

CONTACT INFORMATION	<p>818 Van Vleck Hall  Department of Mathematics  University of Wisconsin-Madison  480 Lincoln Drive Madison, WI 53706 USA</p> <p><i>Phone:</i> (+1) 415 351 8500  <i>Email:</i> <a href="mailto:jain@math.wisc.edu">jain@math.wisc.edu</a>  <i>Web:</i> <a href="http://math.wisc.edu/~jain">http://math.wisc.edu/~jain</a></p>
RESEARCH INTERESTS	<p>Broad: Algebraic Geometry, Number Theory, Machine Learning.  Specific: Monodromy Problems, Galois Representations, Active Learning.</p>
EDUCATION	<p><b>University of Wisconsin-Madison</b>, Madison, Wisconsin USA  Ph.D., Mathematics, Expected May 2016  Dissertation Topic: “Big Mod <math>\ell</math> Monodromy of Families of <math>G</math>-Covers”  Advisor: Jordan Ellenberg  Minor: Computer Science</p> <p><b>University of Waterloo</b>, Waterloo, Ontario Canada  Masters of Mathematics in Pure Mathematics, May 2008  Thesis: “Koblitz’s Conjecture for the Drinfeld Module”  Advisors: Yu-Ru Liu and Wentang Kuo</p> <p><b>University of Waterloo</b>, Waterloo, Ontario Canada  Bachelors of Mathematics in Pure Mathematics, December, 2006  Minor in Combinatorics and Optimization, Graduated with Honors and Distinction</p>
HONORS AND AWARDS	<p>Math Department TA Teaching Award, UW-Madison, Spring 2014  NSF VIGRE Fellowship recipient, UW-Madison, 2011-2014  University of Waterloo Mike Vangoch Memorial Award, 2006  University of Waterloo, W.T. Tutte Fellow  University of Waterloo, Dean’s Honours List</p>
PUBLICATIONS	<p>L. Jain, <i>The Big Mod <math>\ell</math> Monodromy of Families of <math>G</math>-Covers</i>, In Preparation  E. Dummit, R. Harron, L. Jain, R. Pollack, D. Ross, M. Hablicsek, <i>Explicit computations of Hida families via overconvergent modular symbols</i>, <a href="http://arxiv.org/abs/1510.05795">http://arxiv.org/abs/1510.05795</a>, 2015. Submitted  K. Jamieson, L. Jain, C. Fernandez, N. Glattard, R. Nowak, <i>NEXT: A System for Real-World Development, Evaluation, and Application of Active Learning</i> in Advances in Neural Information Processing Systems 28, 2015. <a href="http://www.cs.berkeley.edu/~kjamieson/resources/next.pdf">http://www.cs.berkeley.edu/~kjamieson/resources/next.pdf</a>  L. Jain, P. Tzermias, <i>Beukers’ integrals and Apéry’s recurrences</i>. Journal of Integer Sequences. 8: Issue 1, Article 05.1.1., 2005  J. Holmes, V. Danilov, L. Jain, <i>Transverse Stability Studies of the SNS Ring</i>. Proceedings of 2005 Particle Accelerator Conference, Knoxville, Tennessee, 2254-2256, 2005.</p>
TEACHING EXPERIENCE	<p>UNIVERSITY LEVEL</p> <p><b>University of Wisconsin, Madison</b>, Madison, Wisconsin  <i>Teaching Assistant</i>. Led discussion sections, wrote and graded quizzes/homework and held office hours. Received excellent TA evaluations each semester.</p> <p>Fall 2014, Math 221: Calculus I  Fall 2013, Math 114: Algebra and Trigonometry</p>

Fall 2012, Math 320: Differential Equations and Linear Algebra  
Spring 2011-2013, Math 490: NSF sponsored CURL (Collaborative Undergraduate Research Lab)  
Fall 2010, Math 221: Calculus I

**University of Waterloo**, Waterloo, Ontario Canada

*Instructor.* Taught a three credit class on introductory number theory. Received an excellent teaching evaluation.

Fall 2007, Math 135: Introduction to Algebra and Number Theory

GRADE SCHOOL

**Ida B. Wells High School**, San Francisco, California USA

*Teacher.* Taught a variety of classes as a high school teacher.

**San Francisco and Oakland Math Circles**, San Francisco, California USA

*Teacher.* Led a variety of enrichment math classes for high school and middle school students.

OTHER  
EMPLOYMENT

**Intuit Inc.**, San Diego, CA, 6/2015-9/2015, Data Science Intern with Consumer Tax Group: Responsible for developing and deploying contextual bandits algorithms for segmentation. Also worked on a library for data transformation, manipulation and imputation. Received a company spotlight for my work.

**Seventh Harmonic LLC**, Madison, WI, 8/2013-Present, Co-Founder: Co-founder and software engineer (seventhharmonic.com). Responsible for developing new products, such as Bee-Line, an Android game.

