



HTL ST. PÖLTEN



"Augmented reality with real time data"

Presentation of the intellectual output

KA2 - Cooperation for innovation and the exchange of good practices
KA202 - Strategic Partnerships for vocational education and training
2020-1-DE02-KA202-007393

HTL St. Pölten - Overview

Departments:

- Industrial Engineering
- Informatics – Cyber Security
- Electrical Engineering
- Electronics & Computer science
- Mechanical Engineering

Numbers:

- ~ 1750 students
- ~ 180 teachers
- ~ 40 employees

Types of education:

- vocational colleges

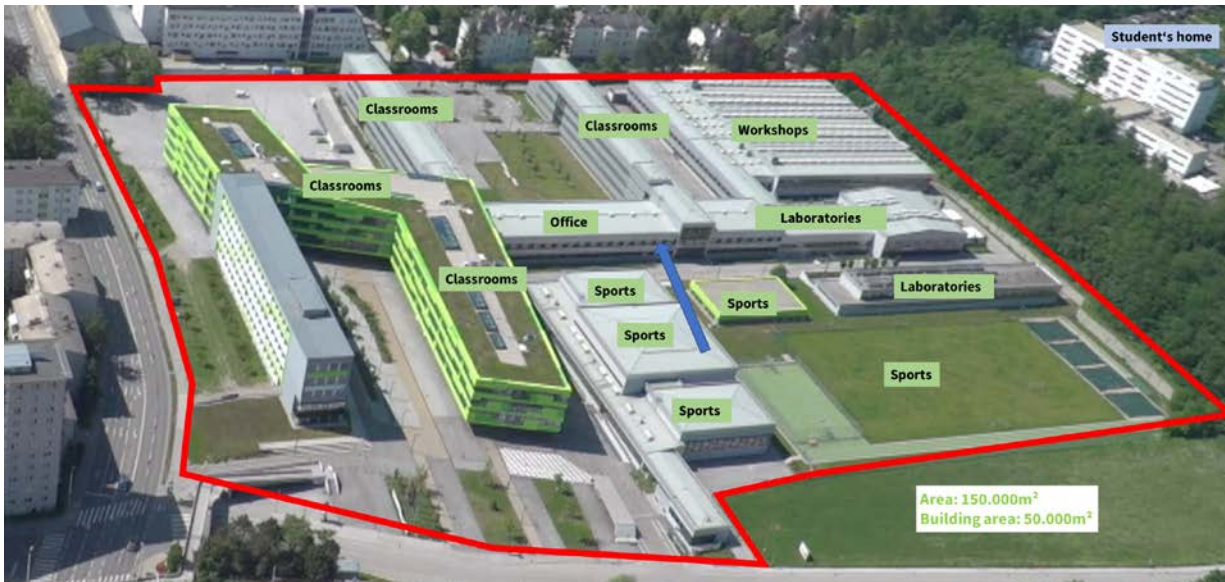
5 years, ~37 lessons/week, **EQF5**
After 3 year of professional work
--> "Ing." (**EQF6**)

- vocational schools

4 years, ~37 lessons/week, **EQF4**

- evening colleges

4 years (=8 semesters modular)
24 evening-lessons/week , **EQF5/6**



Aerial view



Location:

<https://t1p.de/p1wrn>



Netkom 4.0 V2 - Project Team



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Basic informations ...

- ▶ “Handbook” → Document for the whole process
 - from getting physical real time data,
 - data processing,
 - visualization in AR environment
- ▶ FEATURES:
- ▶ Suitable for beginners ... low entry level
- ▶ Reference (Links) to the related videos in the Youtube Channel with downloadable sources
- ▶ Fully functionable source-codes (copy & paste) in document
- ▶ Step by step instructions for the AR environment
- ▶ Integrated additional exercises (for own further learning)

Example (Screenshot) ...

AUGMENTED REALITY WITH REAL TIME DATA



With this we can write a simple program:

```
#define ANA_00_IN 0

void setup() {
  Serial.begin(9600);
}


void loop() {
  int readVal = analogRead(ANA_00_IN);

  Serial.print("Analog value: ");
  Serial.print(readVal);
  Serial.print(" (");
  Serial.print(((float)readVal)/10.23);
  Serial.print(" %");
  Serial.print(" (");
  Serial.print(((float)readVal)*5.0/1023.0);
  Serial.println(" V)");
}
```


What does the program do? It simply outputs the read value on the serial monitor. Namely, as a value, as a percentage, and the measured voltage. Sample output:

Analog value: 173 (16.91 %, 0.85 V)


