Introduction to Robotics
Course 1

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What we'll do today

- Some bla blas
- Meet and greet (the team)
- Introduction to Unibuc Robotics and the labs
- Course motivation
- Course overview
- Meet the printers
- InnovationLabs, IdeaJam, SCSS & funding incubators
- Break
- Kit presentation
- 1st lab homework: installing Arduino
- 1st lab: Arduino - digital and analog I/O
- Some links

Some Bla Bla's

- I usually talk about other stuff besides the slides
- I hate making slides
- Why English, though?

The team

- Lectures:
  - Andrei Dumitriu (andrei.dumitriu@fmi.unibuc.ro)
- Teaching Assistants:
  - Irina Șargu
  - Octavia Ivona Laiu
  - Nistor Mihaela
  - Ana-Maria Melinte
  - Ina Țencu
  - Valentin Pătrașcu
  - Vlad Neculai

The team

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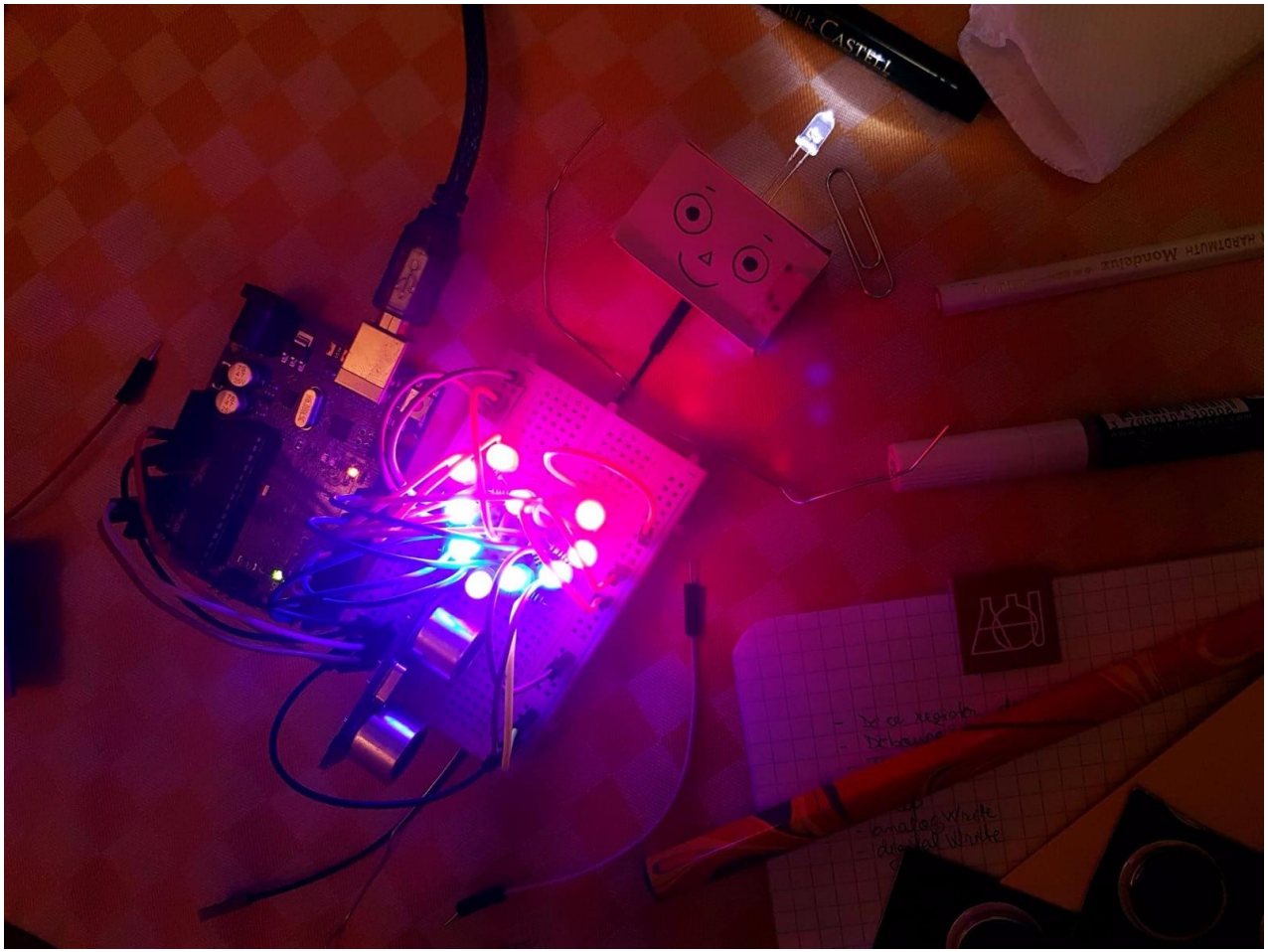


