# conference.program

11.1.16

## 9am

| Title | Presenter | Notes | |
|---|---|---|---|
| **Mezzanine Lounge** | with Prof. Lou Braida | | |
| How Accurate is a Drug Test? | Maria Messick | 1 | * |
| Depth First Search: Using Computers to Intelligently Solve Mazes | Aritro Biswas | 1 | |
| Origami Folding Algorithms: Unveiling the Mystery Behind Folded Structures | Lisa Deng | 1 | |
| Prisoner's Dilemma: Beating out your competition | Elizabeth Eastman | 17 | |
| Counting Cards: How Google Analyzes a Billion People's Data | Hunter Gatewood | 1 | |
| **Twenty Chimneys** | with Emily Zhang | | |
| Let's Make Things Spin! How Electric Motors Work | Priya Kikani | 1 | |
| Turing Machines: The Original Computers | Nicholas Matthews | 1 | * |
| Callbacks in Computer Science: Stop Waiting Around! | Sean Soni | 1 | |
| Banach-Tarski: How to Turn 1 Sphere into 2 Spheres | Alexander Smith | 7 | |
| The Nyquist Rate: Why Spinny Things Sometimes Look Like They Are Spinning The Wrong Way | Christopher Desnoyers | 7 | |
| **PDR 1** | with Professor Leslie Kolodziejski | | |
| PageRank: How Important is Your Website? | Michelle Lauer | 9 | * |
| Optimizing an algorithm (Fibonacci) | Sharon Kipruto | 9 | |
| Operating Systems | Rachel Lathe | 9 | |
| How the Internet Works | Ruth Park | 9 | |
| How do we convey the glass without touching surface? | Taeyoung Yoon | 9 | |
| **Lobdell Balcony** | with Remi Mirkat | | |
| Dealing with a heap of money like a computer scientist | John La | 8 | < |
| How to Win at Poker: Counting Strategies | Suri Bandler | 7 | < |
| How to get Obama's email | Luana Lopes Lara | 9 | * |
| How Hacking a Computer is Just Like Robbing a House | Andrew Montanez | 7 | |
| **Coffeehouse Lounge** | with Professor Collin Stultz and Phoebe Tse | | |
| The Universe: How we got to Now | Christian Cardozo Aviles | 17 | * |
| Copy/Paste, Counterpoint, and Classical Music | Alexander Campillanos | 17 | |
| Thanks for the Memory ft. Dynamic Programming | Kelsey Chan | 17 | |
| How does the Internet seem to always keep you online? | Dayanna Espinoza-Silva | 17 | * |
| Onion Routing: Maintaining Anonymity on the Internet | Henry Tareque | 17 | |
| **PDR 2** | with Professor Dirk Englund | | |
| How to Bet on Anything | Jerry Wu | 28 | * |
| The Physics of the MOSFET | Joshua Sloane | 27 | |
| Introduction to K-Means Clustering | Aasavari Phanse | 27 | |
| RSA Encryption (Or how to pass secret notes in class!) | Abigail Russell | 28 | |
| Trains and Tumors: Understanding the Genes that Cause Cancer | Evan Crane | 27 | |

