

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

6.UAT High School Conference

Program

TUESDAY, OCTOBER 31, 2017

SPECIAL THANKS TO

Katherine Touafek (School to Careers Partnership)
Jennifer Sauriol, John Kotch (Hamilton Wenham)
David Case (Worcester Tech)
Benadette Manning (Fenway)
Lisette Tellez (MIT)

Last Updated Oct 27

9AM

Coffeehouse Lounge

How to Speed Up the Multiplication Process
Assembly Line Computing
A Deeper Look Into Pascal's Triangle
You vs. Tom Brady: How Close Are Your Genes?
From Hawaiian Scientists Communicating to WiFi: MAC Protocols

Remi

Tianlin Zheng ((20)
Henry Love* (19)
Cheng Wang (19)
Ryan Hays (19)
Crystal Wang (16)

Mezzanine Lounge

Sort Your Bookshelf, Fast!
Divided Like Cats and Dogs: The Perceptron Algorithm
Your Computer's Traffic Enforcement
The Network That's Fast AND Cheap
Learning to Play Games

Lou

Timothy Henry* (1)
John Clarke (1)
John Parsons (1)
Lauren Spearman (1)
Robert Verkuil (1)

Twenty Chimneys

PageRank: Voting for the Most Popular Website
Dynamic Range Compression: Making Your Mixtape LOUD!
The Opposite of Secret Codes: How to Send a Message Clearly
How Computers Use Short-Term Memory to Speed Things Up for You!
The Birthday Paradox: Magic of Combinations

Leslie

Shreyash Agrawal* (9)
Julian Chacon (9)
Hope Harrison (9)
Bishesh Khadka (9)
Taranjit Singh (9)

PDR1

Winning Game Shows with Decision Analysis
Correcting Misspellings
Hiding by Dividing: How to Securely Share a Secret
How to Build a Power Efficient Light Bulb
Finding the Best Solution... When the Best Solution Isn't Possible

Randy

Katherine Shade* (5)
Dong Deng (5)
Nicholas Wu (5)
Thomas Leech (5)
Valerie Richmond (5)

PDR2

Dynamic Programming: An Easy Way to Speed Up Large Problems
Buffer Overflows
Think Like a Computer: Breaking Things Down With Assembly Language
Genetic Algorithms: Growing Beautiful Solutions to Hard Problems
How to Put Together a Book of DNA: A Quest

Hairuo

Erica Liu* (28)
Ray Wang (9)
Baltazar Ortiz (28)
Mitchell Gu (16)
Valeria Staneva (28))

PDR4

Building an Artificial Brain with Neural Nets
How Capacitive Touch Buttons Work
How to Starve Cancer Cells
Huffman Coding: How Computers Compress Files to the Smallest Size
Saving Money and Staying Together with Minimum Spanning Trees

Kevin

Chris Briere ((24)
Nicholas Klugman* (24)
Justin Yu (24)
Bitu Moghaddam (24)
Wilbur Zhao (24)

10AM

Coffeehouse Lounge

How to Look Up Anything (Almost) Instantly
How to Find a Loyal Date for Prom
Transistors: How Small Can You Make an Electrical Switch?
DNS: The Phonebook We Use Everyday
TOR: Online Privacy through Layers of Proxies
Binary Indexed Tree

Mezzanine Lounge

Graham's Stupidly Big Number
Character Skinning: How Disney Brings Elsa, Nemo, & Wall-E to Life
Transistor Man Action: Saving the Digital & Analog World
Optimal Power Delivery Through Changing Mediums
Hidden Markov Models: Combining Observation with Assumption

Twenty Chimneys

How Teamwork Can Make Sensor Networks More Efficient
How to Never Lose at Tic-Tac-Toe
How Computers Elect Note Takers and Reach Agreements
Currency Arbitrage; Mangos or Money
Teleporting Information

PDR1

Group Work 101 (For Computers)
The Fastest Path From You to Food
A Theory for How We Learn
Teaching Computers to Understand Words
Maximizing Traffic from A to B

PDR2

What Your Friends Say About You: K-Nearest Neighbors
Genetic Algorithms: How to Evolve the Best Car
How Does Your Phone Know Where You Are?
Using Artificial Intelligence to Have a Successful Halloween
The Stock Market and How to Profit from It

PDR4

DNA Sequencing: Cracking the Code That Defines You
Using Speech Bots to Communicate with the World
I Can Only Juggle 3 Things, But My Computer Can Juggle Millions. How?
Graphics Cards: How Do They Work?
Scaling Systems with Load Balancers

Remi

Scott Cameron* (6)
Vivian Zhang (6)
Samuel Schendel (6)
Jihyun Min (2)
Eric Jepsen (2)
Bojan Serafimov (2)

Lou

Taylor Herr* (2)
Gillian Belton (2)
Justin Graves (2)
Alexander Sludds (2)
So Yeon Min (2)

Leslie

Tina Quach* (10)
Hyemin Bang (10)
Joseph Lin (10)
Fredric Moezinia (10)
Jing Wang (10)

