

conference.program

11.1.16

9am

Title	Presenter	Notes
Mezzanine Lounge	with Prof. Lou Braid	
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
(no title)	Alexander Smith	7
(no title)	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

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 Kolodziejewski	
Space-time and Baseball	Zachary Hulcher	10 *
How to be the World's Laziest Programmer	Geoffrey Gilmore	10
Sending Secret Messages Using Simple Ciphers	Karleigh Moore	10
Putting Everything in Order – How Computers Sort Things	Jade Philipoom	10
Did you mean... Levenshtein Automata?	William Roddenberry	10
Letting Computers Diagnose Your Illness: Intro to Rule-Based Systems	Laura Ting	10
Mezzanine Lounge	with Professor Lou Braid	
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

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 Kolodziejcki	
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 Braid	
The St. Petersburg Paradox	Yanqi 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 Delorme	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

Dealing with a Noisy World: Fourier Transforms and Filters
 Let it Crash: Handling the unpredictable in computer programs
 The Future of Wireless Charging
 Strategies for Two Player Games
 How to Share Nuclear Launch Codes (and Other Secrets)
 How to Steal Passwords: SQL Injection Attacks

with Professor Collin Stultz

David Gomez 19 *
 Aneesh Agrawal 19
 Oscar Guevara 19
 Steven Hao 19
 Linda Liu 19
 Julia Wu 19

12pm

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

Coffeehouse Lounge

Should Everyone Get Candy? – Proof by Induction
 How to Make Your Car Fast and Furious
 The Vector Space Model (Or What You Should Watch Next on Netflix)
 Singular Value Decomposition: Capturing the essence of a picture
 Understanding Radix Sort
 Simpson's Paradox: Who gets more dates: Me or Brad Pitt?

with Professor Collin Stultz

Christina Martinez-Acha 20 *
 Rita Ainane 20
 Rebekah Bell 20
 Osmany Corteguera 20
 Chandani Doshi 20
 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
 Size Matters
 Mathematical Multitasking: In Pursuit of Better Graphics
 Conditional Probability and the Monty Hall Problem
 Prisoner's Dilemma: Why you should never trust your partner

Gregory Young 8 <
 Kevin Ng 24 *
 Andrew Reilley 24
 Jessica Fang 19
 Mesert Kebed 8 >

Twenty Chimneys

with Professor Joe Steinmeyer

Saving Society with Semaphores
 (no title)
 The Monty Hall Problem
 (no title)
 Quantum Mechanics and You
 The Pigeonhole Principle & Beyond: Proofs About Socks, Oranges, & Hair

Anne Kelley 14 *
 Samantha Fierro 14
 Cavin Mozarmi 14
 Nischal Nadhamuni 14
 Narindra Peaks 14
 Elysa Kohrs 14

PDR 4

with Yola Katsargyri and Jason Tong

How Do Bots Move So Fast?
 Cross Site Scripting Attack
 In Bitcoin We Trust
 How Video Game AI Works
 Handling Concurrent Conversations with CDMA

Michael Shum 4 *
 John Mikhail 4
 Nchinda Nchinda 4
 Raoul Khouri 14
 George Liang 14

Mezzanine Lounge

with Professor Lou Braid

The Pirate Game: Distributing Treasure
 As Fast as a Speeding Bullet
 Divide and Conquer: Solving Hard Problems by Solving Easy Ones
 MAC Protocols: Communication Without Conflict
 Data Buffers, or How Your Youtube Videos Load

Stuart Finney 4 *
 Travis Herbanek 4
 Alex Huang 4
 Alex Latham 14
 Yuge Ji 14 >

PDR 2

The FPGA: a million computers in one
 Keeping Track of a Computer's Kids
 Count to infinity and beyond
 How computers efficiently store different versions of your To-Do lists
 Error Correcting Codes: Conveying Info with Greater Accuracy
 Scaling: Solving large problems one step at a time

with Professor Tomas Palacios

Angus MacMullen 24 *
 Famien Koko 24
 Cheuk Lee 24
 Bristy Sikder 24
 Kevin Yang 24
 Sagnik Saha 24

1pm

Title

Presenter Notes

Mezzanine Lounge

Editing DNA with CRISPR Scissors
 AlphaGod: How the Machine beat the Man
 Shortest-Path Finding
 Detecting Fake Data: Benford's Law
 Grocery Shopping: The Bin-Packing Problem
 How to win a billion bucks

with Professor Dirk Englund

Helen Abadiotakis 25 *
 Kai Aichholz 25
 Benjamin Lin 27
 Tomas Calderon 28
 Kai Xiao 28
 Alfredo Yanez 28 >

PDR 4

How Concerts Help Us Understand Data Storage
 Quantum Cryptography: The Unbreakable Cipher
 Making Multiplication Faster with the Karatsuba Algorithm
 Using Your Cache Wisely
 Why our planet is doomed: A look into Game Theory
 Magnetic Circuits

with Yola Katsargyri

Kayode Ezike 25 *
 Brandon Sanchez 25
 Jennifer Tylock 25
 Douglas Kogut 25
 Julian Ranz 25
 Tianye Chen 25

PDR 2

Bitcoin: Magical Digital Money
 Compression: More information: less space
 Binary Search Explained: As Easy as Finding Words in a Dictionary
 AJAX: Stronger Than Long Load Times
 First-Order Circuit Filters

with Tomas Palacios

Natalie Coleman 21 *
 Joren Lauwers 21
 Gustavo Montalvo 21
 Chris Womack 21
 Juan De Jesus 21

