The background features a dark blue gradient with faint, light blue technical diagrams. On the left side, there is a large circular scale with numerical markings from 140 to 260 in increments of 10. Several dashed lines with arrows indicate circular paths or trajectories around the scale and other points. The overall aesthetic is clean and technical.

SHOULD YOU STUDY  
**ENGINEERING?**

The background features a dark blue gradient with a starry space pattern. On the left side, there are several technical diagrams, including circular gauges with numerical scales (e.g., 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260) and various circular arrows indicating rotation or flow. The text is centered on the right side of the image.

A BIT ABOUT ME...

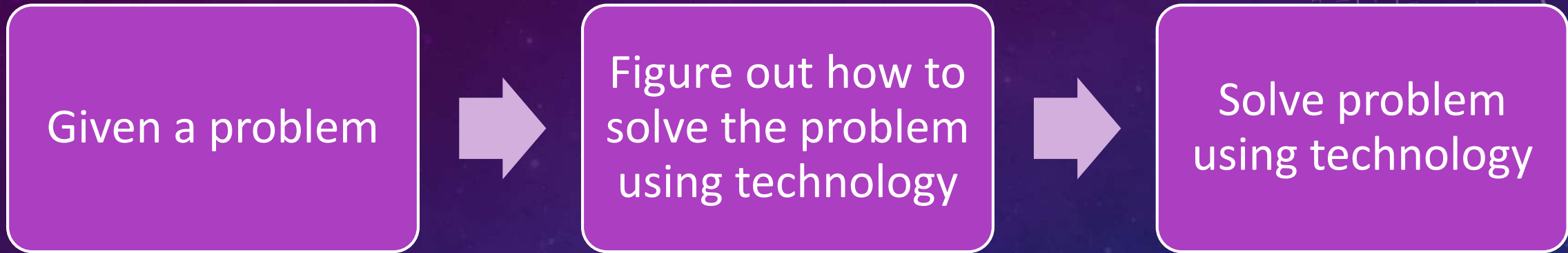
# HENRY POON

SOFTWARE DEVELOPMENT ENGINEER AT AMAZON

BACHELOR DEGREE IN MECHANICAL ENGINEERING (MECHATRONICS SPECIALIZATION)

The background is a dark blue gradient with a subtle pattern of white stars and technical diagrams. On the right side, there are several circular diagrams. One large diagram is a circular scale with tick marks and numbers from 80 to 210. Below it is a smaller circular diagram with concentric circles and arrows. In the bottom left, there are more circular diagrams, some with dashed lines and arrows. The overall aesthetic is technical and futuristic.

WHAT IS ENGINEERING ANYWAY?



IN OTHER WORDS...

An engineer uses technology to make things that make life better for people

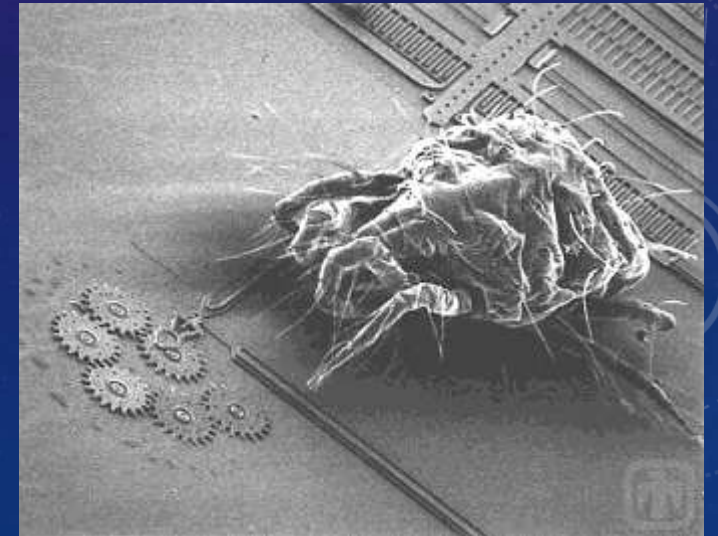
# MECHANICAL ENGINEERING

- Deals with machines...
  - Cars, planes, trains, ships, robots, manufacturing, wind turbines, oil wells, assembly lines, bicycles, sensors, engines, etc....
- You get to use all the fun stuff from Physics 12



# ELECTRICAL ENGINEERING

- Deals with circuits and anything with electricity with some software
  - Quantum computers, robots, processors, cell phones, power lines, power generation, solar cells, radar, radio, etc....



# COMPUTER ENGINEERING/COMPUTER SCIENCE

- Deals with mostly software, with a bit of hardware
  - Artificial intelligence, computer graphics, operating systems, programming languages, search engines, Internet security, etc...
- You get to use all the fun stuff from Computer Programming 12



# MECHATRONICS ENGINEERING

- Take mechanical, electrical, and computer engineering and put it together
  - Robots, 3D printers, electric cars, drones, electric bicycles, landable rockets, machine automation, etc....