Randy

Erick Friis* (6)
Virginia Adams (6)
Megan Fu (6)
Sophie Mori (6)
Long Nguyen (6)

Hairuo

Katherine Young* (10)
Grace Yin (10)
Angela Leong (26)
Anika Gupta (26)
Clay Jones (26)

Martha

Spencer Rust* (26)
Emmanuel Azuh (26)
Ryan Berg (26)
Julian Fuchs (26)
Jared Hanson (26)

11AM

Coffeehouse Lounge

Browser Caching
BitTorrent: Not Just for Pirating the Emoji Movie
The Tree of Life: Where'd You Come From?
Fun Times Filtering Music with the Fourier Transform
How to Use Infinity to Make $1+1=1$

George

Spencer Kim* (21)
Joseph Bergeron (21)
Andrew He (21)
Alex Leffell (21)
Lester Mount (21)

Mezzanine Lounge

How Google Tackles Big Data's Big Problems
Finding the Minimum of a Function with Gradient Descent
How Bitcoin Works Under the Hood
How to Make Computers Smarter Than Humans
How Computers Learn: A Quick Peek into Machine Learning

Lou

Advait Anand* (3)
Michael DeLaus (3)
Sapna Kumari (3)
Christian Jamison (3)
Tony Peng (3)

Twenty Chimneys

How to Organize Anything: Sorting Made Quick and Easy
LEDs and How They're Changing the World
Sorting Through the Age of Information: Topic Models
From Here to There: How to Search
Autonomous Cars: How to Control Speed Without a Driver

Leslie

Subby Olubeko* (11)
Briana Chavez (11)
David Walter (11)
Stephenie Zhang (11)
Jorge Troncoso (11)

PDR1

Optimizing Your Halloween Haul
How to Sell the Most Ice Cream
Finding Medians Faster
Corner and Chills
Principal Component Analysis: A Technique to Choose What to Eat

Randy

Abby Bertics* (7)
Libby Aiello (7)
Sanchit Bhattacharjee (7)
Isaac Kontomah (7)
Van Phu (7)

PDR2

Google Maps: Is Google Following You?
Recognizing Handwriting
Get Your Computer to Be Random: Random Number Generation
Type Inference: Calculating Types for Concise, Correct, and Fast Code
Going Undercover With TOR

Lisette

Eliza Reilly* (7)
Alexandria Velez (7)
Christina Liao (7)
Daniel Smith (3)
Rose Wang (11)

PDR4

How to Win a Game Show Using Information and Inference
Performing Calculations Quickly Using the Magical Powers of 2
Creating Order from Chaos: How Living Things Are Built
Hacking Your DNA to Cure Cancer
Find Out How the USPS Saved Money by Using This One Trick

Luis

Elijah Stiles* (17)
Akshat Bubna (17)
Jesse Gibson (17)
Emily Mu (17)
Jose Navarro (17)

12PM

Coffeehouse Lounge

The Key to Cryptography: How to Share Secret Keys
Diversification: How to Improve Your Winning Chances
How Big Is Infinity? Well, It Depends...
Organizing Things When You Don't Know How to Organize Them
How to Open Any Website in a Cool Way in Front of Your Friends

Mezzanine Lounge

What You Need to Know Time Travel
The Prisoner's Dilemma: A Portal Predicament
How Does Google Rank Pages?
Silent Noise: The Physics of Noise Cancelling Headphones
Redux: Conducting an Orchestra of Website Data

Twenty Chimneys

P=NP: Hard Questions, Easy Answers
Sorting DNA by Size Using Gel Electrophoresis
How to Sharpen an Image by Making it Blurry
How Organized Crime Makes Billions Stealing Credit Cards
Are You Making Good Decisions?

PDR1

How to Find the Secret Color of Light: The RSA Public Encryption
Selling Ice Cream with Locks
Magic, Knitting, & Spies: What the Heck is Steganography Anyway?
How WiFi Can Read Vital Signs
The Probability is Right: Maximize Your Winning Chances

PDR2

Are You Siri-ous?
Bitcoin and the Blockchain
Explosions in Your Car: The Internal Combustion Engine
How to Count Efficiently
Searching Far and Wide for the Perfect Apple: Graph Search

PDR4

Amazon, Netflix, Spotify: How Content Recommender Systems Work
How Fitness Trackers Measure Heart Rate
Computer Language: How To Speak Computer
How to Edit Genes Using Nature's Own Tools
How to Beat Humans at Board Games With Minimax

George

Saroja Erabelli* (22)
Eden Bensaid (22)
Rogers Epstein (22)
Anuhya Vajapey (22)
Chunchun Wu (22)

Lou

Kamoya Ikhofua* (4)
Joyce Chen (4)
Aaron Huang (4)
William Loucks (4)
Keith Orlando (4)

Jing

Alberto Ancona* (13)
Kevin Cuneo (13)
Xueqi Fan (13)
Patrick Insinger (13)
Zhaozheng Jin (13)

Drew

Chien-Hsun Chang* (20)
Nicholas Egan (20)
Janie Liu (20)
Miguel Del Rio (19))
Billy Torres (19))