1.2.15.1 Exercise "Analog In"

	Build and program above mentioned read in the analog value. Explain how the program works.	
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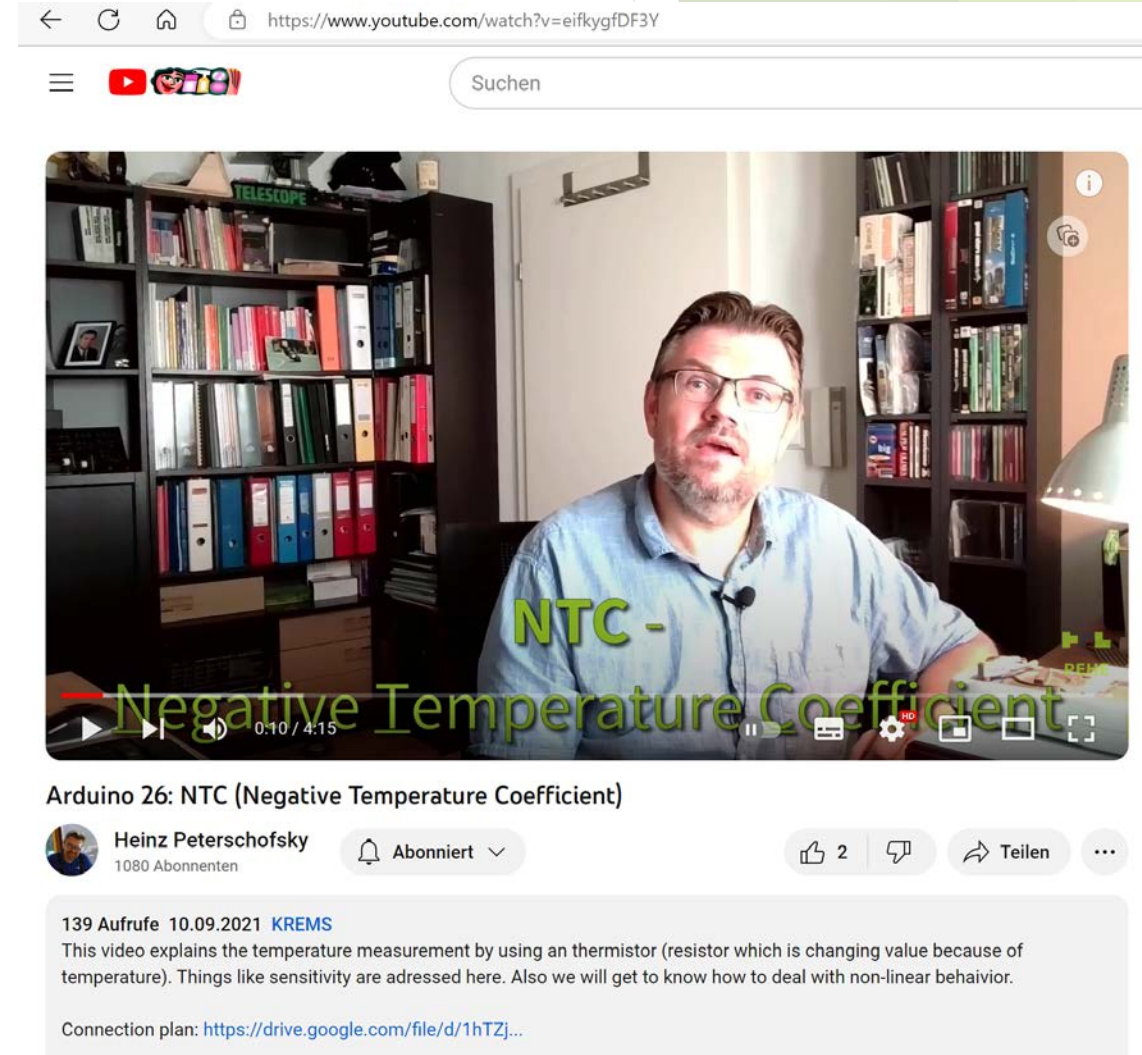
1.2.15.2 Mandatory task "Analog In"

	Expand the circuit in such a way that an LED is controlled. The LED should be dark when the analog value is low and bright when the analog value is high.	
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1.2.15.3 Additional task "Analog In, adjustable"

	The value for minimum and maximum brightness should be adjustable.	
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Video link 25 (Serial Plotter): <https://youtu.be/LPVWYt1RPiHo>



https://www.youtube.com/watch?v=eifkygDF3Y

Suchen

NTC - Negative Temperature Coefficient

0:10 / 4:15

Arduino 26: NTC (Negative Temperature Coefficient)

