Robert S. Hyer Society. Highest academic honor at SMU. One of 12 juniors selected in 2016.
- Charles J. Pipes Award for Outstanding Performance in Mathematics. One chosen each year.
- Dean's Award. Best CSE poster at SMU Research Day 2017: Nibhrat Lohia, Raunak Mundada, **Arya D. McCarthy**. *AirWare: An Advanced In-Air Hand-Gesture Recognition System Using Ultrasonic Doppler Signatures Leveraging Deep Neural Network Architectures*.
- Tau Beta Pi (as sophomore)
- Upsilon Pi Epsilon (as junior)

PUBLICATIONS

Refereed Conference Papers

1. Christo Kirov, Ryan Cotterell, John Sylak-Glassman, Géraldine Walther, Ekaterina Vylomova, Patrick Xia, Manaal Faruqui, **Arya D. McCarthy**, Sandra Kübler, David Yarowsky, Jason Eisner, and Mans Hulden. 2018. UniMorph 2.0: Universal Morphology. In *Proceedings of the Ninth International Conference on Language Resources and Evaluation (LREC)*. European Language Resources Association (ELRA).

Refereed Workshop Submissions

2. **Arya D. McCarthy** and David W. Matula. 2018. Normalized Mutual Information Exaggerates Community Detection Performance. In *SIAM Workshop on Network Science*, Portland, USA. Society for Industrial and Applied Mathematics. (Accepted)

Non-Public Technical Reports

3. **Arya D. McCarthy**. 2016. Design and Implementation of a Method of Abstractly Simulating Cyber Security Vulnerabilities: Embedded Markov and Discrete Event Simulation Approaches. *Deason Institute for Cyber Security*.

INVITED TALKS

1. Toward Fast, Accurate Simulation of Gap Junctions in NNs. *March 2017*
Location: Southern Methodist University (as Summer Research Fellow)
Host: Robert Kehoe

SERVICE

Shared Task Organizer

- CoNLL-SIGMORPHON 2018 Shared Task: Cross-Lingual Morphological Reinflection

Professional Service

- Multiple contributions to *networkx* open-source library
- Webmaster for ACL SIGMORPHON
- Webmaster for UniMorph project
- Webmaster for SMU Ubiquitous Computing Lab (2016–2017)
- Founder and editor-in-chief, *SMU Journal of Undergraduate Research* (2014–2017)
- Editor-in-chief, *Kairos* interdisciplinary magazine (2015–2016)

University Service

- Judge for ACM-ICPC contest at JHU
- Diversity and Inclusion Committee for Department of Computer Science
- Faculty Liaison Committee for CLSP
- Vice-President, SMU Tau Beta Pi (2016–2017)
- President, SMU Upsilon Pi Epsilon (2015–2017)
- Sole student member of SMU Undergraduate Research Steering Committee
- Common Reading selection committee, SMU

REFERENCES

David Yarowsky (yarowsky@jhu.edu), Johns Hopkins University
David W. Matula (matula@smu.edu), Southern Methodist University
Scott Norris (snorris@smu.edu), Southern Methodist University
Eric C. Larson (eclarson@smu.edu), Southern Methodist University

SKILLS

Formal Languages: Python, R, SAS, C++, SQL, Objective-C, Java, JavaScript, MATLAB, L^AT_EX

Machine Learning Frameworks: PyTorch, scikit-learn, TensorFlow

Natural Languages: English, Farsi, Spanish, Italian, Romanian (written); basic Dutch and German

Graduate-Level Coursework in Computer Science: Linguistic & Sequence Modeling, Machine Translation, Machine Learning in Python, Data Mining, Algorithm Engineering, Computer Architecture, Linear Programming

Graduate-Level Coursework in Mathematics and Statistics: Bayesian Statistics, Data Science, Numerical Methods I (numerical linear algebra) and II (numerical analysis), Mathematical Models in Biology

EXTRACURRICULAR ACTIVITIES

Bagpiper
Ballroom Dancer
If my first NLP paper is accepted to EMNLP 2018, I *will* wear my kilt.