

# VICKY CHUQIAO YANG

Santa Fe Institute

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## Education

- Ph.D. Applied Mathematics** 2018  
Northwestern University, Evanston, IL  
Research focus: mathematical models of large-scale human behavior  
Advised by: Daniel M. Abrams
- M.S. Applied Mathematics** 2014  
Northwestern University
- B.S. Mathematical Sciences; B.S. Physics** 2013  
Worcester Polytechnic Institute (WPI), Worcester, MA  
With high distinction

## Academic Positions

- Santa Fe Institute**, Santa Fe, NM  
Omidyar Postdoctoral Fellow 2018–present
- Northwestern University**, Evanston, IL  
Research Assistant in Applied Mathematics 2014–2018
- Argonne National Laboratory**, Lemont, IL  
Lee Teng Intern in Accelerator Physics 2012
- Worcester Polytechnic Institute**, Worcester, MA  
Research Assistant, Social Psychology Inquiry Lab 2010–2012

## Awards and Fellowships

- Omidyar Fellowship, Santa Fe Institute 2018
- Grand Prize in Interactive Data Visualization,  
Northwestern University Computational Research Day 2018
- The Red Sock Award for Best Poster Presentation,  
SIAM Conference on Applications of Dynamical Systems 2017
- SIAM Student Chapter Certificate of Recognition 2017
- Terminal Year Fellowship, Northwestern University 2017
- Travel Award, SIAM Conference on Applications of Dynamical Systems 2017
- Integrated Data Science (IDEAS) Traineeship, Northwestern University 2016
- Travel Award, Dynamics Days Conference 2015
- Walter Murphy Fellowship, Northwestern University 2013
- First Place, Student Paper Competition at Annual Microwave Power  
Symposium held by International Microwave Power Institute 2013
- Second Place, IEEE Student Paper Competition 2013
- Stephen Salisbury Prize for Outstanding Seniors, WPI 2013

- Provost’s Major Qualifying Project Award, WPI 2013
- WPI’s Putnam Competition Top Scorer 2013
- WPI Summer Undergraduate Research Fellowship 2011
- WPI Presidential Scholarship 2009

### Journal Publications Under Peer-review

- **V.C. Yang**, A.V. Papachristos, D.M. Abrams, “The origin of urban productivity scaling laws: mathematical model and new empirical evidence,” under review. [Pre-print: [arxiv.org/abs/1712.00476](https://arxiv.org/abs/1712.00476)][General audience talk video: <https://youtu.be/Xs5ewFzNSYI>]
- **V.C. Yang**, D.M. Abrams, G. Kernell, A.E. Motter, “Why are US parties so polarize? A ‘satisficing’ dynamical model,” under review.
- L. Lee<sup>1</sup>, S. Zhang<sup>1</sup>, **V.C. Yang**, “Do two parties represent the US? Clustering analysis of US public ideology survey,” under revision with *SIAM Undergraduate Research Online*. [Pre-print: [arxiv.org/abs/1710.09347](https://arxiv.org/abs/1710.09347)]

### Peer-reviewed Journal Publications

- B.S. Tilley, **V.C. Yang**, J.C. Baiense, and S. Evans, “Frequency-dependent thermal resistance of vertical U-tube geothermal heat exchangers”, *Journal of Engineering Mathematics* 102 131-150 (2017). DOI 10.1007/s10665-016-9881-7.
- E.M. Moon, **C. Yang**, and V.V. Yakovlev, “Microwave-induced temperature fields in cylindrical samples of graphite powder — experimental and modeling studies,” *International Journal of Heat and Mass Transfer*, vol. 87, No 8, pp. 359-368 (2015).
- **C. Yang** and V.V. Yakovlev, “An efficient empirical model for microwave-induced average temperature of liquid cylindrical reactants,” *Journal of Microwave Power and Electromagnetic Energy*, 47 (3), pp. 177-185 (2013).

### Peer-reviewed Publications in Conference Proceedings

- E.M. Moon, **C. Yang**, M. Patel, H. He, and V.V. Yakovlev, Microwave-induced temperature fields in graphite powder heated in a waveguide reactor. In: *Microwave Symposium, IEEE Microwave Theory and Techniques Society International*, pp. 1-4, (2014).
- A.O. Holmes, **C. Yang**, M. Patel, K. Savaram, H. He, V.V. Yakovlev, and A.A. Zozulya, “Microwave-enabled production of solution- processable graphene: principles and techniques of macroscopic modeling,” In: *14th International AMPERE Conference on Microwave and High Frequency Heating*, Nottingham, UK (2013).
- A.O. Holmes, **C. Yang**, and V.V. Yakovlev, “Temperature modeling for process control in microwave-assisted chemistry,” In: *IEEE Microwave Theory and Techniques Society Microwave Symposium Digest*, Seattle, WA (2013).
- **C. Yang** and V.V. Yakovlev, “Computation of microwave-induced temperature in liquid cylindrical reactants,” In: *47th International Microwave Power Institute Microwave Power Symposium*, pp. 105-107, Providence, RI, (2013).
- **C. Yang** and V.V. Yakovlev, “A simple model of microwave-induced heat transfer in cylindrical reactants with strong convection,” In: *International Conference on Heating by Electromagnetic Sources*, Padua, Italy, (2013).