Heinz Peterschofsky
1080 Abonnenten

Abonniert

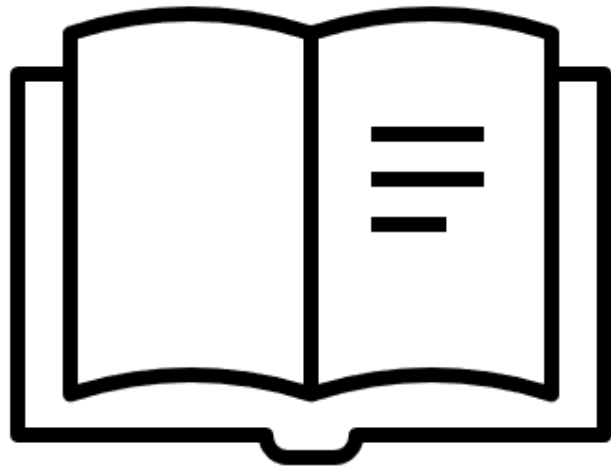
2

Teilen

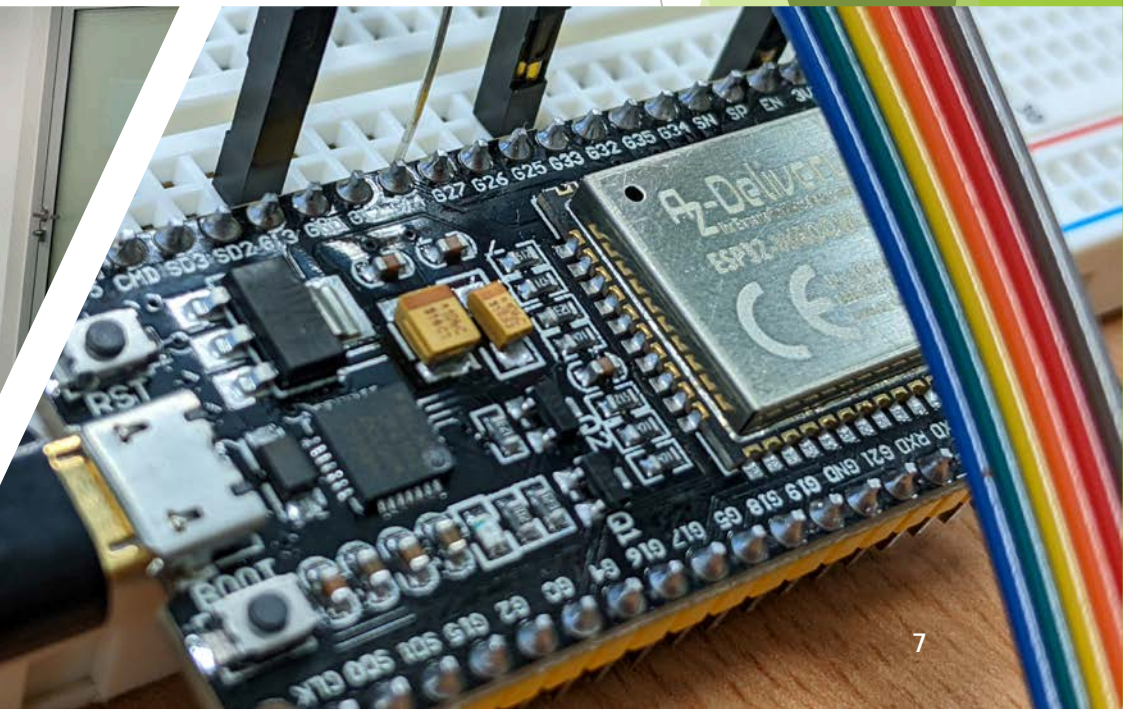
139 Aufrufe 10.09.2021 KREMS

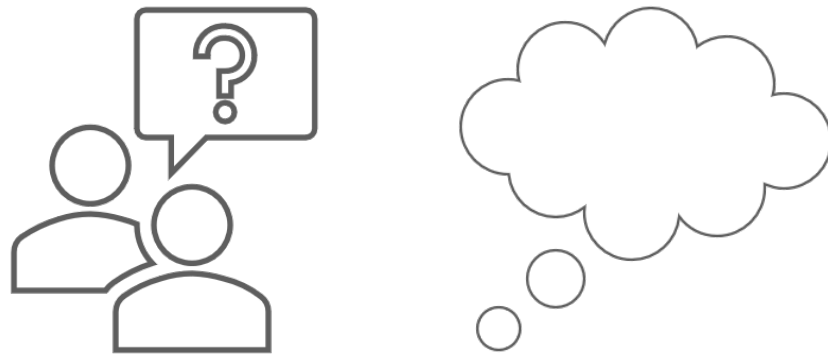
This video explains the temperature measurement by using an thermistor (resistor which is changing value because of temperature). Things like sensitivity are addressed here. Also we will get to know how to deal with non-linear behavior.

Connection plan: <https://drive.google.com/file/d/1hTZj...>



Short insights into the PDF document ...





Thank you for your attention!