# PORTFOLIO

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Mechatronics/ Robotics Student

# PROJECTS

AIRBUS

LAAS CNRS

ROB4FAM

# Integration of the SoT Into the ROS build farm

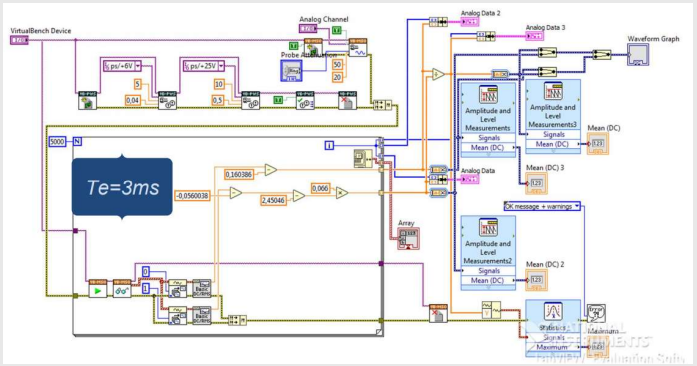
**Stack of Task (SoT)** is a pack of advanced software to **control robots**. It is more than 10 years of code developed my more than 30 researchers including my tutor **Olivier Stasse**

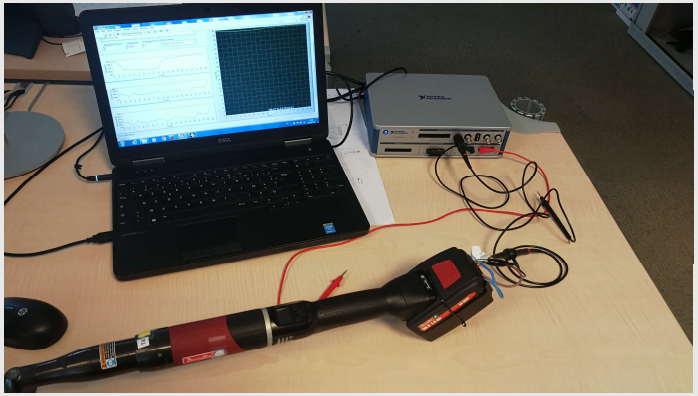
Worked in the **ROB4Fam** team
ROB4FAM is a **joint laboratory** between **AIRBUS** and **LAAS-CNRS** that develop adaptative robot for aeronautic

Aim of the project:
- Implement the SoT inside the ROS build farm
- Adapt and fix warnings of the SoT source code on GitHub (pseudo : Rascof)

Skills developed:
- **Adaptability**
- Understanding of the **ROS build farm**

# Tool battery retro-engineering



Worked at Airbus in the department of research in mechatronics and robotics with **Sébastien Boria** as my tutor

Aim of the project:
Reduce the weight of an assembly tool

Achievement:
- **Characterized** the evolution of the peak intensity at the start of the motor with different torque forces
- Proved that it was possible to **reduce the weight by 50%**

Skill developed :
- **Labview** on the test bench to automatize the data sampling
- Understanding of **the stakes of mechatronics and robotics**

# Connected Boomerang

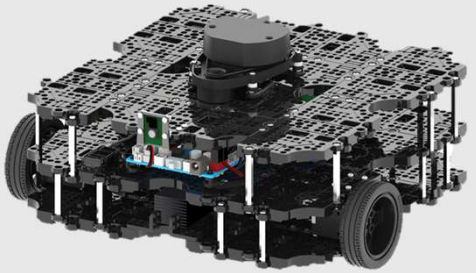
5 cm

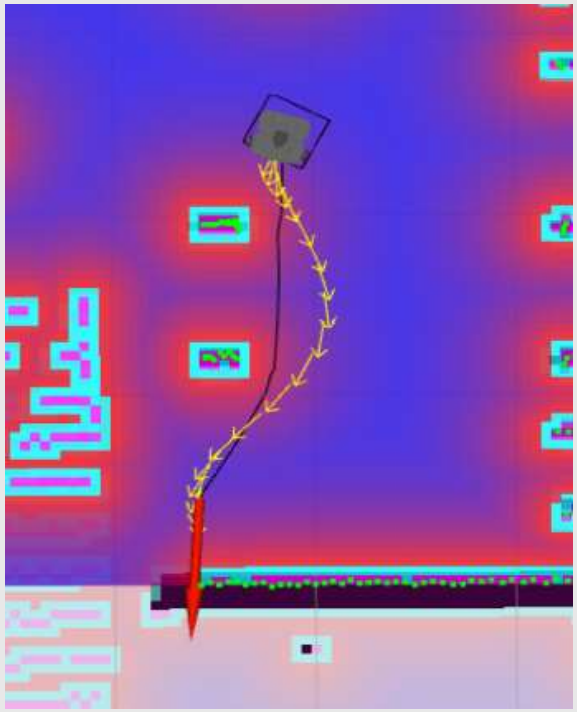
Aim of the project:
Equip a boomerang with sensors to create the 3D path

