Gregory J. Clark

Mathematical Research Interests: *Spectral Hypergraph Theory, Computational Algebra, k-planar Crossing Numbers, Additive Combinatorics, Graph Coloring.*

Interdisciplinary Research Interests: *Social Networks, Trend Forecasting, Multi-Touch Attribution, Social Evaluations, Digital Migration, .*

Industry Employment

Sr Data Scientist and AVP, PNC Bank, Pittsburgh PA.   *2023 – Present*
Co-founder and Director, Augmented Intelligence Labs, UK.   *2020 – Present*

Academic Employment

Research Fellow in Marketing and Reputation, University of Oxford, UK. *2019 – Present*
Future of Marketing Initiative & Centre for Corporate Reputation

Education

Ph.D. Mathematics, University of South Carolina, Columbia, SC.   *May 2019*
Dissertation Title: On the Characteristic Polynomial of a Hypergraph
Advisor: Professor Joshua N. Cooper.

B.S. Mathematics, Westminster College, New Wilmington, PA.   *May 2014*

Budapest Semesters in Mathematics, Budapest, Hungary.   *Spring 2013*

French Language and Culture Summer Immersion Program Paris, France   *Summer 2012*

Research Publications

12. Thomaz, Felipe and Efremova, Natalia and Mazzi, Francesca and Clark, Gregory and Macdonald, Ewan and Hadi, Rhonda and Bell, Joseph and Stephen, Andrew T., Ethics for AI in Business (June 22, 2021). Available at SSRN: https://ssrn.com/abstract=3871867 or http://dx.doi.org/10.2139/ssrn.3871867. *Commissioned by the International Chamber of Commerce Research Foundation Top downloaded paper in applied ethics on SSRN*

11. *G. J. Clark, A. Stephen, F. Thomaz, Reading the Tea Leaves: A Multidimensional Approach to Predictive Analytics.*   *In Preparation*

10. *G. J. Clark, J. Cooper. Applications of the Harary-Sachs Theorem for Hypergraphs. https://arxiv.org/abs/2107.10781.*   *Submitted*

9. *G. J. Clark, J. Cooper. A Harary-Sachs Theorem for Hypergraphs. Journal of Combinatorial Theory, Series B, 149:1–15, 2021.*

8. *G. J. Clark, F. Thomaz, A. Wiedemann, Designed to Go Dark: An Examination of Incentives for Digital Black Markets to Self-Terminate.*   *In Preparation*

7. *G. J. Clark, J. Cooper, Adjacency Spectral Theory for Uniform Hypergraphs, IMAGE (Bull Lin. Alg. Soc.),* **62** *(2019), pp. 7-19.*

6. *G. J. Clark, J. Cooper, Stably computing the multiplicity of known roots given leading coefficients. Numer Linear Algebra Appl. 2020; 27:e2275.*

5. *J. Asplund, E. Czabarka, G. Clark, et al., Using block designs in crossing number bounds. J Combin Des. 2019; 27: 586? 597.*

4. *G. J. Clark, J. Cooper, On the Adjacency Spectra of Hypertrees,* Elec. J. Comb., **25** *(2018), no. 2, pp. 2-48.*

3. *G. J. Clark, G. Spencer, New Bounds on the Biplanar Crossing Number of Low-dimensional Hypercubes. Bulletin of the Institute of Combinatorics and its Applications (BICA) 83(2018), 52-60.*

2. *A. Bright, G. J. Clark, C. Dunn, K. Evitts, M. Hitchman, B. Keating, B. Whetter, Tiling Annular Regions with Skew and T-tetrominoes, Involve, a Journal of Mathematics 10-3 (2017), 505– 521.*

1. *G. J. Clark, Optimal Numbers and Solutions in the Euclidean Algorithm, The Pentagon, A Mathematics Magazine for Students, 73-01 (2013), 23-35.*

Teaching

Teaching Assistant
Saïd Business School, University of Oxford.

1. MBA Marketing Core   *Michaelmas 2019*

Instructor of Record   *July 2015 – Spring 2019*
Department of Mathematics, University of South Carolina.

1. Math 115: Precalculus   *Fall 2015*

2. Math 122: Business Calculus   *Fall 2018, Spring 2018, Fall 2017*

3. Math 170: Finite Mathematics   *Fall 2015, Spring 2016, Summer 2015*

Graduate Student Mentor   *Fall 2016 – Spring 2017*
NSF EAGER Grant for Innovative Research award ID #1725295
Participated in twenty hours of mentorship training which focused on pedagogical discourse. Conducted twelve classroom observations and post-observation discussions each semester. Hosted highly attended bimonthly mini-seminars with participants to discuss teaching concerns.
Department of Mathematics, University of South Carolina.

Graduate Teaching Assistant   *Fall 2014 – Spring 2015*
Department of Mathematics, University of South Carolina.

1. Math 141: Calculus 1   *Fall 2014, Spring 2015*

Research Advisement

Advisees have conducted independent research with support through

- University of South Carolina Summer Program for Research Interns

- Support for Minority Advancement in Research Training

- Magellan Scholars Program

Upon completion of the program, each advisee composed a poster and presented their work at local conferences.

