Mark Schrecengost | CV

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markschrec

Education

University of Virginia **Charlottesville, VA**
Ph.D. Candidate, Adviser: Peter Abramenko *2014–2020*
Thesis: Finite Generation of Kac-Moody Groups over Small Fields

Grove City College **Grove City, PA**
B.S. in Mathematics, Secondary Education Certification *2010–2014*
GPA: 3.97, Dean's List with High Distinction (8 semesters), Summa Cum Laude

Teaching

Instructor, University of Virginia, 2015–Present

Math 1110: Probability and Finite Math (Non-Coordinated) *Spring 2019, Spring 2020*
Math 1310: Calculus I (IBL with a Flipped Classroom) *Fall 2018, Fall 2019*
Math 1310: Calculus I *Fall 2017*
Math 1220: Survey of Calculus II *Spring 2016, Fall 2016, Spring 2017*
Math 1210: Survey of Calculus I *Fall 2015*

Teaching Assistant, University of Virginia, 2014–2015

Math 1320: Calculus II *Fall 2014 (2 Sections), Spring 2015*

Curriculum Development, University of Virginia, 2016–Present

Math 1110: Created and implemented my own curriculum to align with course description, including notes, homework, quizzes and exams

Math 1310: Improved curriculum for Calculus I with a flipped classroom by modifying existing materials based on student and instructor feedback

Math 1210: Wrote additional notes and lecture materials to accompany and improve the previous curriculum

Student Teacher, Grove City College, 2013

Bulter Senior High School: AP Statistics and Advanced Pre-calculus *Fall 2013*

Tutor, Grove City College and University of Virginia, 2010–Present

Peer and Private Tutor: Supplemented student coursework with additional examples and discussions in an interactive environment. Classes include Calculus 1 and 2, Linear Algebra, Abstract Algebra, Real Analysis, Financial Math, computer programming courses, and others

Research

Interests

Geometric/Combinatorial Group Theory: Buildings and groups with RGD systems, particularly finiteness properties of groups acting on buildings. I am currently working on my thesis which involves finite generation of Kac-Moody groups over small fields.

Game Theory: Nim type games played on groups by picking generating sets. Research is part of an undergraduate REU for which I was a co-adviser.

Machine Learning/AI: Continuing interest in different aspects of machine learning, specifically those with applications to games. Includes personal research of neural network architectures and Python libraries.

Papers

Finite Generation of Kac-Moody Groups over Small Fields *Ph.D. thesis, in progess*
Normalizer of Coxeter Groups in the Canonical Linear Representation *in preparation*

Conferences Attended

March 2020: AMS Sectional Meeting, University of Virginia, VA

January 2019: Joint Math Meetings, Baltimore, MD

May 2017: Conference on Combinatorial/Geometric Methods in Group Theory, University of Illinois, IL

Former Research Experiences

Director's Summer Program: Internship, Summer 2013 *Department of Defense*

REU on Graph Pebbling Problems: Summer, 2012 *Hope College, Holland, MI*

Service

Sonia Day **University of Virginia**
Organizer and Volunteer *Spring 2019*

UVA Math Ambassadors Coordinator **University of Virginia**
Organized graduate student visits to local middle and elementary *2018-2019*

UVA Math Ambassadors **University of Virginia**
Volunteer *2015-Present*

Summer REU **University of Virginia**
Graduate Co-Adviser *Summer 2018*

Prospective Graduate Student Open House **University of Virginia**
Panelist *2015-2018*

Graduate Teaching Mentor **University of Virginia**
Observed and mentored first-time instructors *Fall 2017*

Kappa Mu Epsilon **Grove City College**
President *2013-2014*

Kappa Mu Epsilon **Grove City College**
Vice President *2012-2013*

Expository Talks

Proofs with Irrational and Transcendental Numbers: UVA Undergraduate Math Club *Spring 2020*

Introduction to Game theory and Nim: Summer REU Talk *Summer 2018*

Links Between the Discrete and Continuous: UVA Graduate Seminar *Fall 2017*

Coxeter Groups and the Canonical Linear Representation: UVA Graduate Seminar *Fall 2016*

Reflection Groups in Inner Product Spaces: Kac-Moody Seminar *Spring 2016*

Awards and Recognition

All-University Graduate Teaching Award **University of Virginia**
Nominee *2019*

Mathematic's Department Outstanding TA Award **University of Virginia**
Recipient *2019*

Philip N. Carpenter Senior Mathematics Award **Grove City College**
Recipient *2014*

Franklin C. Ketler Mathematics Prize **Grove City College**
Recipient *2014*

Skills

Technical Skills

Computer Programming: Advanced coursework in C++ and C# including the development of GUI applications. Self taught experience with Python including common libraries. Minimal HTML/CSS experience.

Machine Learning: Theoretical understanding of neural networks, convolutional neural networks, and various neural network architectures. Includes personal study of PyTorch.

Typesetting: Extensive experience with LaTeX, including doctoral thesis and beamer presentations.

Mathematical Software: Experience with Mathematica.

Microsoft Suite: Extensive experience with Excel, including Excel VBA. Experience with Word, Powerpoint, and Outlook.

Soft Skills

Communication: Broad experience communicating mathematical concepts with a variety of audiences. Also reported to academic/teaching advisers to share progress on different projects.

Problem Solving: Worked with professors and fellow graduate students to develop solutions for problems encountered while teaching.

Leadership: Led teams of graduate students on outreach visits to local elementary schools.

References

Available upon request.