Course motivation

- Learn how to deliver a product, not just finish it
- Learn how to fast prototype physical products
- Show you insights about the industry
- Help you interact with recent technologies
- Force you to use best practices in coding
- Use a VCS – Version Control System. We'll be using git and github
- Most schools teach you how to be good employees. Besides that, we aim to show you a different road
- Most important: have fun while creating
- Explain the simplicity of everyday stuff (microwaves etc)
- Meet industry people

Course overview

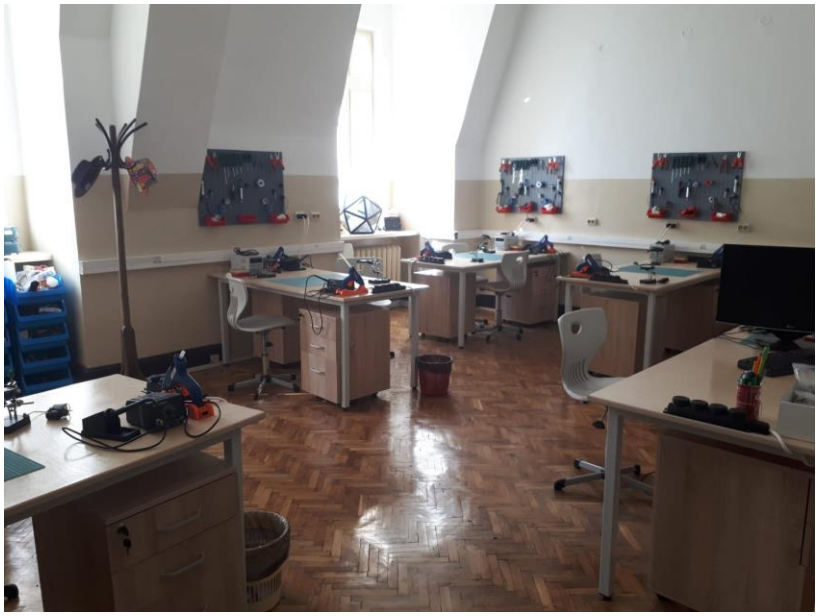
- 1 course (2h+ / week)
- 1 lab (3h / week)
- We'll decide on the lab hours in the following days
- Grading:
  - Lab homework: 2p (0.3p / homework and 0.2p Arduino setup)
  - Matrix game: 3p (deadline:
  - (smart-ish) car: 2p
  - Final project: 3p --- takes place in the 1st Saturday of the **2nd semester**
  - Extra: 1p (involved in activities throughout the semester)
  - Max: 11p
- Homework is presented in pitches
- Attendance:
  - Course: 51%
  - Laboratory: maximum of 2 unmotivated non-attendencies
- Dealbreaker:
  - Not attending
  - Not wearing glasses
  - Burning down the university (FIY: English rule doesn't apply in Romania)
  - Arrogance
- If you're late or don't do your homework because you were lazy, you'll be publicly shamed. Same with not following lab procedures (if it isn't bad enough that you'll be kicked out)

