

# Engineering

Western Middle School - Career Day



OpenAI's DALL-E 2 prompt: "wildcat mascot studying to be an engineer, photorealistic style, cyberpunk at dusk"

# ABOUT ME

- ▶ Evan Wies, Father of 4 GPS Kids
- ▶ Software Engineer, programming for ~40 years
- ▶ Entrepreneur, started 3 companies
- ▶ MIT Graduate, Researcher, Alumni Interviewer
- ▶ Open Source Software Contributor ([github.com/neomantra](https://github.com/neomantra))
- ▶ Maker, Artist
- ▶ @neomantra    [evan@neomantra.net](mailto:evan@neomantra.net)

# ABOUT ME - ENGINEER & ENTREPRENEUR

- ▶ Majored in “Brain and Cognitive Science” and “Electrical Engineering and Computer Science”
- ▶ Conducted research at an MIT Lab and in industry
- ▶ Vision and Haptics Research (3 patents)
- ▶ Museum Exhibits
- ▶ Virtual Reality (VR) and Medical Device Research
- ▶ Video Game Startup
- ▶ Algorithmic Trading (Fast Data, Big Data)
- ▶ Smart Products, 3D Printing

# CAREERS

My name is +  
Ev dh

I am good  
soccer

I like to eat  
dairy foods

When I grow  
up I want  
to be  
a scientist

## ▶ Scientist

They develop theories and work to verify them, expanding human knowledge.

## ▶ Engineer

They leverage knowledge to create solutions to problems.

## ▶ Developer / Programmer / Software Engineer

They create software components and weave them into systems, services, and apps.

# ENGINEERING DISCIPLINES

- ▶ Chemical Engineering
- ▶ Mechanical Engineering
- ▶ Electrical Engineering
- ▶ Materials Engineering
- ▶ Nuclear Engineering
- ▶ Civil Engineering
- ▶ Software Engineering
- ▶ Industrial Engineering
- ▶ Aeronautics / Astronautics ("Rocket Science")
- ▶ Environmental Engineering
- ▶ Agricultural Engineering
- ▶ Mining and Petroleum Engineering

# COMPUTER-RELATED AREAS AND JOBS

## COMPUTER SCIENCE

- Artificial Intelligence
- Computer Security / Cryptography
- Computer Graphics, Visualization
- Image and Sound Processing
- Networking and Communications
- High Performance Computing
- Computer Languages
- Algorithms and Data Structures
- Human-Computer Interaction

## DATA SCIENCE

- Machine Learning
- Modeling and Simulation

## SOFTWARE AREAS

- Applications
- Backend Systems
- Web Sites and Services
- User Experience (UX)
- Smart Products
- Embedded Computing
- Mobile Computing
- Desktop Computing
- Cloud Computing
- Datacenter / Enterprise

## INFORMATION TECHNOLOGY ("I.T.") JOBS

- Software Engineer / Developer
- System Engineer
- System Administrator
- Network Engineer
- Database Engineer
- Storage Engineer
- Engineering Manager
- Product Manager
- DevOps and Automation
- Test / QA Engineer
- Support Engineer
- Field Applications Engineer
- Developer Support / Evangelism
- Technical Writer
- IT Support / Training

# THE JOURNEY BEGINS....

## **FOUNDATION:** Math and Science

- Building ability for abstract and logical thought

## **FOUNDATION:** Programming and Computer Literacy

- Programming is expressing ideas in words ("code") that computers can interpret and process
- No matter what engineering discipline, you will be programming

## **FOUNDATION:** Passion and Projects

- You must care about what you are doing.
- You must learn by doing.

## **FOUNDATION:** More Than A Screen

- Teams, Groups, Human Cooperation
- Physical Fitness, Ergonomics, Mental & Physical Toughness

**YOU**

**WILL**

**FAIL!**

BUT YOU WILL ALSO

**SUCCEED!**

Adjust your mindset,

adapt your approach,

and persevere.

