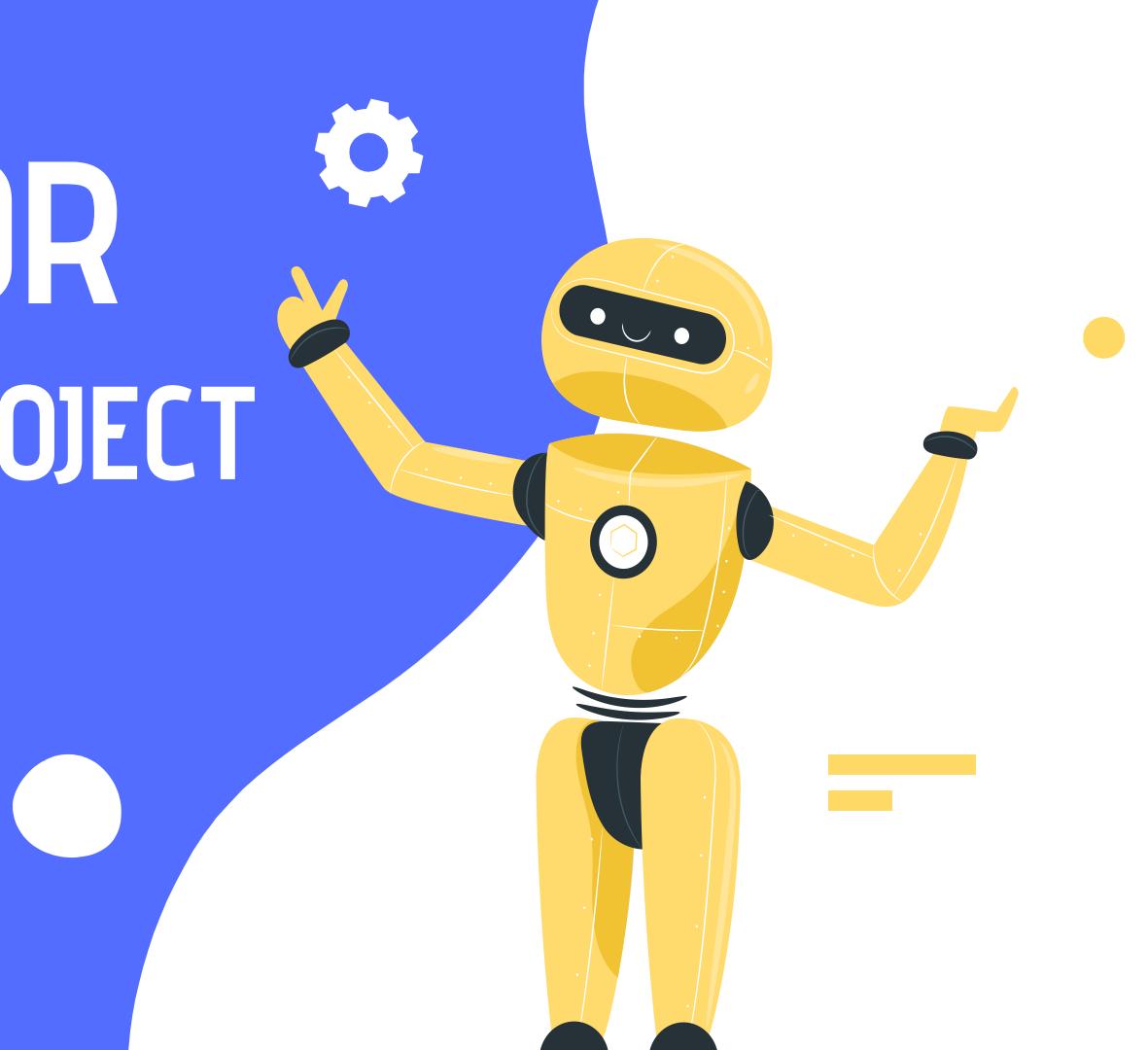


1-TOBOR ROBOT PROJECT

Final Presentation



OUR TEAM

**Mathilde
Gaboriaud**



Project
Manager

**Samuel
Marajo**



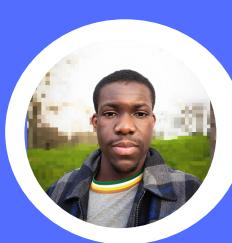
Software
Chief
Engineer

**Wenzheng
Wang**



Hardware
Chief
Engineer

**Lovinsky
Jean-Julien**



Test Chief
Engineer

**Tamilarasan
Raja**



Documentation
Manager

01 CONTEXT

Present the project,
the team...