Course overview

- 2nd semester course: IoT – Internet of Things
  - Continues the current course with Raspberry Pi
  - Selection is based on Introduction to Robotics course performance
- Both courses are practical, applied and mostly high level, sometimes teaching the “how” instead of the “why”

The labs

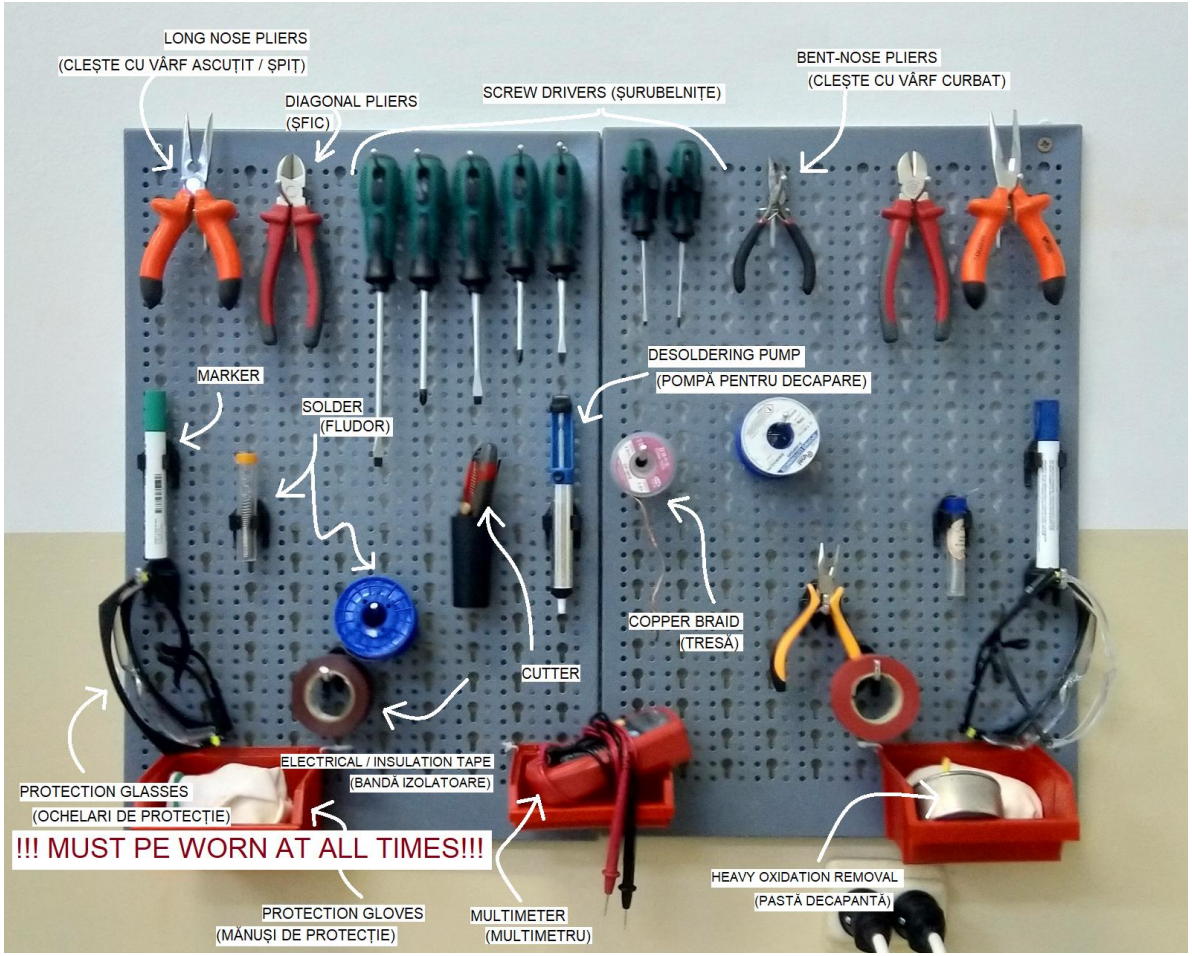
315: Introduction to robotics



314: Digital Innovation hub

3D Printing laboratory: the last room at the 3rd floor. Currently renovating.