**Oak Ridge National Lab/Spallation Neutron Source**, Oak Ridge, TN, 1/2008-4/2008, Intern: Researched instability thresholds at the Spallation Neutron Source particle accelerator. Studied experimental beam data using Matlab and C++ for signal processing and visualization.

TALKS

INVITED TALKS

Topology Seminar, University of Wisconsin-Milwaukee, Fall 2016

**The  $\ell$ -adic monodromy of  $G$ -covers**, Frontier Seminar, Colorado State University, Fall 2014,

**Applications of Monodromy to Number Theory**, PANTS XXII Fall 2014

CONFERENCE TALKS

**Topology Student Workshop**, Talk: *Monodromy of Cyclic Covers*, Georgia Institute of Technology, Atlanta GA, June 2014

**Midwest Number Theory Conference for Graduate Students**, Talk: *Cohen Lenstra Heuristics and Monodromy*, University of Illinois at Urbana-Champaign, June 2014

**Joint Mathematics Meetings**, Atlanta, GA, Talk: *Optimal Control of Piecewise Continuous State Processes*, 2005

**Canadian Undergraduate Mathematics Conference**, Talk: *Beukers' Integrals and Apéry's Recurrences*, 2006

OTHER UNIVERSITY OF WISCONSIN-MADISON SEMINAR PRESENTATIONS

**NEXT: A system for Active Learning** Hamlet Seminar, Fall 2015

**Monodromy and Hurwitz Schemes**, Student Number Theory Seminar, Fall 2014

**Hasse Principle, Brauer-Manin Obstructions and del Pezzo surfaces**, Student Number

Theory Seminar, Fall 2013  
**Intersection Theory**, Algebraic Geometry Seminar, Fall 2012  
**Counting Cubic Number Fields**, Number Theory Seminar, Spring 2012  
**Divisors and Surfaces**, Number Theory Seminar, Fall 2012  
**Grassmannians as a Moduli Space**, Algebraic Geometry Seminar, Fall 2011  
**Music Hacking**, Systems, Information and Learning Seminar, Fall 2011  
**Ranks of Elliptic Curves**, Number Theory Seminar, Fall 2010

OTHER  
 CONFERENCES  
 ATTENDED

**Arizona Winter School on Arithmetic and Higher-Dimensional Varieties**, Tucson AZ, March 2015  
**Graduate Workshop on Moduli of Curves**, Simons Center for Geometry and Physics, Stony Brook NY, July 2014  
**Thin Groups**, University of Michigan, Ann Arbor MI, April 2014  
**Western Algebraic Geometry Symposium**, Boulder CO, April 2014  
**Arizona Winter School on Arithmetic Statistics**, Tucson AZ, March 2014  
**Hot Topics: Perfectoid Spaces and their Applications**, Berkeley CA, 2014  
**New Geometric Techniques Summer Graduate School**, Berkeley CA, 2013  
**Atkin Memorial Lecture and Workshop Cohen-Lenstra Heuristics**, Chicago IL, May 2013  
**Sage Days, 44**, Madison, Wisconsin, 2013  
**Arizona Winter School on Modular Forms**, Tucson AZ, 2013  
**Penn State Göttingen International Summer School on Number Theory**, Göttingen, 2012  
**Arizona Winter School on Ramification and Geometry**, Tucson AZ, 2012  
**Park City Mathematics Institute Graduate Summer School on Moduli Spaces of Riemann Surfaces**, Park City UT, June 2011  
**Arizona Winter School on Stark-Heegner Points**, Tucson AZ, 2011

LEADERSHIP  
 ACTIVITIES

**Organizer of UW-Madison Math Circles Fall 2012 - Fall 2014:** Responsible for organizing weekly meetings, arranging for speakers and ensuring things ran smoothly.

**Co-Organizer Midwest Number Theory Conference for Graduate Students/Midwest Number Theory Days**, 2011, University of Wisconsin-Madison

**Co-Organizer Waterloo Symposium in Undergraduate Mathematics**, 2007, University of Waterloo, Ontario

SOFTWARE  
 PROJECTS

**NEXT System for Active Learning:** NEXT (nextml.org) is a real time computational framework and open-source machine learning system that simplifies the deployment and evaluation of active learning algorithms relying on human feedback. Example applications include online classification, bandit problems, and multidimensional scaling. Project is advised by Robert Nowak at UW-Madison.

**SAGE: Overconvergent Modular Symbols:** Participated in the development of an overconvergent modular symbols library for Sage that explicitly implements work of Pollack and Stevens.

**Music Hack Day, Boston Fall 2012:** Participated with Jordan Ellenberg and Andrew Bridy. We used statistical information from the Million Song Database to create our own composition. Extended this project to use machine learning algorithms for identifying metrics of when two songs were similar. Won 20th place in a related Kaggle competition.

REFERENCES

**Jordan Ellenberg**

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**Robert Nowak**

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**Dan Margalit**

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