Achievement:
- **Equipped a boomerang** with miniature sensors without losing balance
- **Involved the European champion of Boomerang**, Benoit Rancoule, for the test protocol I created
- **Inspired a master project** in the United states

Skills developed:
- **Electronics** (Arduino)
- **Miniaturization** and **Integration** in constrained environment
- **Test Protocol**
- **Embedded systems**

# Autonomous navigation in a semi-structured environment





Aim of the project:

Explore and optimize different type of **local planner**

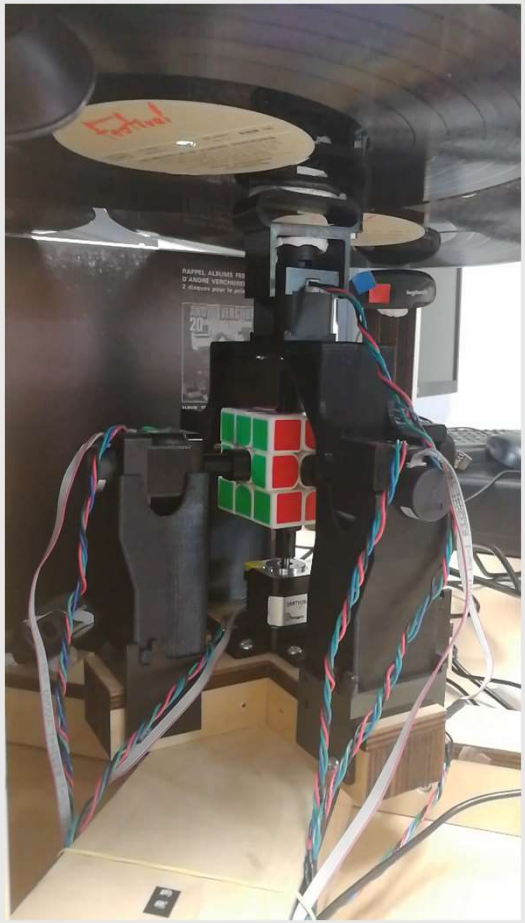
- Dynamic Window Approach local planner
- Elastic Band local planner
- Timed Elastic Band planner

Achievement :

**Obtain a 95% accuracy** in avoiding moving obstacles thanks to a **layered cost map** that inflate the cost map in front of moving obstacles

Skill developed:

- **ROS**(gazebo, rviz)
- **Teamwork** in an international team



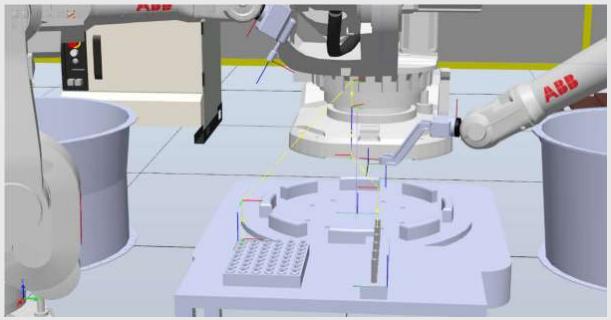
# Rubik's solver

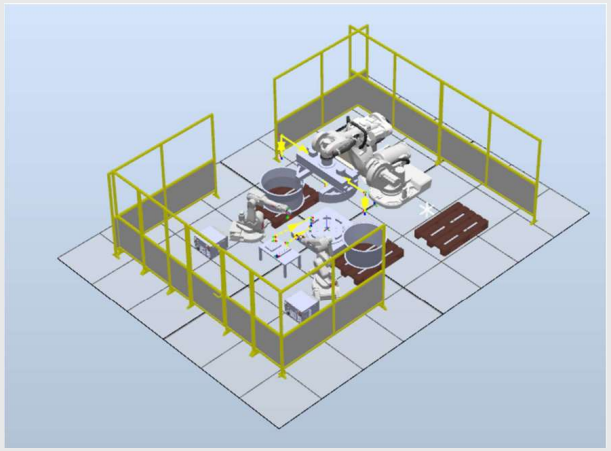
Aim of the project:
Solve a Rubik's cube based on the webcam reading of the faces

Achievement:
- Solve the Rubik's cube In **less than 10 seconds**
- **Analyzed** the interactions between electronics, mechanics and software to **successfully merge all the work from the team**

Skills developed:
- **Teamwork**
- **Electronics** (Eagle)
- **LabVIEW** (LabVIEW RIO card)
- **Mechatronics**