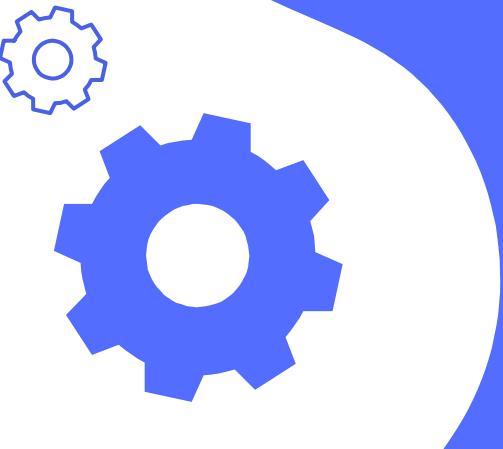


02 SOLUTION

Explanation on the
Hardware, Software, Testing
and Validation part

03 DEMONSTRATION

Demo of the Gold
level

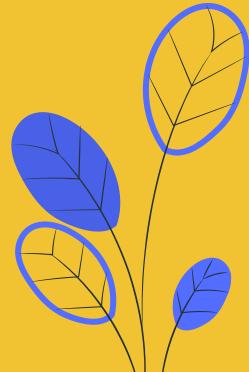


04 CONCLUSION

Conclude on the
project itself

01

CONTEXT

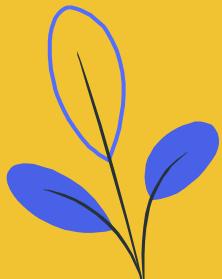




INTRODUCTION

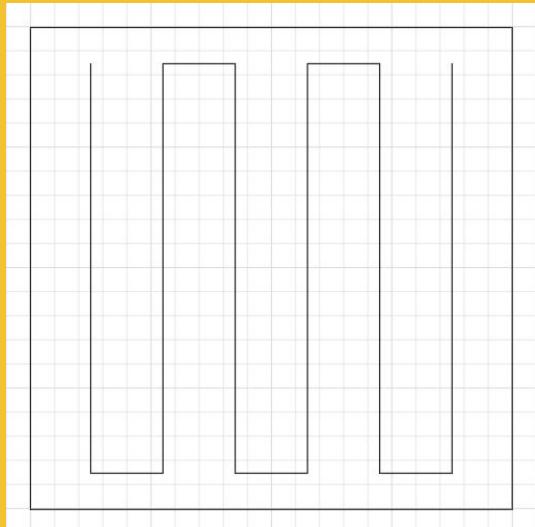
Project : Search and Rescue

Aim : Build a robot that can Search and find a defined object and to rescue it with 3 different paths. The robot can automatically explore the area, detect and pick-up the target (**red column**) to his starting point.