Kenny

Logan Ford* (22)
Andrew Koh (22)
Sebastian Quilter (22)
Kimberly Yu (16)
Malika Shahrawat (16)

Kevin

Sabrina Lui* (13)
Faysal Shair (13)
Kelsey Wong (13)
Kari Stromhaug (4)
Nat Sothanaphan (4)

1PM

Coffeehouse Lounge

Step by Step: How to Make Your Computer Sort Your Candy
The Birthday Paradox
Making and Keeping a Promise
How to Prove You Know a Secret Without Revealing It
So You Want to See an Ad? How Google Makes It Happen

George

Christine Vonder Haar* (23)
Amy Liu (23)
Stephanie McHugh (23)
Bruno Prela (23)
Jenny Xu (24)

Mezzanine Lounge

Don't Drive Blindly: Use Feedback Control!
Building Thinking Machines
Botnets: How to Build an Army
Efficient Encoding
The Internet: What Happens When You Load www.google.com

Kelly

Mitchell Hwang ((17)
Michael Shumikhin* (17)
Ryan Senanayake (17)
Alana Lidawer (28)
Alex Padron (28)

Twenty Chimneys

Understanding Gravitational Waves
Why Disney Movies Look So Real
A Solution to the 45% Divorce Rate: The Stable Marriage Algorithm
Geofilters: How Does Snapchat Know Where I Am?
Bayesian Networks: Compact Representation of Event Likelihoods

Jing

Liam Cohen* (14)
Karen Fan (14)
Anna Frederich (14)
Cameron Korb (14)
Jingyu Li (14)

PDR1

P = NP? The \$1,000,000 Question
How to Do Your Laundry
Reducing Workload with Randomness
Solar Sailing
How to Improve Your Instagram Feed

Drew

Sabrina Ibarra* (21)
Megan Levin (20)
Phat Nguyen (20)
Alex Chen (20)
Rachel Simpson (28)

PDR2

Communicating Secrets Without Communicating Secretly
Collision Detection
How a Computer Takes Photos
Smart Contracts: How Smart Are They?
From 0-60 in Under 3 Seconds: High Performance Motor Control

Kenny

Aaron Zeng* (23)
Andrew Zhang (23)
Kevin Zhu (23)
Bernard Snowden (23)
Cameron Ordone (16)

PDR4

Determining the Structure of Our Planet Via Seismic Wave Analysis
Using Math to Send Secret Messages & Passwords Over the Internet
Understanding #FUNctions
Maximizing Revenue Using Linear Optimization
Heapsort: Fast Sorting in a Special Structure

Kevin

Rachel Wei* (14)
Ashwath Thirumalai (14)
Cam Wagner (14)
Friederike Buck (24)
Isaac Rosado (21)

2PM

Coffeehouse Lounge

Match Me If You Can: How to Match Sound Samples
How the Heck Do Computers Work?
PCBs: Why Electronics Aren't Terrible
Fourier Transform: Another Way to Look at Signals
Collaborating on Homework and What Could Go Wrong

Mezzanine Lounge

How Does JPEG Work?
Infinite Infinities
Induction: Solving Easier Versions of Hard Problems
Is This Your First Time Visiting?
Meta-Programming: A Code That Codes

Twenty Chimneys

How to Plan a Good Party
Get in Gear: Automotive Transmissions
Shortest Paths and Dijkstra's!
Predicting Future Results Based on Previous Information
MOSFET: The Basic Building Blocks of Modern Electronics
How Are Dogs Different? Intuitions Behind Hierarchical Clustering

PDR1

How to Leak a Secret
Running Out of Time? Then You Aren't Running Fast Enough!
How to Be Popular: PageRank
CSI: AI - Teaching Machines to Learn Through Competition
How Bluetooth Allows Nearby Devices to Communicate
BitTorrent: Why Sharing is Caring

PDR2

How Computer Memory Works
Make an Efficient Schedule Using Greedy Algorithms
Keeping Track of Collections of the Same Things
Hamming Distance: Did Your Message Change in Transmission?
Finding Every Pythagorean Triple
Making a Stir-Fry as Fast as Possible: Understanding CPU Parallelism

Leslie

Emmanuel Akinbo* (12)
Cesar Guerrero (12)
Toby Holtzman (12)
Tomohiro Maeda (12)
Alisa Ono (12)

Martha

Tristan Honscheid* (27)
Nikhil Bhatia (27)
Ini Oguntola (27)
Robert Rusch (27)
Mikita Samsonau (27)

Jing

Kevin Foley* (15)
Jacob Brown (15)
Rena Liu (15)
Emily Stanford (15)
Victor Oliveira (15)
Wei Wei (16)

Drew

Sidd Seethepalli* (12)
Rodmy Paredes (12)
Annie Wang (12)
Parth Shah (27)
Molly Nagele (20)
Stacy Ho (19)

Kenny

Tyler Wasser* (15)
Keren Starobinski (15)
Victoria Longe (15)
Joanna Sands (19)
Samuel Korsky (16)
Haoran Xu (27)