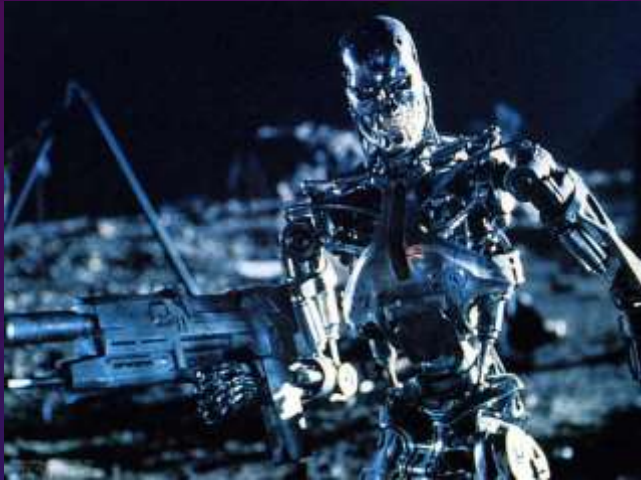




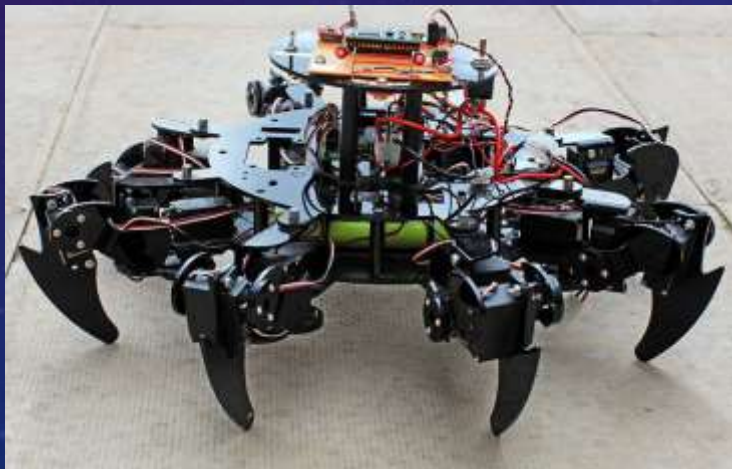
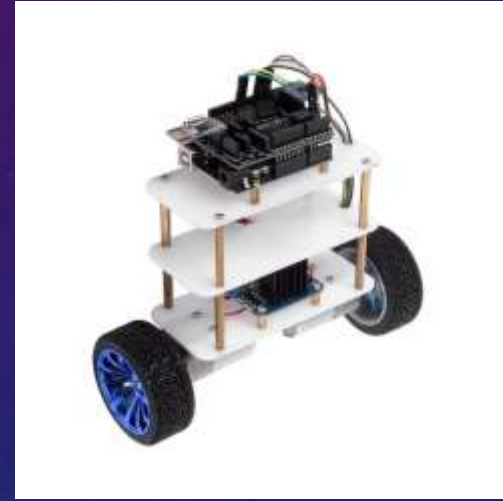
The background is a dark blue gradient with a subtle pattern of white stars. Overlaid on this are several faint, light blue technical diagrams. On the right side, there is a large circular gauge with a scale from 0 to 210 and a needle pointing towards 180. Below it is another circular diagram with concentric circles and arrows. In the bottom left, there are more circular diagrams with arrows. The overall aesthetic is technical and futuristic.

WHY DID I CHOOSE MECHATRONICS?

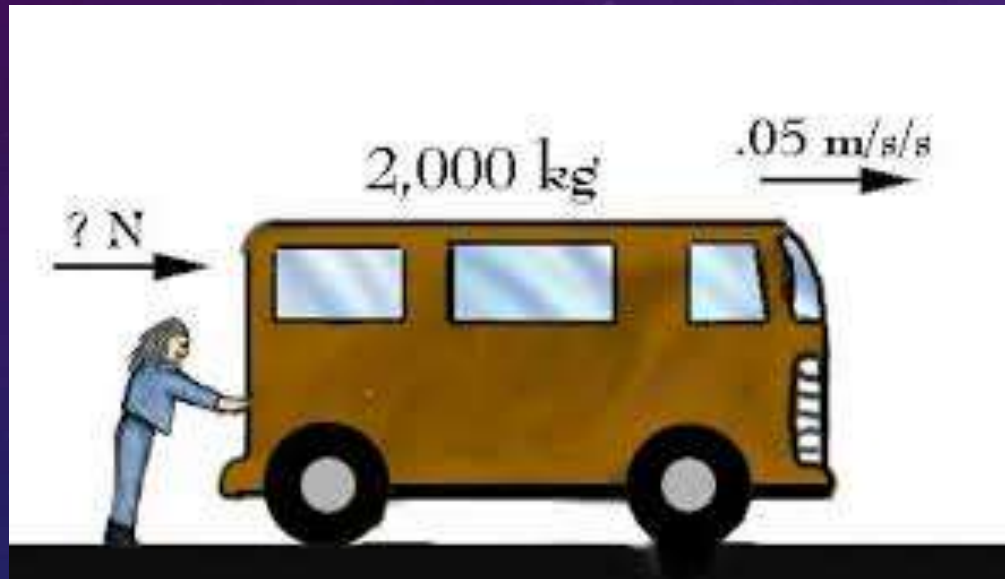
# IT SOUNDED COOL... BECAUSE ROBOTS



# SAW COOL STUFF THAT PEOPLE MADE



# MATH, PHYSICS, AND COMPUTER PROGRAMMING



```
ts next]) {
NSMutableDictionary *fields = [[NSMutableDictionary alloc] initWithCapacity:10];
* savingsTargetID = [NSNumber numberWithInt:[results valueForKey:@"savingsTargetID"]];
setObject:savingsTargetID forKey:@"savingsTargetID";
* categoryID = [NSNumber numberWithInt:[results valueForKey:@"categoryID"]];
setObject:categoryID forKey:@"categoryID";
* parentGoalID = [NSNumber numberWithInt:[results valueForKey:@"parentGoalID"]];
setObject:parentGoalID forKey:@"parentGoalID";
* name = [results valueForKey:@"name"];
setObject:name forKey:@"name";
* color = [results valueForKey:@"color"];
setObject:color forKey:@"color";
* saveAmount = [NSNumber numberWithInt:[results valueForKey:@"saveAmount"]];
setObject:saveAmount forKey:@"saveAmount";
}
```