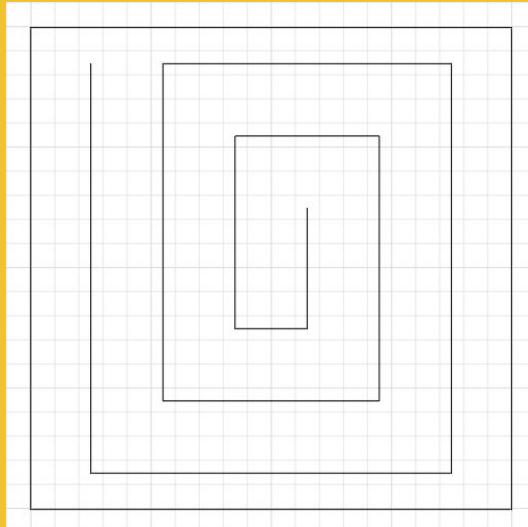




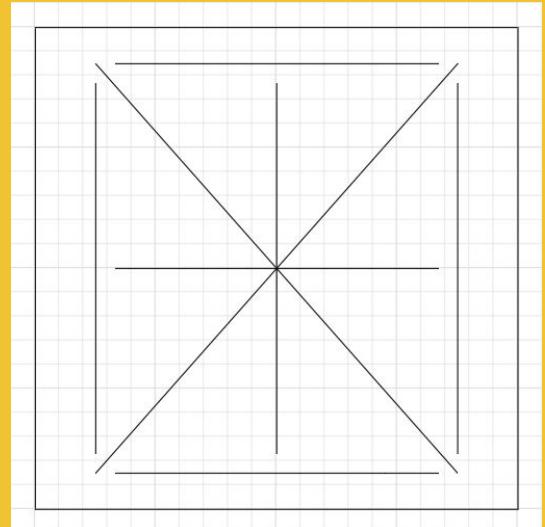
3 TRACK STRATEGIES :



Snake track



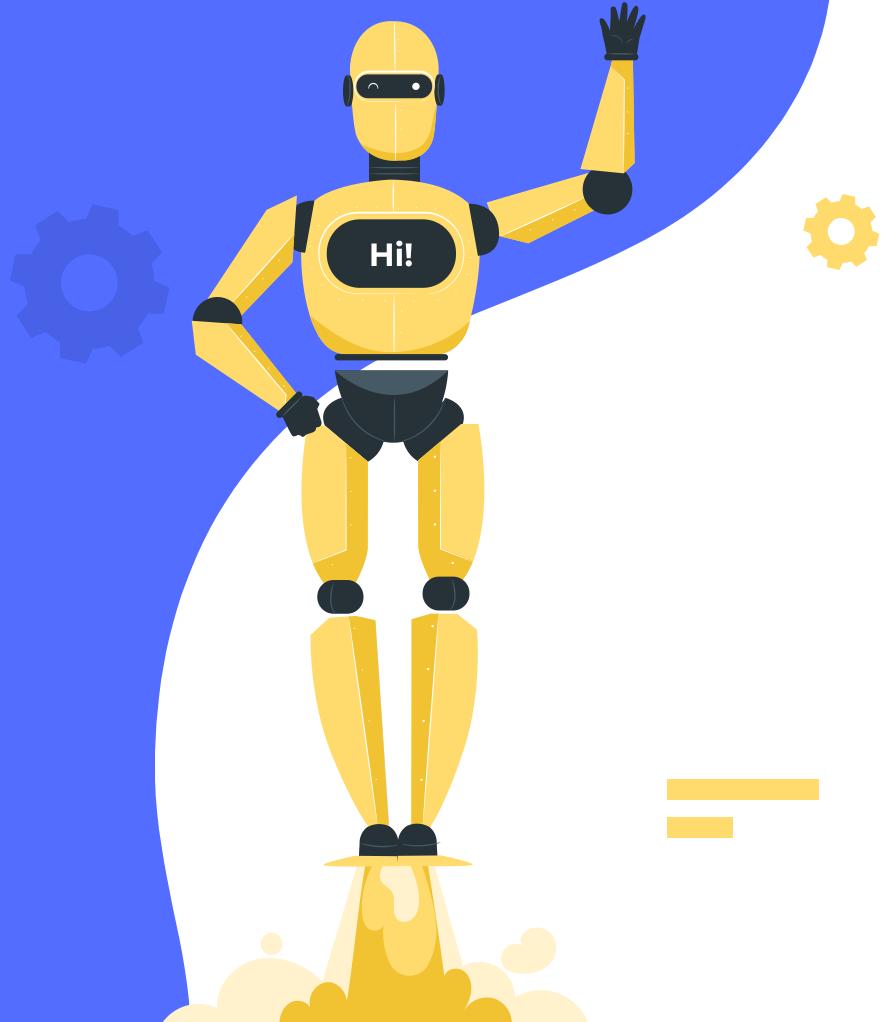
Snail track



Star track

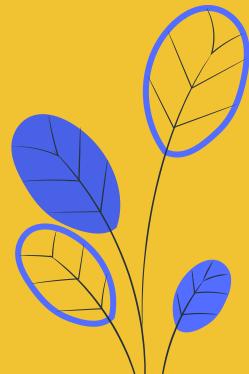
GOLD TARGET

The robot is able to autonomously explore the area and detect the target (**red column**). The robot is able to pick-up the target and go home. The robot is able to report to a remote system with a graphical user interface.