# 10am

| Title | Presenter | Notes | |
|---|---|---|---|
| **Coffeehouse Lounge** | with Professor Collin Stultz | | |
| Strobe Photography: Capturing the Instantaneous | David Houle | 18 | * |
| Organizing Your Music Library | Ziad Baaklini | 18 | |
| How to Get Through a Corn Maze | Connie Siu | 18 | |
| How Computers Learn Words Without Being Taught | Zygimantas Straznickas | 18 | |
| Evolution of Encryption | Ryan Stuntz | 18 | |
| **Lobdell Balcony** | with Phoebe Tse and Remi Mirkat | | |
| Bitcoin Trading with Bayesian Regression | Anvita Pandit | 18 | * |
| Things we know we can't know | Trevor Henderson | 8 | |
| How to Create Panoramic Images Using Computer Vision | Jose Zuniga | 18 | |
| WARNING! Race Conditions May Result in Unpredictable Programs | Nicole OBrien | 10 | |
| How Your Favorite iPhone and Web Apps are Built | Kevin Shum | 10 | |
| Matter and Space | Brindha Kannan | 18 | |
| **PDR 1** | with Professor Leslie Kolodziejski | | |
| Space-time and Baseball | Zachary Hulcher | 10 | * |
| How to be the World's Laziest Programmer with Amb and Require | Geoffrey Gilmore | 10 | |
| Sending Secret Messages Using Simple Ciphers | Karleigh Moore | 10 | |
| Putting Everything in Order – How Computers Sort Things | Jade Philipoom | 10 | |
| Spelling Correction with Levenshtein Automata | William Roddenberry | 10 | |
| Letting Computers Diagnose Your Illness: Intro to Rule-Based Systems | Laura Tung | 10 | |
| **Mezzanine Louge** | with Professor Lou Braida | | |
| Qubits: A New Way to Compute | Bennett Amodio | 2 | * |
| Ray Tracing: Generating Realistic Images by Taking Photos in Reverse | Nathan Gutierrez | 2 | |
| RAFT: Helping Your Mars Rovers Communicate | Carlos Henriquez | 2 | |
| Kolmogorov Complexity: Why most sequences can't be easily described | Lisa Zahray | 2 | |
| How Google Maps Figures Out Which Way to Go: Dijkstra's Algorithm | Annie Phan | 2 | |
| **Twenty Chimneys** | with Emily Zhang and Robert Ramirez | | |
| Strobes – Making Objects Stand Still | Elaine Lin | 2 | < |
| How your computer gets Google's IP Address | Zachery Miranda | 2 | * |
| How to Keep Track of Spare Parts | Will Reyes | 2 | |
| Language from a Machine's Perspective | Justine Jang | 22 | |
| How to Move Video Game Characters | John Stephens | 22 | |
| **PDR 2** | with Professor Tomas Palacios | | |
| How to Win a Game Show | Arezu Esmaili | 22 | * |
| Breaking Down Words with Friends | Garron Charles | 22 | |
| Molecular self-assembly: how to easily design nanoparticles | Anastasia Dosca | 22 | |
| Network Flow: What Rivers and Baseball Playoffs Have in Common | Theron Nipson | 22 | |
| Finding the Signal Recipe: The Basics of the Fourier Transform | Sienna Ramos | 22 | |
| Complexity: Knowing How Fast Your Code Is…. Before You Write It | Jose Salazar | 22 | |

# 11am

| Title | Presenter | Notes | |
|---|---|---|---|
| **PDR 2** | with Professor Tomas Palacios | | |
| Word Scoring: How Autocorrect Chooses the Right Match | Jacqueline Liu | 23 | * |
| How does it feel to be in charge of an airline? Solving airline scheduling with flow networks | Suyash Fulay | 23 | |
| BitHacks: Tweaking the Nuts & Bolts of a Computer Program | Isaac Garza | 23 | |
| Hierarchical Modeling: How Computers Transform Bodies in Animation | Selina Leung | 23 | |
| Shining a Light on Solar Panels | Elizabeth Schell | 23 | |
| Infinite Money: The Two Envelope Paradox | Katie Sedlar | 23 | |
| **PDR 1** | with Professor Leslie Kolodziejski | | |
| The Tower of Hanoi Puzzle | Nadia Lucas | 11 | * |
| Use the Force (of Light) | Kathy Camenzind | 11 | |
| How DNA Sequencing Works | Isabel Chien | 11 | |
| From Points to Curves: How Computers Draw Art | Catherine Li | 11 | |
| Playing Matchmaker | Dora Tzeng | 11 | |
| **Lobdell Balcony** | with Phoebe Tse and Emily Zhang | | |
| How Feedback Helps You Cruise Across the Country | Wei Low | 23 | * |
| Drawing with Bezier Curves: The Math Behind Pixar | Christina Sun | 23 | |
| How to Communicate Quickly and Efficiently: For top secret missions or just loading Facebook | Marisa Rozzi | 11 | |
| How computers see images | Vickie Ye | 11 | |
| Git Version Control | Megan Gebhard | 7 | |
| K-Means: From data to knowledge | David Mayo | 28 | |
| **Mezzanine Lounge** | with Professor Lou Braida | | |
| Making a fortune through the St. Petersburg Paradox | Yanqi (Tyson) Chen | 3 | * |
| LZW Compression: How to Say More with Less | Xuan Bui | 3 | |
| How to Make a Pixar Movie | Evan Denmark | 3 | |
| Onion Routing: How to Cleverly Communicate Covertly | Michael Feffer | 3 | |
| Classification Trees: WHAT ARE THOOOSE? | Daniel Lerner | 3 | |
| **PDR 4** | with Jason Tong and Yola Katsargyri | | |
| Subtle Bragging: Multi-party Computation and How it Works | Daniel Shaar | 3 | * |
| How to Simulate the Universe | Ethan Witt | 3 | |
| Market Making: Easy Money? | Brian Saavedra | 3 | |
| Minimax: How Computers Beat Grandmasters at Chess | David Zheng | 13 | |
| Using Bayes' Rule to Model How Humans and Robots Think | Madeleine Severance | 13 | |
| **Twenty Chimneys** | with Professor Joe Steinmeyer | | |
| Virtual Memory: Stop Apps from Fighting | Julian Delerme | 13 | * |
| Cyberspying without code | Corey Cleveland | 13 | |
| Simultaneous Localization and Mapping | Mubarik Mohamoud | 13 | |
| Network Centralities: Who is important? | Alex Luh | 13 | |
| Fiber Optics: Connecting the World with Light | Alan Medina | 13 | |
| How to catch a Pokémon? | Sudhanshu Mishra | 13 | |