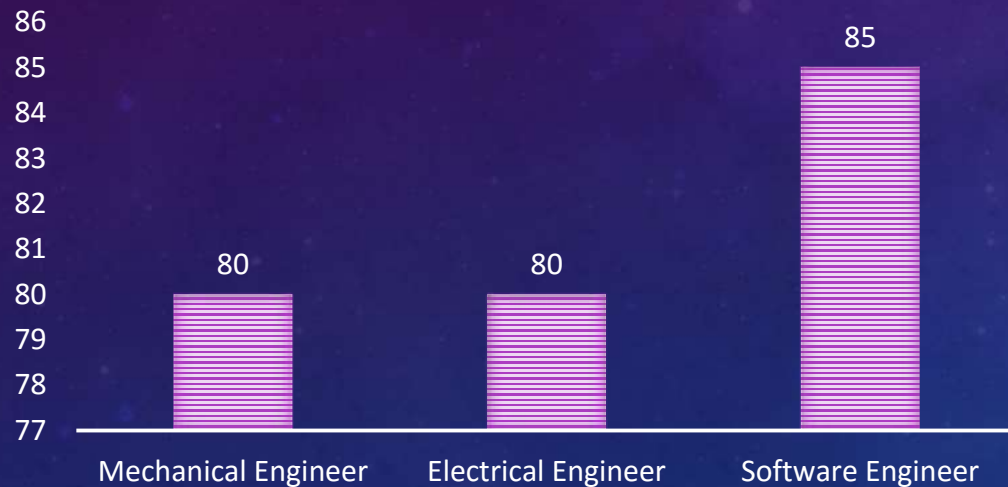
The background is a dark blue gradient with a subtle pattern of white stars and technical diagrams. On the right side, there are several circular diagrams resembling gauges or dials. One large gauge has a scale from 0 to 210 with tick marks every 10 units. Other smaller gauges and dashed circular paths with arrows are scattered across the right side. The overall aesthetic is clean, modern, and technical.

HOW MUCH DO ENGINEERS MAKE?

# SALARY STATISTICS (APPROXIMATE)

## Canada

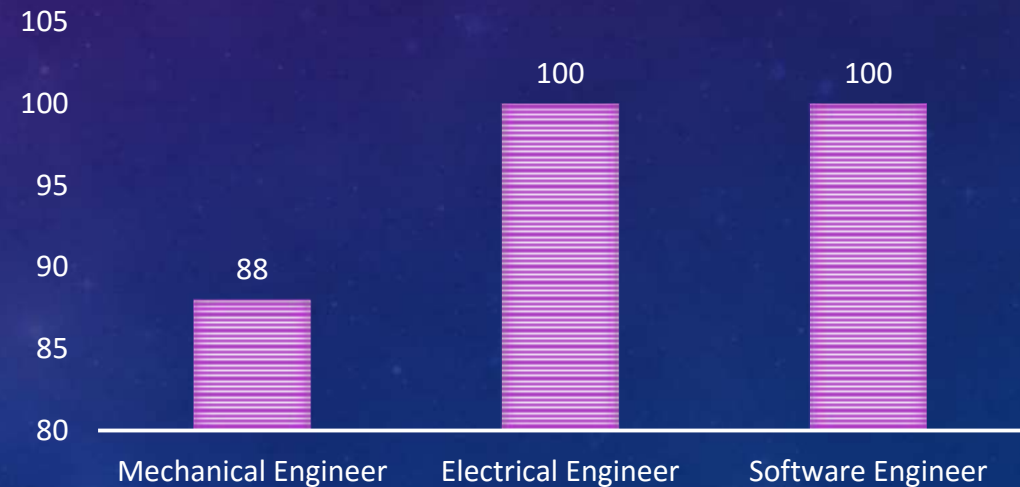
### YEARLY SALARY (CAD X 1000)



Source: <http://www.jobbank.gc.ca/>

## USA

### YEARLY SALARY (USD X 1000)



Source: <http://www.bls.gov/>



WHAT KIND OF JOBS ARE OUT THERE?

# YOU HAVE OPTIONS





INTERNSHIP  
ROBERT BOSCH GMBH  
(8 MONTHS)

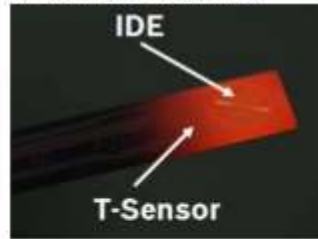
- World's largest supplier of automobile components
- Worked on particle sensors for diesel engines

Siliciumcarbid-Technologie für robuste Sensoren  
Leitapplikation Rußpartikelsensor

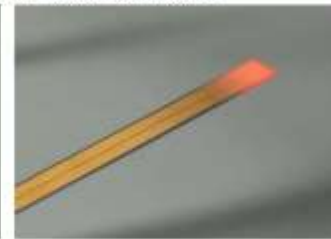


Sensor-Chip mit Rückseitenheizer

MEMS Pt-IDE auf Silizium



Au-Rückseitenheizer



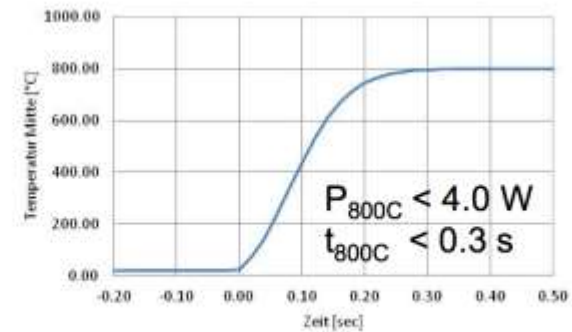
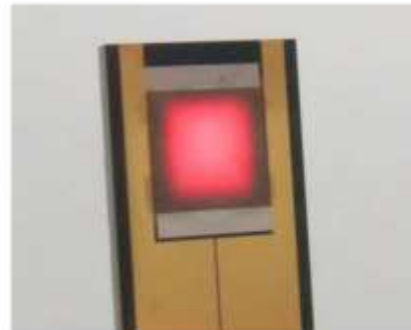
Verbau in Gehäuse mit Schutzrohr