Tools rack


LONG NOSE PLIERS
(CLEȘTE CU VÂRF ASCUȚIT / ȘPIȚ)
DIAGONAL PLIERS
(ȘFIC)
SCREW DRIVERS (ȘURUBELNIȚE)
BENT-NOSE PLIERS
(CLEȘTE CU VÂRF CURBAT)
MARKER
SOLDER
(FLUDOR)
DESOLDERING PUMP
(POMPĂ PENTRU DECAPARE)
COPPER BRAID
(TRESĂ)
CUTTER
ELECTRICAL / INSULATION TAPE
(BANDĂ IZOLATOARE)
PROTECTION GLASSES
(OCHELARI DE PROTECȚIE)
!!! MUST PE WORN AT ALL TIMES!!!
PROTECTION GLOVES
(MĂNUȘI DE PROTECȚIE)
MULTIMETER
(MULTIMETRU)
HEAVY OXIDATION REMOVAL
(PASTĂ DECAPANTĂ)

If you don’t want to be kicked out…

Unibuc Robotics

- Founded by students
- 4 courses:
  - Introduction to Robotics
  - 3D Modeling for printing
  - IoT: Internet of Things
  - ROS: Robot Operating System
- Growing team, most of them actual or past students

Meet our printers

(1) Zortrax M300 Plus

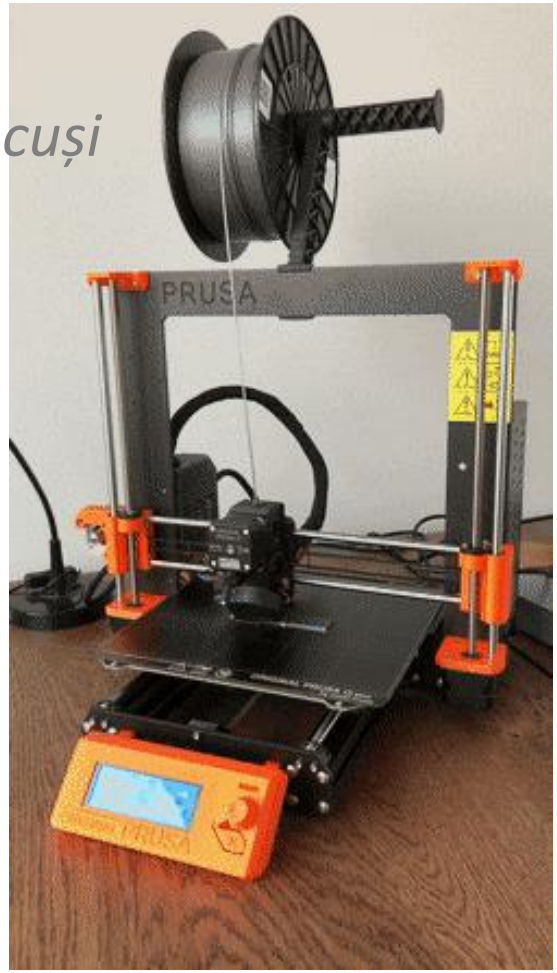
aka The Big Brother

(2) Prusa I3 MK3

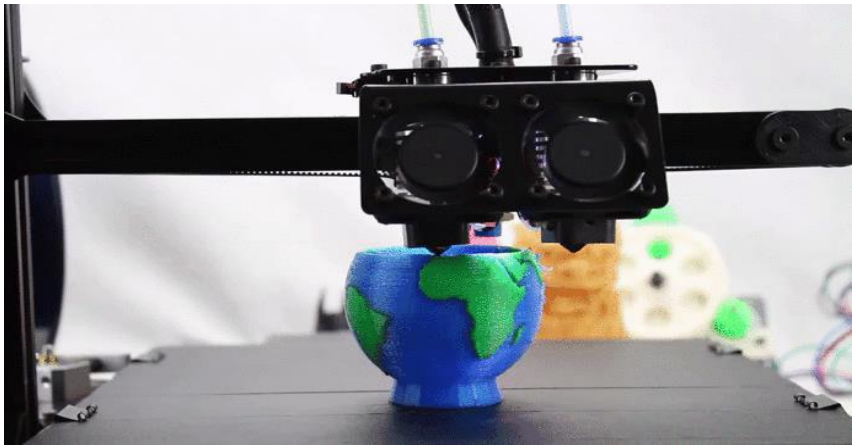
aka Purrsa and Brâncuși

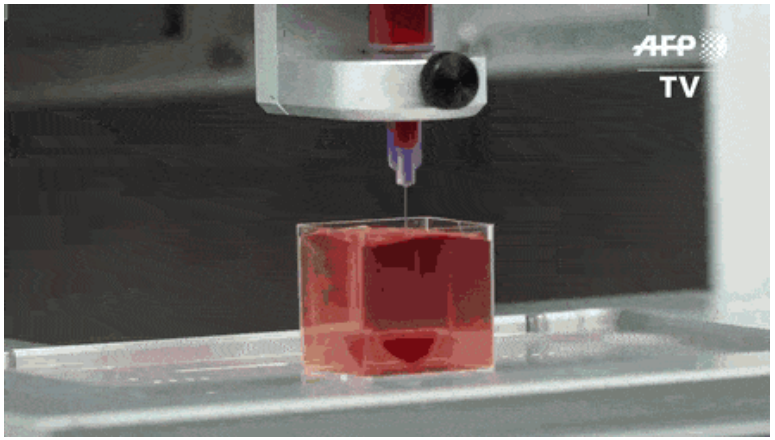
(1) Prusa I3 MMU

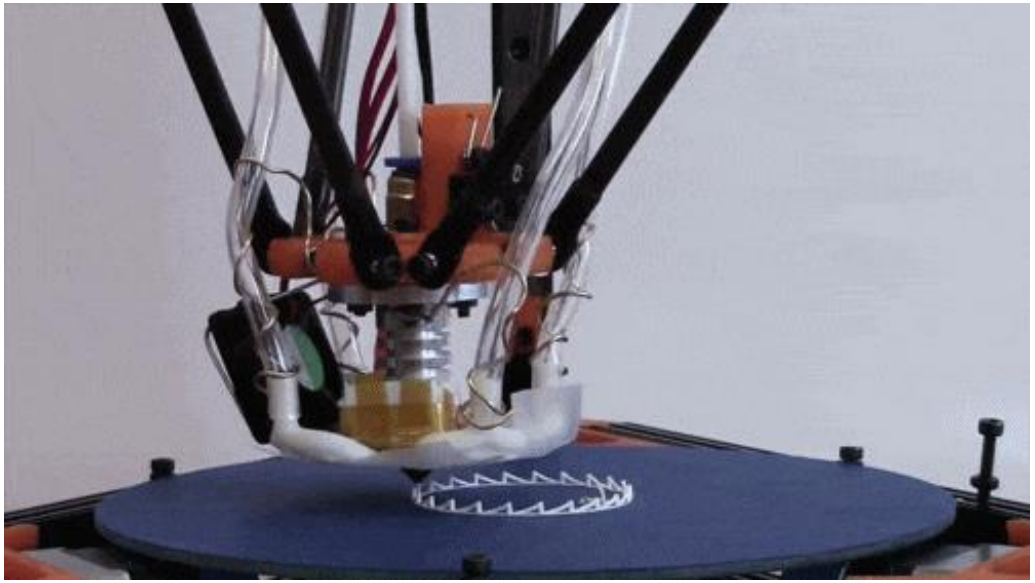
aka Rainbow



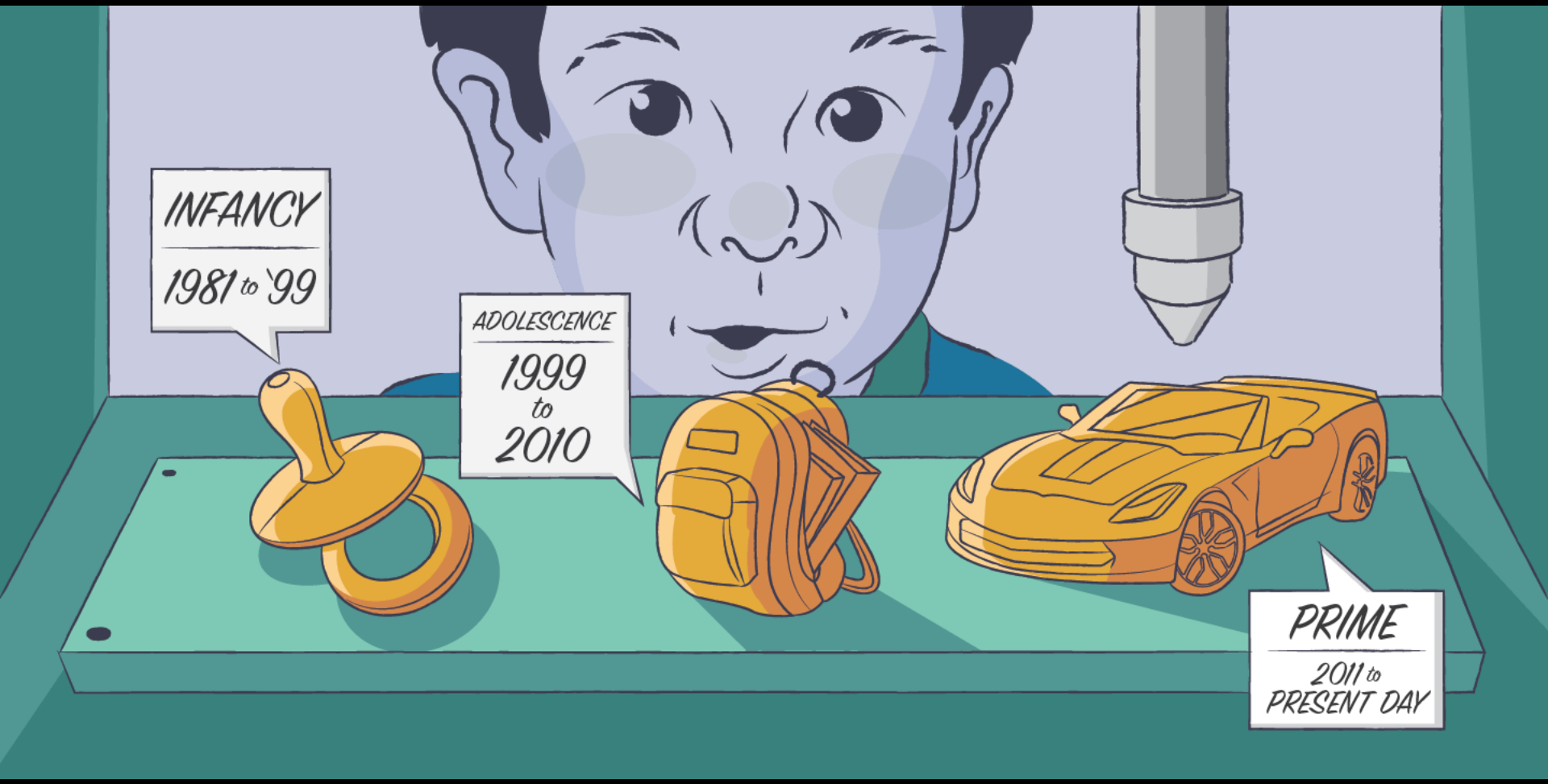
Introduction to 3D printing







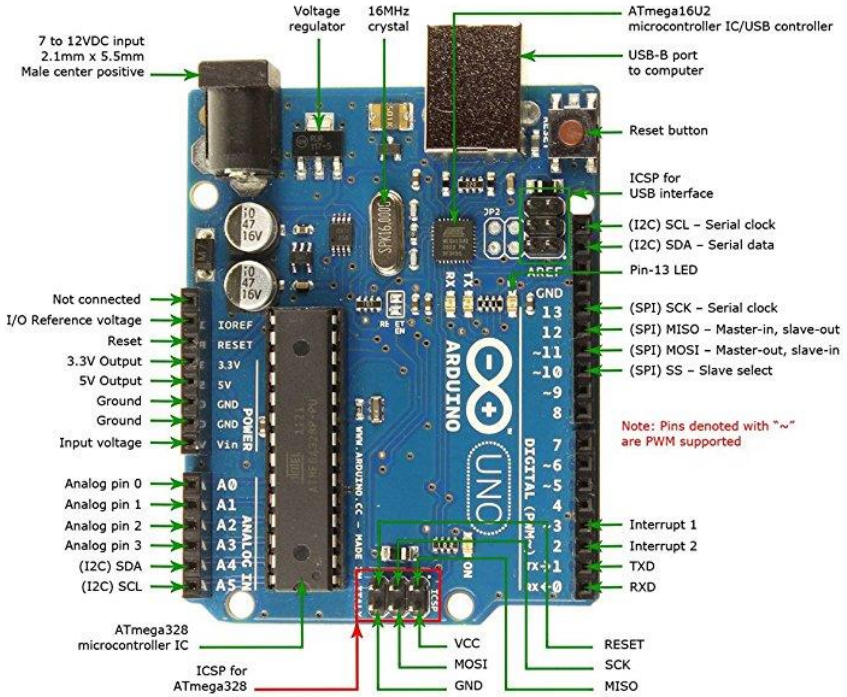
IT'S OLDER THAN YOU ARE



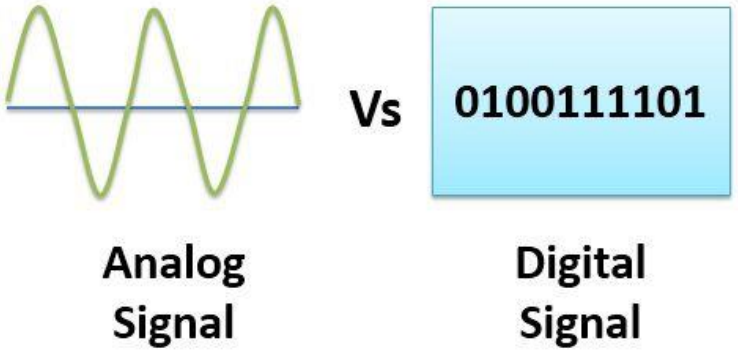
Events

- Innovation Labs:
  - Pre-incubator for startups
