Catalina **Vajiac**

Graph Mining

Ph.D. Student · Carnegie Mellon University

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Education

Carnegie Mellon University — *Pittsburgh, PA*

Ph.D. in Computer Science — *Aug. 2019 - present*

University of Notre Dame — *Notre Dame, IN*

B.S. in Computer Science, **3.87/4.0** — *Aug. 2015 - May. 2019*

Saint Mary's College — *Notre Dame, IN*

B.S. in Computing and Applied Mathematics, **3.91/4.0** — *Aug. 2014 - May. 2018*

Research Projects

Synchronous Hyperedge Replacement Graph Grammars — *Notre Dame, IN*

Research Assistant tweninger/PSHRG — *January 2018 — May 2018*

- Extracted features from temporal graphs by learning a CFG from their fragments
- Conducted experiments to evaluate model's performance
- **Publication:** Pennycuff, C., Sikdar, S., Vajiac, C., Chiang, D., Weninger, T. "Synchronous Hyperedge Replacement Graph Grammars" in *Proc. of International Conference on Graph Transformation*, Toulouse, France. 2018.

Exploration of Numerical Precision in Deep Neural Networks — *UCLA, California*

Research in Industrial Projects for Students Participant jihangjie/AMD-RIPS2017 — *June 2017 — August 2017*

- Studied resiliency of neural networks when exposed to lower numerical precision
- Sponsored by Instutute of Pure and Applied Mathematics and by AMD
- **Publication:** Li, Z. Ma, Y. Vajiac, C., Zhang, Y. "Exploration of Numerical Precision in Deep Neural Networks" in *arXiv preprint arXiv:1805.01078*, 2018.

Exploration of Gradient Descent — *Saint Mary's College*

Undergraduate Thesis Project catvajiac/gradient_descent — *August 2017 — December 2017*

- Derived equations for gradient descent, forward and back propogation algorithms
- Implemented a multi-layer, fully connected neural network from scratch in Python
- Defended thesis in November 2017, passed with Honors

Computer-Assisted Image Analysis for Paper Analytical Devices (PADs) — *Saint Mary's College*

Research Assistant — *May 2016 — December 2016*

- Created image analysis software to classify chemical reactions in PADs
- Won Outstanding Poster Award at the 2017 Joint Math Meetings
- **Outstanding Poster Award:** Vajiac, C, Bentley, I. "Developing Automated Analysis Codes for Paper Analytical Devices" in *Proc. of Joint Mathematics Meetings*, Atlanta, Georgia. 2017.

Honors and Awards

May 2019	**Outstanding Student Award**, Computer Science Department	*Notre Dame*
Sep 2018	**Anita Borg Scholar**, Grace Hopper Conference	*Houston, Texas*
May 2018	**Donald E. Miller Award**, Mathematics and Computer Science Department	*Saint Mary's College*
May 2018	**Honors on Undergraduate Thesis**, Mathematics and Computer Science Department	*Saint Mary's College*
Jan 2017	**Meritorious Winner**, Mathematical Contest in Modeling	*COMAP*
Jan 2017	**Outstanding Poster Award**, MAA Undergraduate Poster Session	*Joint Math Meetings*
Jan 2017	**Indiana Epsilon Inductee**, Pi Mu Epsilon	*Saint Mary's College*
	Dean's List, All Semesters	*Saint Mary's College*

Industry Experience

Business Support Solutions Team, IBM Cloud *IBM, Foster City, CA*

Software Developer *June 2018 - August 2018*

- Implemented features for Account Management api's
- Improved Account Management's workflow for staging and deployment

Outreach

Teaching Assistant *Notre Dame, IN*

Saint Mary's College and University of Notre Dame *August 2015 — May 2019*

- Ran weekly problem sessions for Foundations of Higher Mathematics and Calculus I
- Held office hours and graded for Programming Challenges and Systems Programming

President *Notre Dame, IN*

Mathematics and Computer Science Club, Saint Mary's College *August 2017 — May 2018*

- Organized events and talks to facilitate school-wide interest in mathematics
- Ran cryptography sessions for Hypatia Day (event for middle school girls' exposure to STEM)

Vice–President *Notre Dame, IN*

Linux User's Group of Notre Dame *August 2018 — May 2019*

- Organized and gave weekly talks on topics related to the open-source community

Treasurer *Notre Dame, IN*

Pi Mu Epsilon, Saint Mary's College *August 2018 — May 2019*

- Organized travel for 15 women to go to the Joint Mathematics Meetings 2017 and 2018