Elektrische Kontaktierung



Chip mit Membranheizer



# 1<sup>ST</sup> JOB AFTER GRAD MOTION METRICS INTL. (2.5 YEARS)

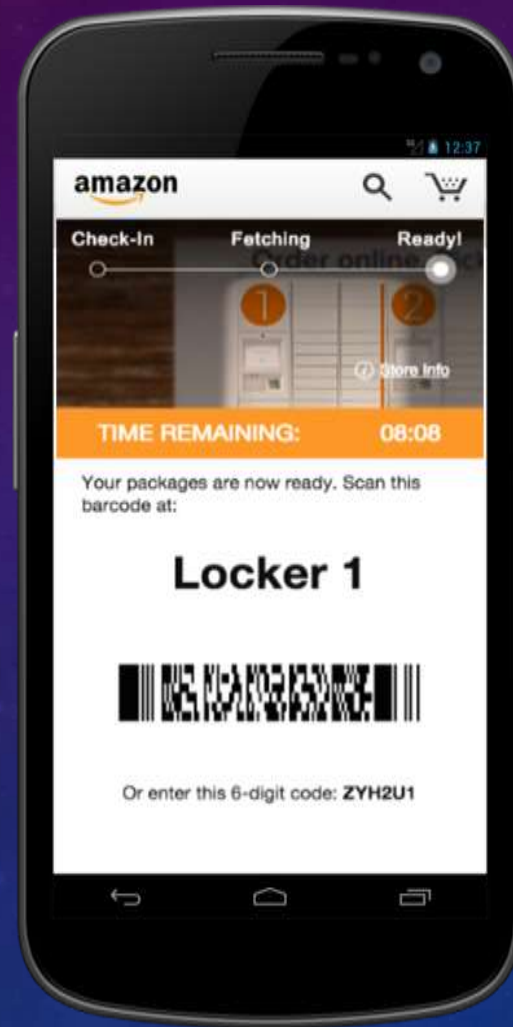
- Supplier of safety products for mining excavators
- Worked as an hardware AND software engineer (camera mounts, algorithm design, etc.)



2<sup>ND</sup> JOB AFTER GRAD  
AMAZON.COM INC.

(7 MONTHS AND COUNTING)

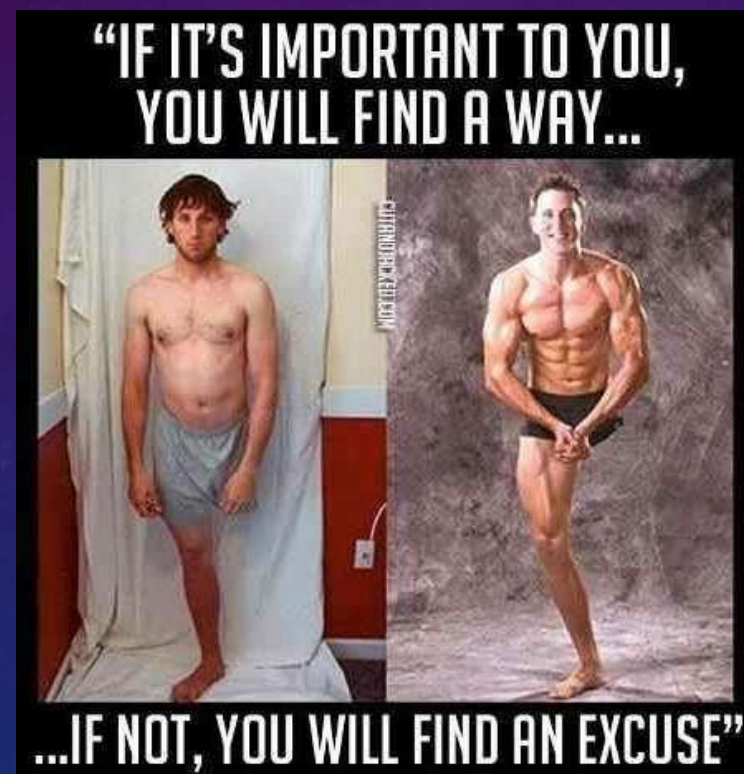
- Largest Internet-based retailer in USA
- Working with package pickup locations at universities
- Building software for use by store staff and customers



IS ENGINEERING HARD?



YES, BUT DIFFICULTY SHOULDN'T STOP YOU



WOULD YOU WANT IT TO BE EASY?

**NOTHING  
WORTH HAVING  
COMES EASY**

ALSO DEPENDS HOW SMART YOU ARE AND HOW  
HARD YOU WORK



The background features a dark blue gradient with a subtle pattern of white stars and technical diagrams. On the right side, there are several circular diagrams resembling gauges or dials with numerical scales (e.g., 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210) and arrows. There are also dashed lines and other geometric shapes scattered across the scene.

WHAT IS IT LIKE TO STUDY ENGINEERING?



#truth #gotrekt #ggnore #googlesaveme



### what engineering is actually like

We can start with Equation 7.40 to find the fugacity coefficient:

$$RT \ln \left[ \frac{f_1^v}{y_1 P_{low}} \right] = - \int_{P_{low}}^P \left( \frac{\partial P}{\partial n_1} \right)_{T, V, n_2} dV$$

Rewrite the equation of state to include extensive volume and moles:

$$P = \frac{RT}{V} \frac{a_{mix}}{y^{3/2} T^{1/2}} = \frac{(n_1 + n_2) RT}{V} \frac{(n_1 a_1 + n_2 a_2) \chi_{n_1 + n_2}^{1/2}}{y^{3/2} T^{1/2}}$$

