

Fall 2018 Projects

Courtney Smith	Morse Functions and Handle Decomposition	Topology, Analysis
Jeffrey Jiang	The Pontryagin-Thom Theorem	Topology, Geometry
Connor Brubaker	An Introduction to Machine Learning in Practice	Statistics, Computer Science
Emily Nguyen	Connectionist Temporal Classification	Data science/machine learning/speech recognition
Demetrius Hinojosa-Rowland	Machine Learning and OLS	Statistics
Nari Jeong	NLP in Machine Learning	Probability, Numerical Analysis, Machine Learning
Antonio Farah	The Finite Element Method	Numerical Analysis
Leon Liu	Infinity topoi	Category theory
Claire Mirocha	Signal Sampling and the Discrete Fourier Transform	Analysis, Mathematical Physics, Signal Processing
Sam Weston	The Propp-Wilson Algorithm	Probability
Zachary Gardner	A Topological Proof of Bezout's Lemma: Redux	Topology
Blake Holman	Graphs and Euler's second formula	Combinatorics / Graph Theory
Tomas Matzner	Categorical Localizations	Geometry, Category Theory
Joseph Downs	Lattice Cryptography: What is NTRU?	Algebra, Cryptography
Rushi Shah	Gerrymandering Considered Harmful	Geometry
Gerardo Salazar	The Feynman Path Integral Formulation Of Quantum Mechanics	Mathematical Physics
Jose Luis Guzman	Localization and Local Properties	Algebra
Deborah Zhuang	The Spectral Decomposition of Normal Transformations	Mathematical Physics
Brandon Whiteley	The Marcinkiewicz Multiplier Theorem	Analysis
Cameron Walsh	Birthday Attacks: Not a Cake Walk (But Definitely a Random Walk)	Cryptography
Elizabeth Taber	Multiplying polynomials and the FFT	Analysis, Numerical Analysis

Rob Claassen	Topological Properties of Solid State Systems	Mathematical Physics
Bill Zan	From Geometric to Algebraic	Algebra
Thomas G Herben	Machine Learning Basics	Machine Learning
Ridha Sameer	Magnetic Mirrors: A Basic Plasma Confinement Method	Mathematical Physics
Nabeel Naiyer	Rational Solutions to First Order Linear AODEs	Analysis
Shannon Scofield	Basic Ramsey Numbers and Proof of Nonplanarity	Combinatorics / Graph Theory
Matthew Jone	Special Relativity	Mathematical Physics
Victor Floyd	The Fundamental Group of The Circle and Some of its Properties	Topology
jing zheng	error correcting code	Algebra
Ryan Chiapoco	Concentration	Probability
Johnny Coudsi	Field Theory	Algebra, Number Theory
Raeann Rojas	Seifert Surfaces	Topology
Soumika Karusala	Turing Machines and the Halting Problem	Theory of Computation/Algorithms
Ishan Paranjape	Computational Differential Equations in Aerospace Engineering Applications	Mathematical Physics
Benjamin Maccini	Comparison of Regression Methods	Statistics
Devin Powell	Data Analysis for Political Science	Statistics, Analysis
Teegan Simonds	Seifert Surfaces	Topology
Seongyong Kim	Four Vertex Theorem	Topology, Geometry
Rohan Vijay	Lagrangian Equations and Difference Methods in Classical Mechanics	Mathematical Physics, Numerical Analysis
Michael Zamora	Legendre Transformations and the Equivalence of Lagrangian and Hamiltonian Systems of Equations	Mathematical Physics

Dora Gurfinkel	"Good Artists Copy; Great Artists Steal": Using Machine Learning to Create Sylistic Content	Machine Learning
Praveen Pai	Geodesics and the Lagrangian in General Relativity	Mathematical Physics, Geometry
Ishank Arora	Regression and Classification: An Introduction	Statistics
Kateri Whitfield	Affine Geometry: Thales' Theorem and Desargues' Theorem	Geometry
Arjun Malik	A Proof that the Rational Points of Finite Order on a Cubic Curve Have Integer Coordinates	Number Theory
Kaab Ashqeen	Special Relativity	Mathematical Physics
Mauricio Montes	Using Ring Theory to solve Diophantine Equations	Number Theory
Lin Hui	model selection	Machine Learning
Paul Tee	2D Topological Quantum Field Theory	Topology, Mathematical Physics
Quinn Simonis	Surfaces in \mathbb{R}^3	Geometry, Analysis