Program

* denotes slide collectors • students with < must present in first half • students with > must present in second half

9AM

20 Chimneys • Cardinal
Fermi Estimation: Answering Mind-bending Questions On The Fly
How Netflix Knows Which Movies you'll Love
How Do We Extract Power From Solar Cells?
Adding Color to Protein Interactions

Mezzanine • Evan
How to Read Your DNA!
Encrypting Messages with Hard Math
Computing With Gates: Addition as Zookeeping
How to Find Your Bike and Solve a Crossword Puzzle

Coffeehouse • Luis
How to Win Game Shows and Make Better Decisions
The Million-Dollar Question: Is Everything Easy?
Exploring Infinity!
How is the Weather in the Land of Oz?

PDR1 • Sarah
How to Protect Shared Information: An Introduction to Locks
How to Efficiently Flip Pancakes
How We Get Machines To Do What We Want
Computer Rendering: How to Win an Oscar
Stability and What It Means For Engineers

PDR2 • Morgan
Birthday Paradox (And Its Use In The Computer Science Field)
Catching Criminals: Combining Existing Processes and Tools to Copy DNA in the Lab
How to Cook Faster: Amortization
Counting the People Watching Your Snapchat Story

10AM

20 Chimneys • Cardinal
Learning About Strangers
Controller Area Network: Over 70 Computers in Your Car Working Together
TBD
Perception of Color: Things Are Not Always As They Appear
Stable Selfishness
<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>10AM</td>
<td>Mezzanine</td>
<td>How Netflix Recommends You Movies</td>
<td>Lisette Tellez*</td>
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<td>How To Make Big Data...Small</td>
<td>Priya Veeraraghavan</td>
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<td>Your Genetic Wardrobe: V(D)J Recombination</td>
<td>Juan Rodriguez</td>
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<td>The Basics of How a Computer Works</td>
<td>Robert Thorpe</td>
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<td>Coffeehouse</td>
<td>Sending Redundant Information to be Less Redundant</td>
<td>Ethan Kim*</td>
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<td>Hyperthreading: Use All Of The Computer Hardware You Paid For!</td>
<td>Marcus Boorstin</td>
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<td>Designing Efficient User Interfaces to Improve User Experience</td>
<td>Eric Luu</td>
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<td>From Your Secret Admirer: Anonymity on the Internet</td>
<td>Suzy Mueller</td>
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<td>Do it Faster: Divide and Conquer</td>
<td>Sameena Shaffeeullah</td>
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<td>PDR1</td>
<td>From the Earth to the Moon</td>
<td>Jake Burga*</td>
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<td>FM for Your DMs: How Wireless Devices Use the Frequency Domain to Transmit Messages</td>
<td>Thomas Cook</td>
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<td>Backward Chaining: How to Tell if Tony Stark is Iron Man</td>
<td>Josh Elbahrawy</td>
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<td>Designing Digital</td>
<td>Marayna Martinez</td>
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<td>How To Build the Best NBA Team with Dynamic Programming</td>
<td>Phillip Ou</td>
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<td>PDR2</td>
<td>Interfering With Waves</td>
<td>Dimitris Koutentakis*</td>
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<td>How Closely Are You Related to a Neanderthal?</td>
<td>Jackie Vahey</td>
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<td>Need For Speed: Mergesort</td>
<td>Sophia Tabchouri</td>
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<td>Paint Party: How To Hide Your Secrets With Paint</td>
<td>Nikita Waghani</td>
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<td>Troubleshooting with CRISPR</td>
<td>Emily Tang</td>
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<td>11AM</td>
<td>20 Chimneys</td>
<td>Pipelining For Faster Computer Processors</td>
<td>Eghosa Eke*</td>
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<td>Instant Recall</td>
<td>Steven Homberg</td>
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<td>A Simple Hack to Minimize Path Traveling</td>
<td>Rick Huang</td>
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<td>Genomic Sequencing: Cracking the Code of Life</td>
<td>Jonathan Kelly</td>
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<td>How Search Engines Work</td>
<td>Jong-Wook Kim</td>
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<td>Mezzanine</td>
<td>How to Win More Than Anybody Else</td>
<td>Samuel Song*</td>
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<td>How I'm Friends (of Friends) with Everyone on Earth</td>
<td>John Heyer</td>
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<td>Pipelining: How To Do Laundry Efficiently</td>
<td>Mary Thielking</td>
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<td>Need for Speed: Algorithm Analysis</td>
<td>Joshua Tomazin</td>
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<td>PCR: Making a Haystack of Needles</td>
<td>Ming Wang</td>
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<td>Coffeehouse</td>
<td>Taking a Tour of TOR. What's Beyond Incognito Mode</td>
<td>Stephen White*</td>
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<td>Man-In-the-Middle Attacks</td>
<td>Abel Tadesse</td>
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<td>Perceptrons: Or, How Spicy is Too Spicy?</td>
<td>Avi Walden</td>
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<td>It's a Bird! It's a Plane! It's... a Frisbee!</td>
<td>Richard Yip</td>
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<td>Moving Faster Than A Camera: Rolling Shutter Effect</td>
<td>Abdurrahman Akkas&lt;</td>
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<td>PDR1</td>
<td>How Netflix Can Give You Smarter Recommendations</td>
<td>Ignacio Fernandez*</td>
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<td>How Does My Computer Do Many Things at Once?</td>
<td>Mohammad Abunassar</td>
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<td>Optimize Everything: Winning Marco Polo with Gradient Ascent</td>
<td>Dane Erickson</td>
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<td>How to Count Poker Hands</td>
<td>Riya Jagetia</td>
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<td>Theron Nipson</td>
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<td>How Cosmic Rays are Causing Errors in Your Computer</td>
<td>Abraham Quintero</td>
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11AM cont.