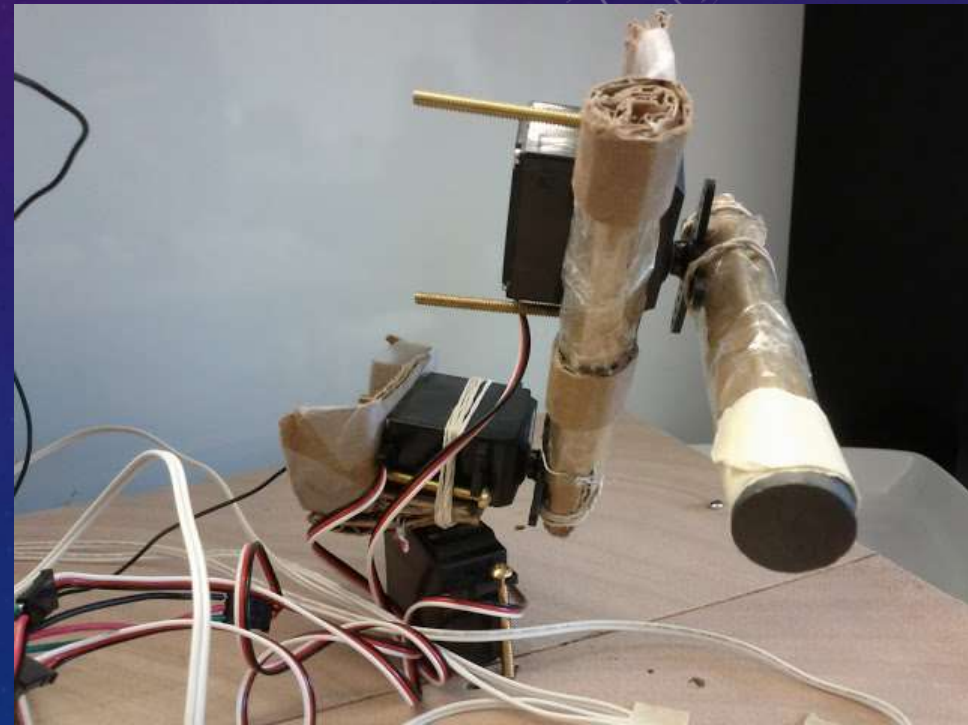
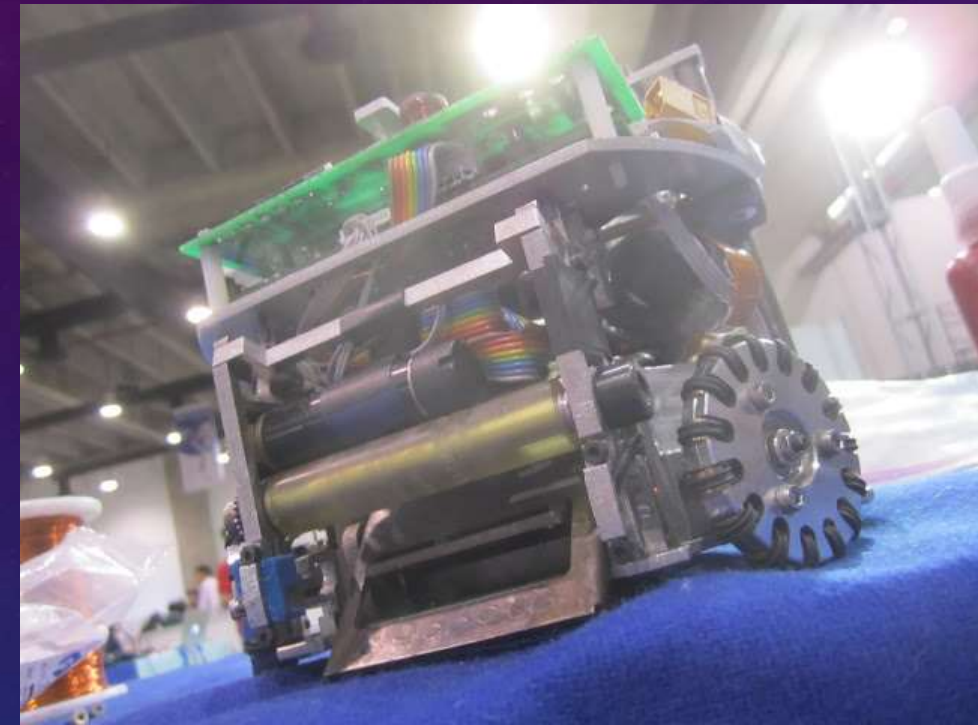
Differentiate:

$$\left( \frac{\partial P}{\partial n_1} \right)_{T, V, n_2} = \frac{RT}{V} \frac{1}{y^{3/2} T^{1/2}} \left[ a_1 (n_1 + n_2)^{1/2} + \frac{(n_1 a_1 + n_2 a_2)}{2(n_1 + n_2)^{1/2}} \right]$$

Substitute this expression into Equation 7.40 and integrate to obtain

$$RT \ln \left[ \frac{f_1^v}{y_1 P_{low}} \right] = -RT \ln \left( \frac{V P_{low}}{nRT} \right) - \frac{2}{y^{1/2} T^{1/2}} \left( a_1 (n_1 + n_2)^{1/2} + \frac{(n_1 a_1 + n_2 a_2)}{2(n_1 + n_2)^{1/2}} \right) + \left( \frac{P_{low}}{nRT} \right)^{1/2} \left( \frac{2}{y^{1/2}} \left( a_1 (n_1 + n_2)^{1/2} + \frac{(n_1 a_1 + n_2 a_2)}{2(n_1 + n_2)^{1/2}} \right) \right)$$

# DESIGN PROJECTS



# EXTRACURRICULAR PROJECTS



# INTERNSHIPS



# WORKING/STUDYING IN A DIFFERENT COUNTRY (THIS IS THE BEST PART IMO)



ARE THERE GIRLS IN ENGINEERING?