**Coffeehouse Lounge** with Professor Collin Stultz

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|---|---|---|---|
| Dealing with a Noisy World: Fourier Transforms and Filters | David Gomez | 19 | * |
| Let it Crash: Handling the unpredictable in computer programs | Aneesh Agrawal | 19 | |
| The Future of Wireless Charging | Oscar Guevara | 19 | |
| Strategies for Two Player Games | Steven Hao | 19 | |
| How to Share Nuclear Launch Codes (and Other Secrets) | Linda Liu | 19 | |
| How to Steal Passwords: SQL Injection Attacks | Julia Wu | 19 | |

# 12pm

| Title | Presenter | Notes | |
|---|---|---|---|

**Coffeehouse Lounge** with Professor Collin Stultz

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|---|---|---|---|
| Should Everyone Get Candy? – Proof by Induction | Christina Martinez-Acha | 20 | * |
| How to Make Your Car Fast and Furious | Rita Ainane | 20 | |
| The Vector Space Model (Or What You Should Watch Next on Netflix) | Rebekah Bell | 20 | |
| Singular Value Decomposition: Capturing the essence of a picture | Osmany Corteguera | 20 | |
| Understanding Radix Sort | Chandani Doshi | 20 | |
| Simpson's Paradox: Who gets more dates: Me or Brad Pitt? | Fernando Varela | 20 | |

**PDR 1** with Robert Ramirez and Emily Zhang

| | | | |
|---|---|---|---|
| Git-ting Smart With Your Files: How to Rage At Your Computer Just A Little Less | Gregory Young | 8 | < |
| Size Matters | Kevin Ng | 24 | * |
| Mathematical Multitasking: In Pursuit of Better Graphics | Andrew Reilley | 24 | |
| Conditional Probability and the Monty Hall Problem | Jessica Fang | 19 | |
| Prisoner's Dilemma: Why you should never trust your partner | Mesert Kebed | 8 | > |

**Twenty Chimneys** with Professor Joe Steinmeyer

| | | | |
|---|---|---|---|
| Saving Society with Semaphores | Anne Kelley | 14 | * |
| The Monty Hall Problem | Cavin Mozarmi | 14 | |
| Preventing an invasion with Neural Networks | Nischal Nadhamuni | 14 | |
| Quantum Mechanics and You | Narindra Peaks | 14 | |
| The Pigeonhole Principle & Beyond: Proofs About Socks, Oranges, & Hair | Elysa Kohrs | 14 | |

**PDR 4** with Yola Katsargyri and Jason Tong

| | | | |
|---|---|---|---|
| How Do Bots Move So Fast? | Michael Shum | 4 | * |
| Cross Site Scripting Attack | John Mikhail | 4 | |
| In Bitcoin We Trust | Nchinda Nchinda | 4 | |
| How Video Game AI Works | Raoul Khouri | 14 | |
| Handling Concurrent Conversations with CDMA | George Liang | 14 | |