1. Undergraduate

    (a) Caleb Simmons, A Summary of Splitting Numbers for Integer Tiles   *Summer 2016*

    (b) Corey Stewart, A Summary of Splitting Numbers for Integer Tiles   *Summer 2016*

    (c) Eric Miller, Generalized Dinitz Conjecture   *Fall 2015 – Spring 2016*

2. High School

    (a) Jacob Folks, A Summary of Splitting Numbers for Integer Tiles   *Summer 2016*

    (b) Seungmok Lee, A Summary of Splitting Numbers for Integer Tiles   *Summer 2016*

    (c) Sydney Miyasaki, A Summary of Splitting Numbers for Integer Tiles   *Summer 2016*

Grants, Activities, and Honors

SPARC Grant Recipient   *Summer 2017*
Sponsored by the Office of the Vice President for Research, the Support to Promote Advancement of Research and Creativity, or SPARC, Graduate Research Grant is a merit-based award designed to ignite research and creative excellence across all disciplines at USC.

Preparing Future Faculty Certificate With Distinction in Teaching   Spring 2019
Successful PFF candidates have completed activities designed to prepare participants in the critical areas of faculty competence: teaching, research and service. This accomplishment is an indicator of the participant's initiative and a measure of experience toward becoming future faculty. Contact Dr. Sean Yee (yee@math.sc.edu) for additional information.

Peer Reviewer for Involve, a Journal in Mathematics   *Fall 2017 – Spring 2018*

Outstanding Graduate Teaching Award   *Spring 2018*

USC Combinatorics Seminar Organizer   *Fall 2016 – Spring 2017*

Graduate Peer Excellence Award   *Spring 2015*

Invited Talks and Workshops Attended

(Travel support denoted by asterisk.)

8. **Reputation Symposium***   *Fall 2018*
   Distinguishing Between Reputation and Influence of Users in a Complex System
   University of Oxford, UK

7. **NSF-CBMS Workshop on Additive Combinatorics***   *Summer 2018*
   University of South Carolina, Columbia, SC

6. **Research Highlight***   *Spring 2018*
   Designed to Fail: Determining Illicit Market Life Spans with Stochastic Calculus
   University of Oxford, UK

5. **Practice for Coordinators of Large Undergraduate Courses on Campus**   *Fall 2017*
   A Mentorship Model for Graduate Student Instructors in Large Undergraduate Courses
   University of South Carolina Center for Teaching Excellence, Columbia, SC

4. **Mathematical Research Communities***   *Summer 2017*
   Beyond Planarity: Crossing Numbers of Graphs
   Snowbird Resort, Snowbird, UT

3. **Joint Mathematics Meeting***   *Spring 2017*
   Graduate Student Instructor Mentorship Model: A professional development that trains experienced graduate students to pedagogically mentor novice mathematics graduate student instructors
   Hyatt Regency Atlanta and Marriott Atlanta Marquis, Atlanta, GA

2. **AMS Sectional Meeting***   *Fall 2016*
   The Splitting Number of an Integer Tile
   North Carolina State University, Raleigh, NC

1. **Carolina Math Seminar**   *Fall 2016*
   The Splitting Number of an Integer Tile
   Columbia College, Columbia, SC

Conferences and Seminars Attended

(Travel support denoted by asterisk.)

American Marketing Association Winter Academic Conference *Spring 2021*
Marketing Vice: The Influences and Impacts of Vice Platforms, Products, and Services
St. Pete Beach, Florida

Future of Marketing Initiative Partners' Meeting *Semi-Annual, Fall 2019 – Present*
University of Oxford, UK

Reputation Symposium *Annual, Fall 2019 – Present*
University of Oxford, UK

Reputation: Ethics, Trust, and Relationships Seminar Series *Fall 2020*
University of Oxford, UK

Teradata Vantage for Data Science using New SQL, Python, and R *Fall 2019*
London, UK

Combinatorics Seminar *Fall 2018*
On the Computation of the Characteristic Polynomial of a Hypergraph
University of South Carolina, Columbia

Discover USC: Three Minute Thesis Competition *Spring 2018*
Modeling Dark Net Markets
University of South Carolina, Columbia

Combinatorics Seminar *Spring 2018*
A Combinatorial Description for the Coefficients of the Characteristic Polynomial of a Hypergraph
University of South Carolina, Columbia

Conference on Research in Undergraduate Mathematics Education* *Spring 2017*
Mentor Professional Development for Mathematics Graduate Student Instructors
Kona Kai, San Diego, CA

Triangle Lecture Series* *Spring 2016*
University of North Carolina, Greensboro, NC.

Combinatorics Seminar *Fall 2015*
On de Bruijn Sequences with Varying Combs
University of South Carolina, Columbia, SC

Atlanta Lecture Series* *Fall 2015*
Georgia Tech, Atlanta, GA.

Graduate Student Combinatorics Conference* *Spring 2015*
A Compact Look at Codensity
University of Kentucky, Lexington, KY

Service Activities

Community Organization Diversity and Inclusion Chair *Spring 2020 – Present*

USC Center for Teaching Excellence Symposium Moderator *Spring 2016, 2017*

Discover USC Poster Session Judge *Spring 2016, 2017*

High School Mathematics Competition Volunteer *Fall 2017*

Completed Safe Space Training *Spring 2015*