The background is a dark blue gradient with a subtle pattern of white stars and technical diagrams. On the right side, there are several circular diagrams resembling gauges or dials with numerical scales (e.g., 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210) and arrows. There are also dashed lines and other geometric shapes scattered across the image.

## IT'S NOT JUST A MAN'S PROFESSION

19.1% of students enrolled in an engineering undergrad program are female (2014)

Source: <https://www.engineerscanada.ca>



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HOW DO I KNOW IF ENGINEERING IS FOR ME?



# DO YOU QUESTION HOW THINGS WORK?

Air and water

## How do planes fly?

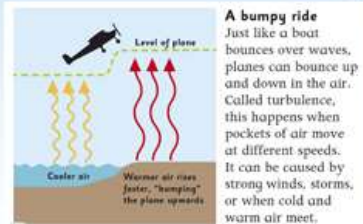
Huge, heavy machines seem to defy gravity by staying up in the air! Yet aeroplanes fly around the world every day. It's because they can create the forces they need to fly.

### The forces of flight

"Aerodynamics" means "the way air moves". There are four aerodynamic forces – thrust and drag, and lift and weight. Aeroplanes need to balance them out in order to fly.

### Thrusting forward

Planes need to create thrust to balance out drag. This plane has a propeller to create thrust. As the propeller turns it draws air past the blades, which pulls the plane forwards.



### A bumpy ride

Just like a boat bounces over waves, planes can bounce up and down in the air. Called turbulence, this happens when pockets of air move at different speeds. It can be caused by strong winds, storms, or when cold and warm air meet.

### The biggest jumbo

The world's largest plane is the Airbus A380. At 73 m (239½ ft) long, this jumbo jet can carry up to 853 passengers. It's 10 times longer than the four-seater Cessna 400.



### Lifting up

Lift is the opposite force to weight. A plane creates most of its lift with its wings.



The slow-moving air under the wing pushes up more than the fast-moving air above the wing pushes down. This creates lift.

## How do planes fly?

### What does that bit do?

Every part of a plane has a job to do, from the streamlined nose to the tail fin that keeps the plane steady in the sky.

Flaps that come down from the wings are used to increase lift during take-off and landing.



Ailerons on the back edge of the wings are used to "roll" the plane, to make it turn or keep it level.



A rudder in the plane's tail turns the plane left or right.

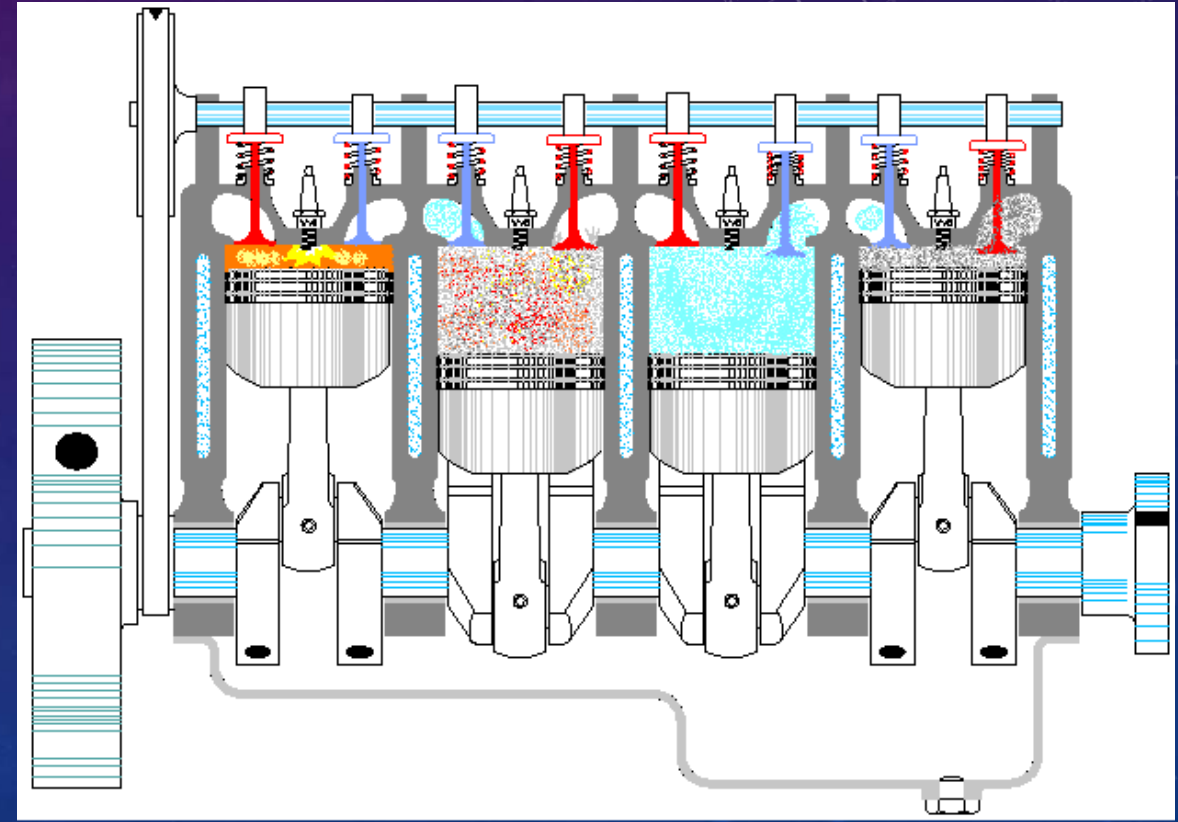


Elevators in the tail move up and down to balance the position of the nose, keeping the plane level.