# PRACTICAL PROGRESS

- Projects
  - Via GHS - Engineering, Honors Science Research, Labs
  - Personal
- Education
  - Math, Science Classes
  - Computer Science Classes
  - Internet (courses, videos, blogs)
- Experience
  - Internships, Volunteering, Summer Jobs
  - Open Source Software

# WHERE TO WORK?

- Technology is everywhere
- Companies
  - Huge (>1,000), Small (<10), Startups
- Research
  - Academic Labs at Universities
  - Private Labs and R&D Departments
- Freelance, Contracting
- Remote work

# ENGINEERING MINDSET

## Problems....

Heat Issue at WMS 12/20

☆ Beinstein, Gordon ▾ To: gordon\_beinstein@greenwich.k12.ct.us 12/20/21, 09:23

Good Morning Western Families,

I will send out my regular weekly parent email later [today](#) or [tomorrow](#), but I wanted to let you know that unfortunately your kids walked into a cold, but safe, building but [this morning](#) with temperatures hovering around 45-50 degrees. The boiler had shut down over the weekend. Ramon, our head custodian, noticed this as he came to work at [6:15 AM](#), and was able to fire it up by about [6:45 AM](#), but it will take a few hours for the [heat](#) to circulate throughout the building. We are allowing/encouraging kids to wear hats and coats in the meantime. Your kids seem to be making the best of it so far...at the very least, it is keeping them awake on a [Monday morning](#)!

Thanks in advance for your understanding.

Gordon



I'm shivering



35° Fahrenheit

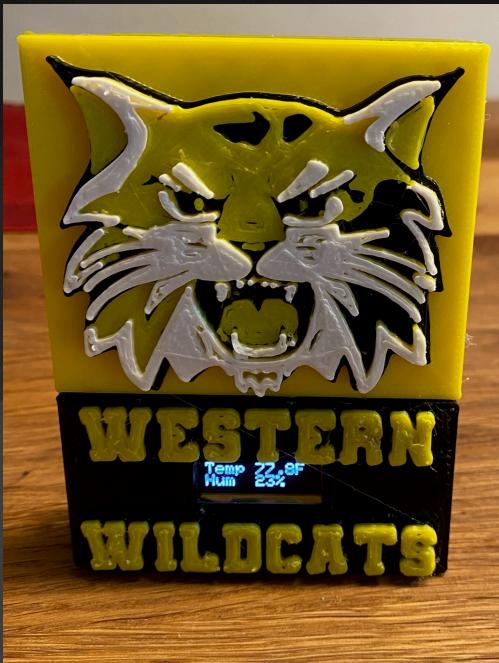


35° Celsius

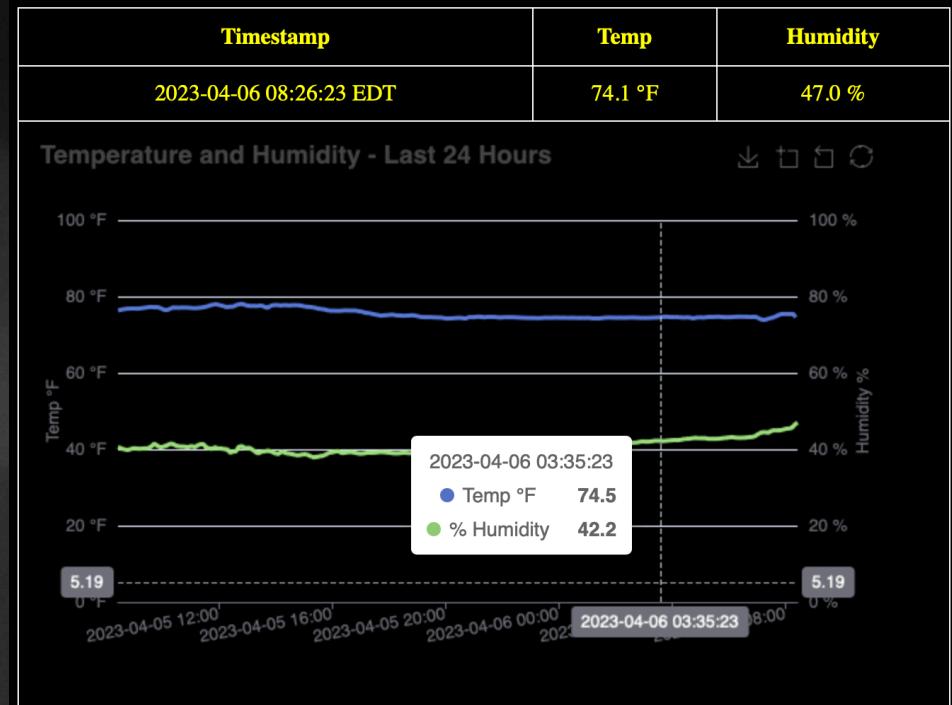


# ENGINEERING MINDSET

Solutions...



WMStemp.com



*Not affiliated with anyone or anything.*

"The Only Constant In Life Is Change"  
- Heraclitus