**Mezzanine Lounge** with Professor Lou Braida

| | | | |
|---|---|---|---|
| The Pirate Game: Distributing Treasure | Stuart Finney | 4 | * |
| As Fast as a Speeding Bullet | Travis Herbanek | 4 | |
| Divide and Conquer: Solving Hard Problems by Solving Easy Ones | Alex Huang | 4 | |
| MAC Protocols: Communication Without Conflict | Alex Latham | 14 | |
| Data Buffers, or How Your Youtube Videos Load | Yuge Ji | 14 | > |

**PDR 2** with Professor Tomas Palacios

| | | | |
|---|---|---|---|
| The FPGA: a million computers in one | Angus MacMullen | 24 | * |
| Keeping Track of a Computer's Kids | Famien Koko | 24 | |
| Count to infinity and beyond | Cheuk Lee | 24 | |
| How computers efficiently store different versions of your To-Do lists | Bristy Sikder | 24 | |
| Error Correcting Codes: Conveying Info with Greater Accuracy | Kevin Yang | 24 | |
| Scaling: Solving large problems one step at a time | Sagnik Saha | 24 | |

# 1pm

| Title | Presenter | | Notes |
|---|---|---|---|
| **Mezzanine Lounge** | with Professor Dirk Englund | | |
| Editing DNA with CRISPR Scissors | Helen Abadiotakis | 25 | * |
| AlphaGod: How the Machine beat the Man | Kai Aichholz | 25 | |
| Shortest-Path Finding | Benjamin Lin | 27 | |
| Detecting Fake Data: Benford's Law | Tomas Calderon | 28 | |
| Grocery Shopping: The Bin-Packing Problem | Kai Xiao | 28 | |
| How to win a billion bucks | Alfredo Yanez | 28 | > |
| **PDR 4** | with Yola Katsargyri | | |
| How Concerts Help Us Understand Data Storage | Kayode Ezike | 25 | * |
| Quantum Cryptography: The Unbreakable Cipher | Brandon Sanchez | 25 | |
| Making Multiplication Faster with the Karatsuba Algorithm | Jennifer Tylock | 25 | |
| Using Your Cache Wisely | Douglas Kogut | 25 | |
| Why our planet is doomed: A look into Game Theory | Julian Ranz | 25 | |
| Magnetic Circuits | Tianye Chen | 25 | |
| **PDR 2** | with Tomas Palacios | | |
| Bitcoin: Magical Digital Money | Natalie Coleman | 21 | * |
| Compression: More information: less space | Joren Lauwers | 21 | |
| Binary Search Explained: As Easy as Finding Words in a Dictionary | Gustavo Montalvo | 21 | |
| AJAX: Stronger Than Long Load Times | Chris Womack | 21 | |
| First-Order Circuit Filters | Juan De Jesus | 21 | |
| **Coffeehouse Lounge** | with Professor Kimberle Koile | | |
| Reverse Engineering Smoothies with Math | Phillip Cherner | 5 | * |
| How to Control Almost Anything | Douglas Chambers | 5 | |
| Why Wheels Do Strange Things On Camera | Israel Donato-Ridgley | 5 | |
| Identity Based Encryption: The Locked Boxes and Keys in Your Computer | Jakob Weisblat | 8 | |
| Hash Functions: Speedy Searches for Quicker Computers | Harrison Okun | 5 | |
| **PDR 3** | with Sarah Tortorici and Robert Ramirez | | |
| Efficiently Find That Thing You're Looking For | Katie Marlowe | 5 | * |
| How to get from Stanford to MIT as quickly as possible | Rachel Rotteveel | 5 | |
| Reduced Size Without Reduced Detail: Reduced Repitition | Daniel Solomon | 5 | |
| Particle Systems: Wow, that Water Looks Real! | Reece Tamashiro | 5 | |
| Time Travel with Special Relativity | David Campeau | 21 | |
| Adversarial Search: How Computers Play Games | Jeremy Wright | 21 | |
| **Twenty Chimneys** | with Professor Joe Steinmeyer | | |
| How Brain Cells Communicate – Why we laugh, learn, and love | Runpeng Liu | 16 | < |
| How can we measure a car's speed using an on-board camera? | Banti Gheneti | 15 | * |
| How to Send Secret Information | Lotta Blumberg | 15 | |
| How to Share a Secret | Brandon Carter | 15 | |
| Image Filtering Made Easy | Sara Stiklickas | 15 | |
| **PDR 1** | with Jason Tong | | |
| The New Password: Your Eyes | Joanna Han | 15 | * |
| Is Time Actually Money? | Nicole Lu | 15 | |
| What is Pipelining? Do Laundry Faster and Make Netflix Load More Quickly | Lorenzo Vigano | 15 | |
| Computer Vision for Dummies | Pravina Samaratunga | 16 | |
| How to count Skittles quickly with MapReduce | Dang Pham | 16 | |