# ABB assembly station

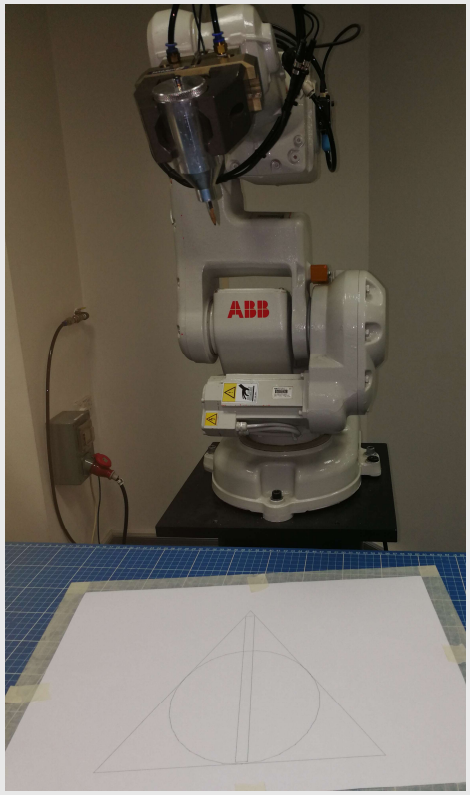


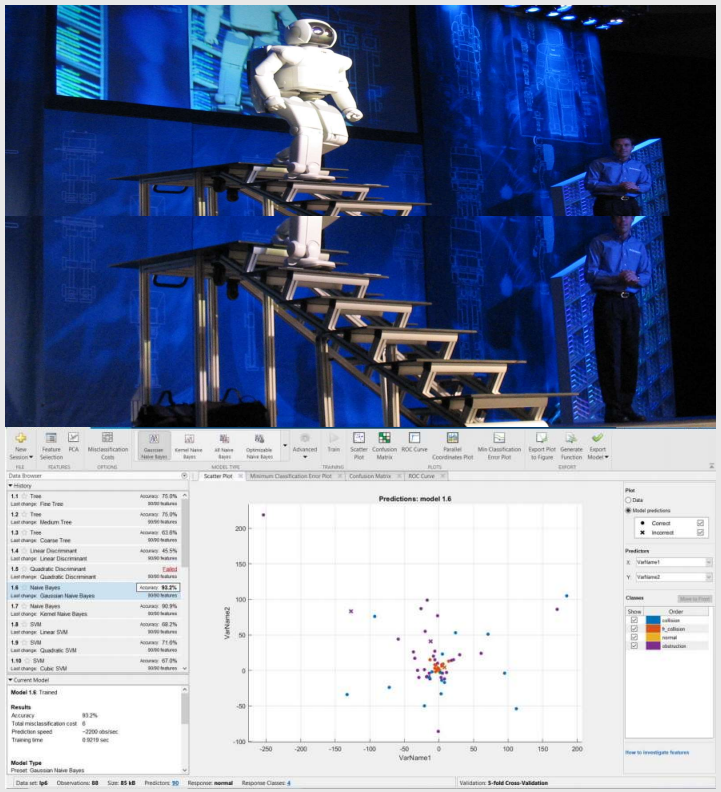
Aim of the project:
**Create an assembly line** to assemble
two engine parts with bolts and screws

Achievement:
Implement a code inside a **real ABB robot**

Skills developed:
- **Robot Studio**
- **Teamwork**
- **3D modeling**
- **Algorithm**



# Detection of failure with AI & ML




Aim of the project:
Detect the type of failure with the most accuracy

Achievement:
Computed more than **70% of accuracy** on all the dataset
Needed more data to improve the accuracy

Skills developed:
- **Matlab** for machine learning and artificial neural network
- **C++** for data processing

# HOBBIES

# Student Association


Achievement:

Proposed different type of events to mobilize more students :

- **Stepstone digital challenge** participation (sport and e-sport tournament organized by Stepstone)
- **Escape game** in collaboration with other schools
- **Game tournament** in a gaming pub

Skills developed:

- **Creativity** (Adobe After effect, Premier Pro)
- **Communication** (Facebook, Instagram)
- **Networking**
- **Management**

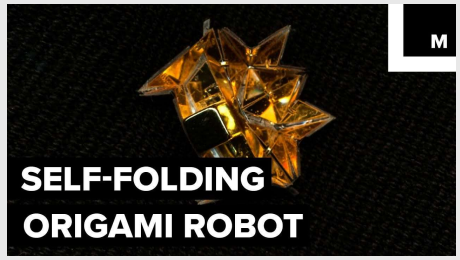
# 3D Printing and laser cutting

Projects:
- Figurine and bust printing for painting
- **Collaboration with an artist** to create jewelries
- Reparations

I **designed** this model and cut it out of wood with a laser cutting machine

Skills developed:
- **Creativity**
- **3D modeling** (Blender, Solidworks)
- **Laser cutting**
- **Client communication**
- **Adobe Illustrator**

# Complex Origami




Understand and can perform complex folding with more than 200 folds

Why is it relevant for robotics ?
- Intelligence in the shape
- Better flexibility and adaptability

Skills developed:
- Patience
- Meticulousness

# Japanese Culture

Worked in a ryokan for 2 months as a cleaner and a waiter

Achievement:
The staff was very satisfied of my services

Skills developed:
- Japanese
- Respect
- Meticulousness