# 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 Experience

**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

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| 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