  - Starts with a pitch, followed by selection and a 24h hackathon. Then, another pitch based on the prototype and selection for the 3 months mentorship program. Final presentation after that.
  - IdeaJam: pitch your idea before working on it in order to receive feedback
  - SCSS: Robotics, IoT and Process Automation
    - 2 tracks: junior (non-last-year BS students) and seniors (last year of BS or MS students)
    - Present your project – doesn't need to be finalized
    - In partnership with Polytechnic University of Bucharest
  - Funding opportunities:
    - If you have a good idea, we can fund it

- Arduino UNO:



- The **Arduino Uno** is an open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino.cc.
- The board has 14 Digital pins, 6 Analog pins, and programmable with the Arduino IDE (Integrated Development Environment) via a type B USB cable.



Some links

- Arduino: www.arduino.cc
- 3D models:
  - www.thingiverse.com
  - www.myminifactory.com
- Github: www.github.com
- Photos from previous years:
  - 2018 - 2019: https://www.youtube.com/watch?v=yU7PrXv8q5o
  - 2017 – 2018: https://www.youtube.com/watch?v=yU-KauPZAi8
- Fb page: www.fb.com/unibuc.robotics
- Instagram: www.instagram.com/unibuc.robotics
- Youtube: https://www.youtube.com/channel/UCGtlG8jRsRRtMQF_90LAy7Q