### Dragging back

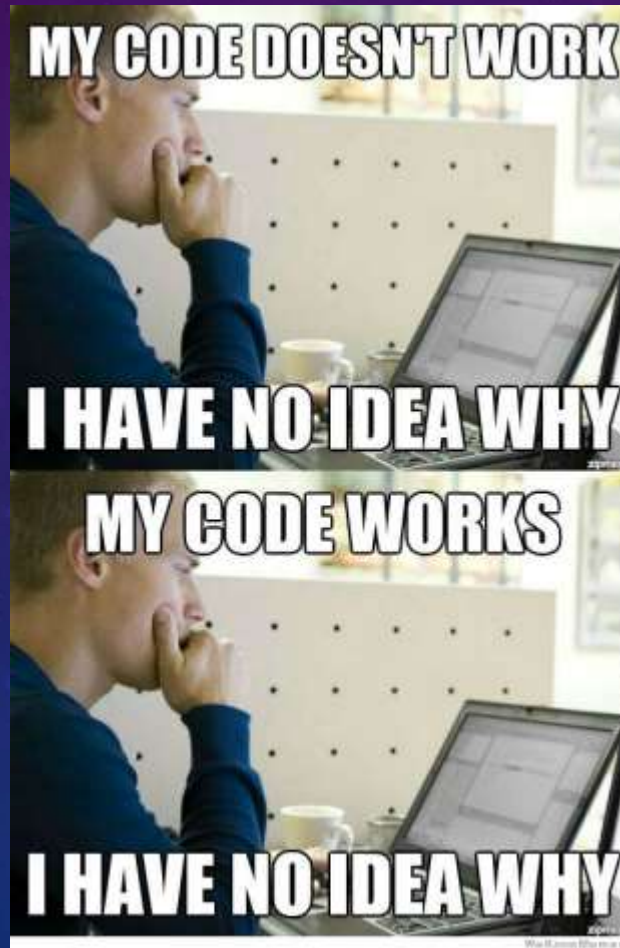
Drag is the opposite force to thrust – it slows things down. Imagine trailing your hand in water as you sail along in a boat. You can feel the water push back, or drag, against your hand. Air has the same effect on planes (and anything else that moves). A plane's smooth surface and streamlined shape help to reduce drag.



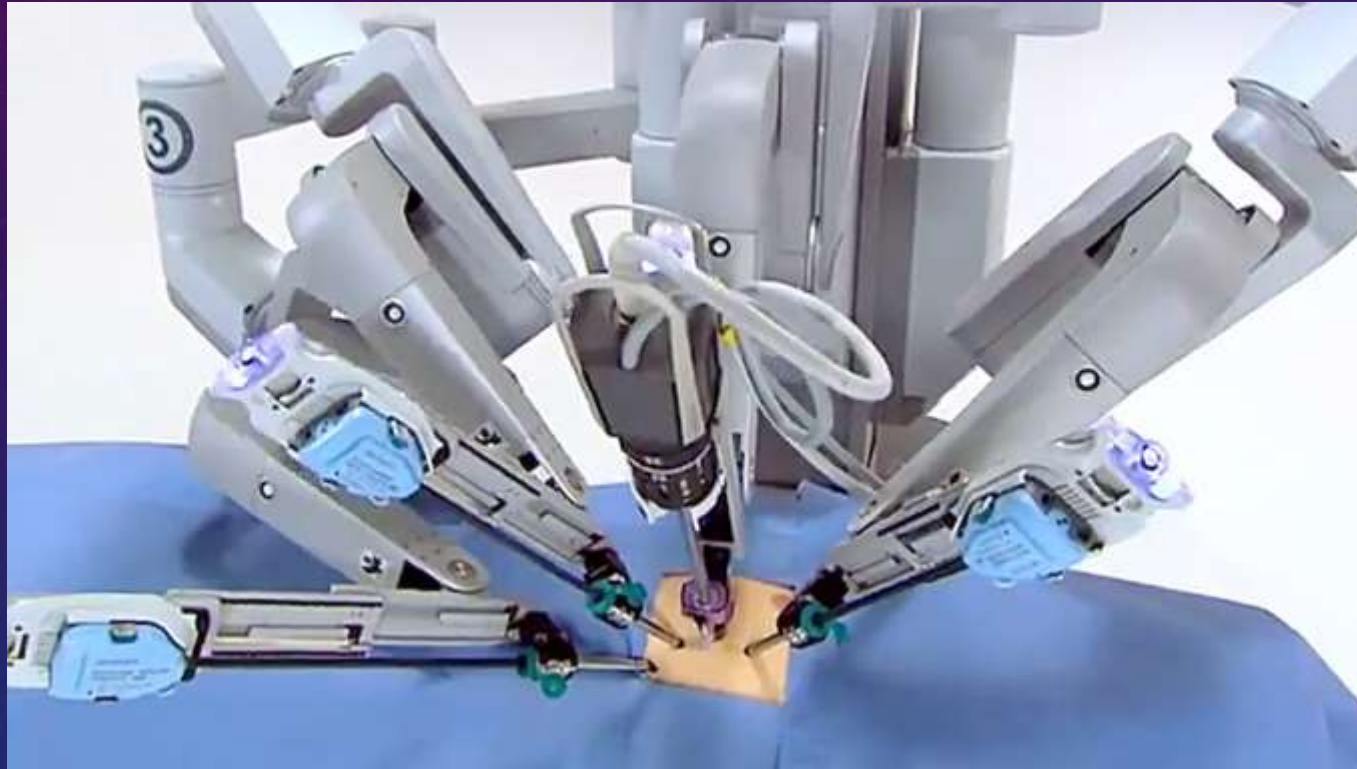
DO YOU LIKE BUILDING THINGS?



DO YOU LIKE TO SOLVE PROBLEMS?



DOES TECHNOLOGY EXCITE YOU?



The background features a dark blue gradient with a subtle pattern of white stars and technical diagrams. On the right side, there are several circular diagrams resembling gauges or dials with numerical scales (e.g., 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210) and arrows. Some diagrams are solid lines, while others are dashed. The overall aesthetic is clean, modern, and technical.

