

A laboratory setting with a petri dish, a pipette, and a beaker of yellow liquid. The background is blurred, showing various lab equipment and a blue molecular model.

From Foundations to Forte in STEM

Kevin Meng

CIE MathComp/MathFun Seminar

30 May 2020

Hi there! My name is Kevin

I'm a passionate innovator, public speaker, and musician.



- Participant in MCMF, Speech Contest, Engineering Fair, LAMP, Convention, AAEOY, Symposia
- YAA Winner, 2020
- Volunteer, 2013-Present



Intel ISEF Best in Category Winner



ACM/CSTA Cutler-Bell Prize Winner



Coca-Cola Scholar



U.S. Navy Research Directorate Scholarship



3x First-Author Publications & 1x Patent Pending



MIT Lincoln Labs Minor Planet Namesake



Founder, ArcGen Technologies LLC



Admitted to MIT, Harvard, Stanford, UT Honors

Talk Outline

Foundations
in STEM

Going
Beyond

Putting It All
Together

My
Experience

1. Foundations in STEM

- **Objective:** Broaden your horizons
 - Middle School: General math/science courses
 - High School: AP/IB classes
- **Pros:**
 - Introduction to interesting, fundamental, and universal STEM topics
- **Caveats:**
 - You can handle bigger challenges!



2. Going Beyond

What do you think about in the shower?

- Resources to learn more & practice:
 - Math/Physics/Chem/Bio: AoPS Forums/WOOT, A* Academy, etc.
 - CS: Coursera, USACO Train, CodeForces, etc.
 - Summer Programs: Duke TIP, UTD, AwesomeMath
- Example of interest in machine learning:
 - Math: Multivariable Calculus, Statistics
 - Programming: Advanced Syntax, Data Structures, Algorithms
 - Interdisciplinary Applications: Biology, Physics, Chemistry, Politics

3. Putting It All Together

“Innovate for Impact”

Research

Developing, Testing, and Presenting New Ideas

STEM Bridge, UTD Nano, UTSW STARS, RSI, SSP, HSHSP, MIT PRIMES, Clark

Vehicle

Regeneron ISEF, Regeneron STS, Davidson, ACM Cutler-Bell Prize, IEEE, ACM, AAI, AAAS, Google Science Fair

Destination

Olympiads

Solving Difficult Problems w/ Time Constraints
WOOT, AwesomeMath, SUMaC, MathCamp

Vehicle

AMC/USAJMO/USAMO, USACO, USAPhO, USNCO, USABO, ARML, UIL, MathCounts, MCMF

Destination

“Push Your Limits”



My Experience Following This Path

Foundations (Middle/High School)



7th/8th Grade: Algebra I & II, Geometry



9th Grade: Precalculus



10th Grade: AP Calculus BC, AP Chemistry, AP CSP



11th Grade: AP Physics C, AP Statistics, AP CSA



12th Grade: AP Biology

Going Beyond

1

7th Grade

AMC, MathCounts,
MIT App Inventor

2

8th Grade

AMC, MathCounts,
Science Fair,
Gateway to
Technology, Physics

3

9th Grade

C++, Java, Python,
UTD Data Structures
& Algorithms Course

4

10th Grade

Independent Study of
Machine Learning,
Data Structures,
Algorithms

5

11th & 12th Grade

Putting It All Together



8th / 9th Grade: TXSEF Best in Show, USACO Gold



10th Grade: ISEF 3rd Grand, joined UT Arlington IDIR Lab, published 1st paper to IEEE



11th Grade: ISEF Best in Category, U.S. Navy Scholarship, MIT minor planet namesake, TXSEF Best in Show, research at UTA, published 2nd paper to IEEE, invited to NSA & 7-Eleven, AJAS Fellow



12th Grade: Invited to CES 2020, Nvidia, AAI, research at UTA, founded ArcGen, filed first patent, ACM Cutler-Bell Prize, Coca-Cola Scholar, admitted to MIT, Stanford, Harvard, UT

Don't Forget to Give Back!

Share your love of STEM with those in your community



Thank you!

Feel free to reach out at mengk@mit.edu for further questions