PDR2 • Remi
Dynamic Programming: An Efficient Problem-Solving Strategy
Yuwei Zhang*
Birthday Paradox: Counting the Opposite
Terrance Liang
How Positivity can be Negative
Jesus Mathus
The Friendship Paradox: Your Friends are More Popular Than You Are and That's Okay
Linda Zhang
Bitcoin: Trust, and Verify
Sophia E

12PM

20 Chimneys • Cardinal
How to Digest Big Data
Kimberli Zhong*
What are Hard Problems?
Daniel Bausher-Belton
Limitless Energy with Nuclear Fusion
Kyle Beeks
How to Organize Computers That Can Crash
Omer Cerrahoglu
Teaching Computers How to Think
Hannah Chen

Mezzanine • Jason
From Socket to Cellphone: How Our Phone Chargers Work
Julian Alverio*
How You Can Speed Up Your Life with this Simple Trick
Ana Neri
How Programs Are Made
David Vargas
 Exposure in Photography: Aperture and Shutter Speed
Avery Lamp
How to Teach Computers to Play Computer Games
Manjot Sangha

Coffeehouse • Jessica
Genetic Algorithms: How Computers Can Evolve
Kyle Bridburg*
Fractals: Weird Dimensions
Julian Mendoza
How To Find Your Soulmate
Daniel Zuo
Memoization: Optimize Computing Fibonacci Numbers
Sharon Kipruto
Pattern-Hunting and Data-Crushing
Michael McGraw
Forces That Hold Molecules Together
Bob Liang

PDR1 • Amar
How to Find Love Using Search Algorithms
Udgam Goyal*
From 3D to Your Screen: The Visibility Problem
Malek BenRomdhane
Finding Things Quickly With Quantum Computers
Samuel Duchovni
The Smallest Infinity
David Huang
Constraint Propagation: Solving Global Problems Through Local Solutions
Manuel Guillen>

PDR2 • Remi
Organizing Your Life With Hashing
Jeffrey Lu*
How to Make the Most Out of Any Situation
Madeleine Dawson
Smashing Your Computer’s Memory For $$$
Maxwell Lancaster
Picking Team Captains to Cluster Data
Brian Shimanuki
How Video Took Over the Internet: A Crash Course on Compression
Lawrence Wu

1PM

20 Chimneys • Luis
The Chemical Computer: How To Solve Problems Using DNA
Claire Simpson*
Economics of Blockchain
Juan Huertas
How Google Maps Gets You Directions
Reymundo Cano
How Google Handles So Much Data
Jack Serrino
Cat That Like Us and Cats That Don't
Jessie Wang
1PM cont.