# 2pm

| Title | Presenter | | Notes |
|---|---|---|---|
| **Mezzanine Lounge** | with Professor Dirk Englund | | |
| Analyzing Social Networks Through Centrality Measures | Tyler Finkelstein | 26 | * |
| Understand and Fix Your Slow Wifi | Reo Baird | 26 | |
| Command Line Pipes | William Navarre | 28 | |
| Rule-based systems: A sneak peek into Artificial Intelligence | Adarsh Jeewajee | 27 | |
| Skip Lists – Express Trains for Lists | Botong Ma | 27 | > |
| **PDR 4** | with Yola Katsargyri | | |
| Long Distance Radio Communications or How Do Our Satellites Phone Home? | Alex Sloboda | 26 | * |
| Collect Data Lazily, Get Away With It | Descartes Holland | 26 | |
| Tell a Lie Often Enough… | Arman Rahman | 26 | |
| Collisions in Storage: How Pigeonhole Principle Shows they are Inevitable | Tim Zhong | 26 | |
| Parkinson's Evil Twin | Michael Castano | 26 | |
| **Twenty Chimneys** | with Professor Leslie Kolodziejski | | |
| Just Google It: How Search Works | Ismael Gomez | 12 | * |
| The Math Behind Card Counting | Diego Cornejo | 12 | |
| Number of Paths on the NYC Grid | Amber Guo | 12 | |
| How to be a Better Decision Maker | Willow Jarvis | 12 | |
| Understanding Circuits and Why Electrical Plugs Have Three Prongs | Michelle Qiu | 12 | |
| **PDR 2** | with Phoebe Tse | | |
| How to be an Efficient Doctor – The Viterbi Algorithm | Aofei Liu | 28 | < |
| Friendship Paradox – Why Your friends have more friends than you | Joy Yu | 12 | * |
| How to organize your fat stacks of cash really quickly using Mergesort | Jonatan Yucra Rodriguez | 12 | |
| Li Ion Battery Management Systems | Eric Ponce | 27 | > |
| Threads and Locking, Find the Race Condition Win a Prize | Kenny Gea | 27 | > |
| **Coffeehouse Lounge** | with Professor Kimberle Koile | | |
| Drawing Lines for Fun, Profit, and Classification (aka the joys of linear separators | Lei Ding | 7 | * |
| Finding a moment in a videostack | Ali-Amir Aldan | 6 | |
| Hacking Passwords 101 | Nikita Kodali | 8 | |
| The Halting Problem A.K.A. Will Grandma Ever Stop Talking? | Vincent Anioke | 7 | > |
| How to Make Your Computer Play (and win!) the Game of 20 Questions | Spencer Bard | 7 | > |
| Gene Drives – A method for editing a species or driving it to extinction | Damien Martin | 8 | > |
| **PDR 3** | with Sarah Tortorici | | |
| Winning Board Games without any Real Skill | Keith Galli | 6 | * |
| Mr. Steal Your Prom Date | Sravya Bhamidipati | 6 | |
| How to be a Particularly Good Finder | Jackie Liu | 6 | |
| How To Make Super Babies | Crystal Pan | 6 | |
| How to prove things certainly exist, by only proving that they probably exist | Michael Wallace | 6 | |

| **PDR 1** | with Jason Tong | | |
|---|---|---|---|
| How to Share Secrets With Your Friends | Edward Park | 16 | < |
| Your computer perceiving the world. Why you and your computer both trip-up on the McGurk effect. | Alexander List | 16 | < |
| How Computers Remember Your Cat Videos | Leopoldo Calderas | 16 | * |
| Traveling for Cheap: How to Find the Cheapest Flight Paths Around the World! | Danielle Penney | 16 | |
| Solving mazes with Depth First Search | Gregory Hui | 16 | |


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my.notes