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<sup>1</sup>Undergraduate students advised

## Other Reports and Articles

- **C. Yang**, Visualizing the US Congress, interactive visualization in d3, online at [http://www.vcyang.com/vis\\_congress/](http://www.vcyang.com/vis_congress/) (2016).
- **C. Yang**, Macroscopic Modeling of Microwave-enabled production of solution-processable grapheme, Major Qualifying Project Report submitted to Worcester Polytechnic Institute (2013).
- **C. Yang**, Thermal Modeling of Wire-coil Insert, project report submitted to Argonne National Laboratory (2012).
- **C. Yang**, J. L. Skorinko, Does having a foreign accent affect men and women differently? Effect of foreign accent and gender on employment decisions and negotiations, project report submitted to Worcester Polytechnic Institute (2012).

## Selected Presentations

- Dynamics Days US, Poster Jan 2018
- SIAM Conference on Applications of Dynamical Systems, Snowbird UT. Poster. (The Red Sock Award for Best Poster Presentation) May 2017
- Chicago Area SIAM Student Conference, Evanston IL. Talk April 2017
- Seven Minutes of Science Symposium (science out reach), Evanston IL. Talk (Video: <https://youtu.be/Xs5ewFzNSYI>) April 2017
- Northwestern University Undergraduate Math Society Lecture. Invited talk Nov 2016
- International Conference on Computational Social Science, Evanston IL. Poster June 2016
- Dynamics Days US, Durham NC. Poster Jan 2016
- IEEE Microwave Theory and Technique International Symposium, Tampa FL. Talk June 2014
- International Microwave Power Institute Symposium, Providence RI. Talk (First Place, Student Paper Competition) June 2013
- IEEE Student Conference, Cambridge MA. Talk (Second Place, IEEE Student Paper Competition) April 2013
- American Math. Society Student Conference, Boston MA. Talk April 2013
- Accelerator Physics Internship Presentation Argonne National Laboratory and Fermilab. Talk Aug 2012
- New England Psychological Association Annual Conference, Worcester MA. Poster Oct 2012

## Industry Experiences

- **Data Scientist Internship, Airbnb**, San Francisco, CA 2017
  - Used time series analysis of user behavior to infer user satisfaction
  - Identified main drivers in customer support that influence user satisfaction

## Leadership

- **Organizer, Inaugural NICO Research Jam** 2018  
Organize the first research jam event at Northwestern Institute for Complex Systems **Chapter**
- **President, Society for Industrial and Applied Mathematics** 2016 - 2017
- **Chair of Organizing Committee, Chicago Area SIAM Student Conference** 2017

Lead 9-person team from 3 universities to organize and raise funds for conference of 100 participants. Goal is to bridge the lack of communication among students using similar math techniques but are in different fields.

**Co-founder and President, NuTango Northwestern** 2015 - 2017

Found non-profit student group for inclusive community through Argentine Tango dance, focus on challenging gender norms in partner dancing. Define organization mission and execute decisions.

Lead teams of 2-7 exec members and raise funds. Grow group from 2 to 450 members.

**Executive Board Member,**

**Graduate Leadership and Advocacy Council, Northwestern University** 2016 - 2017

**Chapter President, Pi Mu Epsilon US Honorary National Math Society** 2012 - 2013

## Mentoring

Louisa Lee and Siyu Zhang (Northwestern undergraduate students) 2016

“Do the two parties represent the US? Clustering political ideology of the US public”. Publication submitted to *SIAM Undergraduate Research Online*.

## Teaching

**Teaching Certificate Program** training, Northwestern University, 2016 - 2017

**Teaching Assistant**, Dept. of Mathematics, Northwestern University 2014 - 2015, 2016 - present

**Argentine Tango Instructor**, NuTango, Northwestern University 2016

**Teaching Assistant**, Dept. of Mathematics, WPI 2011 - 2013

## Science Outreach

- Judge, Northwestern University High School Project Showcase 2017-2018
- Speaker, Seven Minute of Science Symposium 2017
- Volunteer, Grand Prix Challenges, Evanston 5th Ward Middle School 2016

## Workshops attended

- Integrated Data Science Traineeship 2016-2017
- Ready Set Go Science Communication Course, Northwestern University 2017
- Focus Summer School in Data Visualization, Northwestern University 2016
- ComSciCon-Chicago, Science Communication Workshop 2016
- Mathematical Problem in Industry Workshop, Newark DE 2015
- Graduate Students Mathematical Modeling Camp, Troy NY 2015
- US Particle Accelerator School, Grand Rapids MI 2012

## Referee Service

- *Chaos: An Interdisciplinary Journal of Nonlinear Science* 2016, 2017

## Computer and Programming Skills

Python, Matlab, Maple, Latex, SQL, d3, C, SPSS, bash, QuickWave 3D