# WHAT TO DO TO FIND OUT MORE ABOUT ENGINEERING

# GOOGLE KNOWS EVERYTHING

- Whatever questions you have about engineering, Google knows the answer
- What you learn, salary, different engineering fields, good schools, what other engineers say about their profession etc.

WHAT WOULD I HAVE DONE DIFFERENTLY?

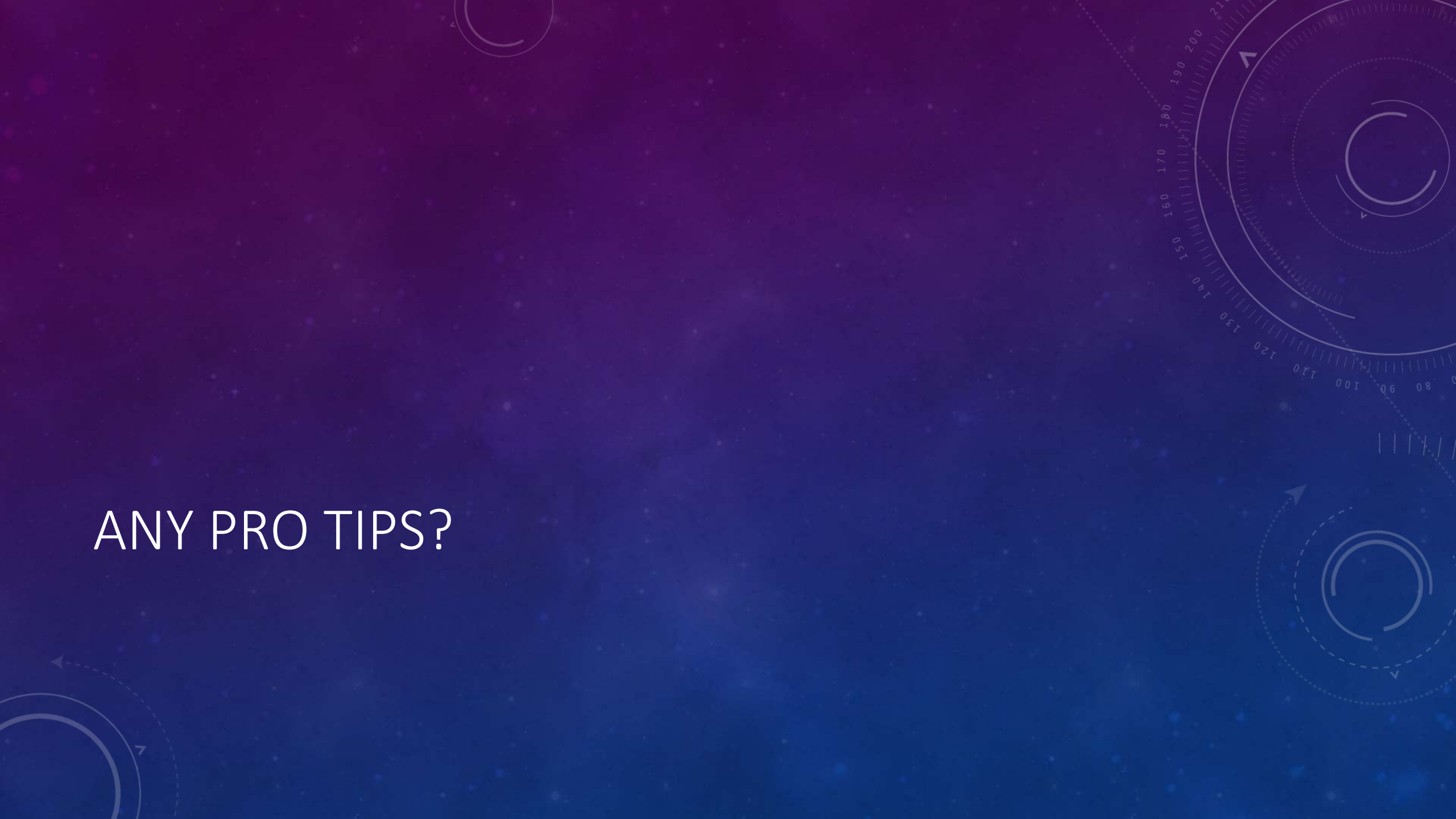
The background features a dark blue gradient with a subtle pattern of white stars. On the right side, there are several technical diagrams, including a large circular scale with numerical markings from 80 to 210 and a smaller circular diagram with concentric lines and arrows. In the bottom left corner, there are faint circular outlines and arrows, suggesting a circular flow or process.

# I SHOULD HAVE READ UP ON IT MORE

- I joined engineering because my friends did it, but didn't know anything more
- Should have Googled stuff about engineering to learn more about it



ANY PRO TIPS?



## PRO TIPS

- Do what you are interested in
- Nothing that's worth it is ever easy
- Don't do it JUST for the money

The background is a dark blue gradient with a subtle pattern of white stars. Overlaid on this are several technical diagrams in a lighter blue color. In the top right, there is a large circular gauge with a scale from 80 to 210 and a needle pointing towards 180. Below it is another circular diagram with concentric circles and arrows. In the bottom left, there are dashed circular lines with arrows. The overall aesthetic is clean, modern, and technical.

ASK YOURSELF...

DID ANY OF THAT SEEM FUN OR INTERESTING TO  
YOU?

The background is a dark blue gradient with a subtle starry pattern. On the right side, there are several technical diagrams, including a large circular scale with numerical markings from 80 to 210 and a smaller circular diagram with concentric lines and arrows. On the left side, there are also some faint circular diagrams.

# ANY QUESTIONS?

FEEL FREE TO E-MAIL ME WITH QUESTIONS

[HENRY.YH.POON@GMAIL.COM](mailto:HENRY.YH.POON@GMAIL.COM)