Coffeehouse Lounge

Reverse Engineering Smoothies with Math
 How to Control Almost Anything
 Why Wheels Do Strange Things On Camera
 Identity Based Encryption: The Locked Boxes and Keys in Your Computer
 Hash Functions: Speedy Searches for Quicker Computers

with Professor Kimberle Koile

Phillip Cherner 5 *
 Douglas Chambers 5
 Israel Donato-Ridgley 5
 Jakob Weisblat 8
 Harrison Okun 5

PDR 3

Efficiently Find That Thing You're Looking For
 How to get from Stanford to MIT as quickly as possible
 Reduced Size Without Reduced Detail: Reduced Repetition
 Particle Systems: Wow, that Water Looks Real!
 Time Travel with Special Relativity
 Adversarial Search: How Computers Play Games

with Sarah Tortorici and Robert Ramirez

Katie Marlowe 5 *
 Rachel Rotteveel 5
 Daniel Solomon 5
 Reece Tamashiro 5
 David Campeau 21
 Jeremy Wright 21

Twenty Chimneys

How Brain Cells Communicate – Why we laugh, learn, and love
 How can we measure a car's speed using an on-board camera?
 How to Send Secret Information
 How to Share a Secret
 Image Filtering Made Easy

with Professor Joe Steinmeyer

Runpeng Liu 16 <
 Banti Gheneti 15 *
 Lotta Blumberg 15
 Brandon Carter 15
 Sara Stiklickas 15

PDR 1

The New Password: Your Eyes
 Is Time Actually Money?
 What is Pipelining? Do Laundry Faster and Make Netflix Load More Quickly
 Computer Vision for Dummies
 How to count Skittles quickly with MapReduce

with Jason Tong

Joanna Han 15 *
 Nicole Lu 15
 Lorenzo Viganò 15
 Pravina Samarantunga 16
 Dang Pham 16



Title

Presenter Notes

Mezzanine Lounge

(no title)
 Understand and Fix Your Slow Wifi
 (no title)
 Rule-based systems: A sneak peek into Artificial Intelligence
 Skip Lists – Express Trains for Lists

with Professor Dirk Englund

Tyler Finkelstein 26 *
 Reo Baird 26
 William Navarre 28
 Adarsh Jeewajee 27
 Botong Ma 27 >

PDR 4

Long Distance Radio Communications or How Do Our Satellites Phone Home?
 Collect Data Lazily, Get Away With It
 Tell a Lie Often Enough...
 Collisions in Storage: How Pigeonhole Principle Shows they are Inevitable
 Parkinson's Evil Twin

with Yola Katsargyri

Alex Sloboda 26 *
 Descartes Holland 26
 Arman Rahman 26
 Tim Zhong 26
 Michael Castano 26

Twenty Chimneys

Just Google It: How Search Works
 The Math Behind Card Counting
 Number of Paths on the NYC Grid
 How to be a Better Decision Maker
 Understanding Circuits and Why Electrical Plugs Have Three Prongs

with Professor Leslie Kolodziejski

Ismael Gomez 12 *
 Diego Cornejo 12
 Amber Guo 12
 Willow Jarvis 12
 Michelle Qiu 12

PDR 2

How to be an Efficient Doctor – The Viterbi Algorithm
 Friendship Paradox – Why Your friends have more friends than you
 How to organize your fat stacks of cash really quickly using Mergesort
 Li Ion Battery Management Systems
 Threads and Locking, Find the Race Condition Win a Prize

with Phoebe Tse

Aofei Liu 28 <
 Joy Yu 12 *
 Jonatan Yucra Rodriguez 12
 Eric Ponce 27 >
 Kenny Gea 27 >

Coffeehouse Lounge

Drawing Lines for Fun, Profit, and Classification (aka the joys of linear separators)

Finding a moment in a videostack

Hacking Passwords 101

The Halting Problem A.K.A. Will Grandma Ever Stop Talking?

How to Make Your Computer Play (and win!) the Game of 20 Questions

Gene Drives – A method for editing a species or driving it to extinction

with Professor Kimberle Koile

Lei Ding 7 *

Ali-Amir Aldan 6

Nikita Kodali 8

Vincent Anioke 7 >

Spencer Bard 7 >

Damien Martin 8 >

PDR 3

Winning Board Games without any Real Skill

Mr. Steal Your Prom Date

How to be a Particularly Good Finder

How To Make Super Babies

How to prove things certainly exist, by only proving that they probably exist

with Sarah Tortorici

Keith Galli 6 *

Sravya Bhamidipati 6

Jackie Liu 6

Crystal Pan 6

Michael Wallace 6

PDR 1

How to Share Secrets With Your Friends

Your computer perceiving the world. Why you and your computer both trip-up on the McGurk effect.

How Computers Remember Your Cat Videos

Traveling for Cheap: How to Find the Cheapest Flight Paths Around the World!

Solving mazes with Depth First Search

with Jason Tong

Edward Park 16 <

Alexander List 16 <

Leopoldo Calderas 16 *

Danielle Penney 16

Gregory Hui 16

Special thanks to:

Katherine Touafek (School to Careers Partners)

Dave Medvitz (Pingree)

Benadette Manning (Fenway)

Michele Goe (O'Bryant)

Bob Hall (Newman)

Jason Tong (MIT)

my.notes