Mezzanine • Jason
Protecting Your Privacy on the Internet                              Stanley Cen*
The Domain Name System: How Naming Sites on the Internet Works  Yoeal Efrem
Does Knowing the Future = Success? How Computers Play Games      Lordique Fok
Linear Optimization: How to Maximize Your Profits with Limited Resources Robert Tran
How Can Computers Play Board Games Efficiently?                  Luis Sanmiguel

Coffeehouse • Kimberle
Why Loading A Webpage Isn't Completely Terrible                 Kimberly Dauber*
How Not to Lose at Tic-Tac-Toe using Minimax                    Steven Chen
Powering the World Around Us                                     Rachael Devlin
How to Store Lots More Images on Your Computer                  Caitlin Cassidy>
Fluorescence: How to Get Lit                                       Melissa Li>

PDR1 • Sarah
Speedy Sorting Simplified                                        Brenda Zanze*
Simulated Annealing: a Talk on Mathematical Optimization         Zhiyao Ma
A Taste of How Computers Deal with Short-Term Memory Loss        Rodrigo Ruiz
How to Set Your Friends Up On Dates                               Maggie Yuan
Synchronization: Too Much Milk                                    Brandon Zeng

PDR2 • Jessica
How Computers Keep Things Short and Sweet                        Margaret Yu*
Transistors: Building Blocks of the Digital Age                  Owen Gray
Why What You Think You Know About Probability is (Probably) Wrong Saron Teklezgi
PageRank: How Google Finds The Best Out Of Billions Of Pages      Carl Unger
Comparative Advantage: Why it's Always Better to Trade            Matthew Wu

2PM
20 Chimneys • Phoebe
How to Save Time with Caching                                     Brian Xu*
DNS: The 32-year-old Internet Tech Behind Domains From .com to .meme and Everything in Between  Eric Jepsen
BitTorrent: A Better Way to Share                                 Lisandro Jimenez
Building a Computer Using Dominoes                               Ebrahim Aljohani
The Brain from an Electrical Perspective                         Rebekah Waldman

Mezzanine • Jason
Rewriting the Genome with CRISPR/Cas9                             Minyi Lee*
How A Tesla Car Motor Works                                       Jack Erdozain
How Google Maps Finds the Shortest Path                           Michelle Huang
Grouping with Computer                                             Dian Mattingly
The Wide World of Sorts                                           Charles Bachmeier

Coffeehouse • Kimberle
Schlieren Imaging: Seeing the (Near) Invisible                    Nayoung Lee*
How to Talk Securely, Even When Someone's Eavesdropping          Andrew Bartow
Digital Logic: How 1's and 0's Make Up a Computer                  Leah Goggin
Making Hard Choices From Bad Advice - and Teaching Computers to Do It For You David Ricardo
Fast & Furious: Intro to Fourier Analysis                         Joseph Park>

PDR1 • Sarah
How Disney Renders Animations                                     Sophia Russo*
Reinforcement Learning (AI)                                       Anthony Liu
Why BitTorrent is a Piece of Cake!                                Rupayan Neogy
Modern Mind Control: Optogenetics                                 Allison Tam
The Heart of an Amplifier - MOSFET Transistor                     Yuechen Yang
SPECIAL THANKS TO:
Katherine Touafek (School to Careers Partnership)
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Anders Hulleberg (Waltham)
Jennifer Sauriol (Hamilton Wenham)
Harrison Bralower (Newman)
Molly Nebiolo (CCSC)
Jessica Wang (MIT)

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