02

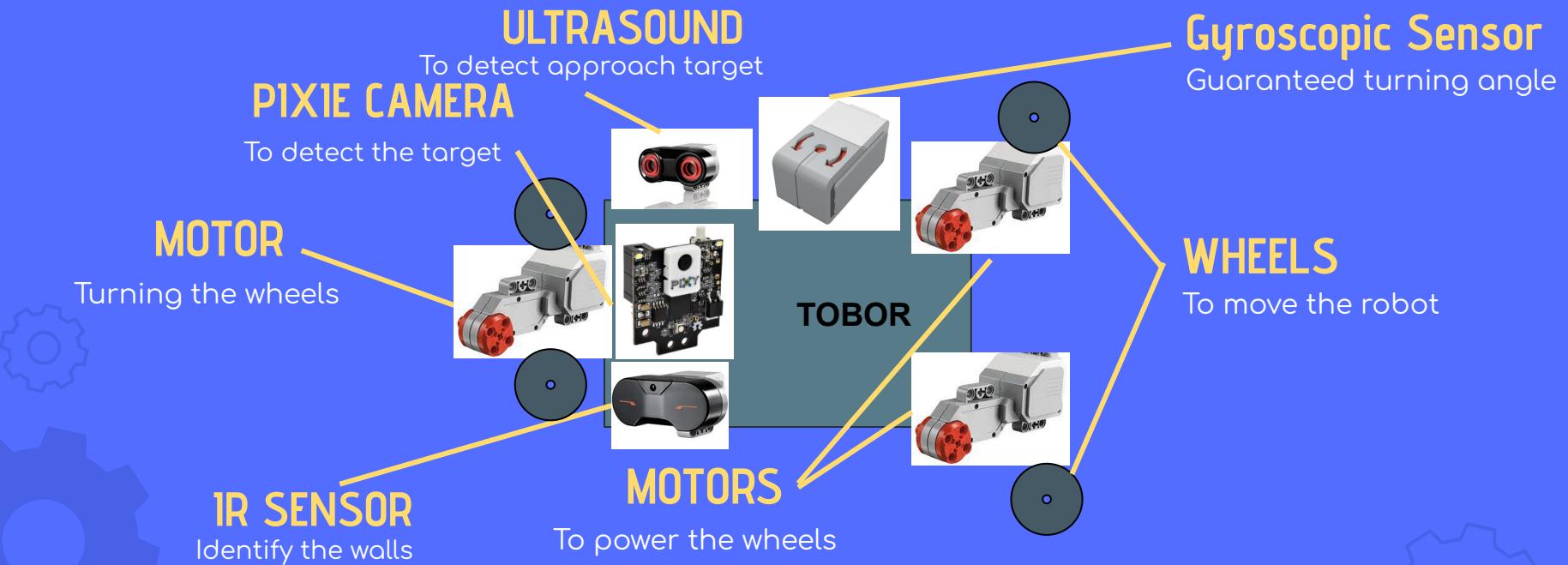
SOLUTION



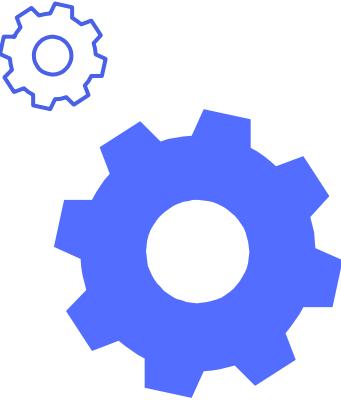
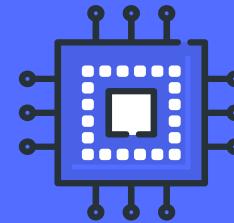
GENERAL ARCHITECTURE

Specifications / functions :

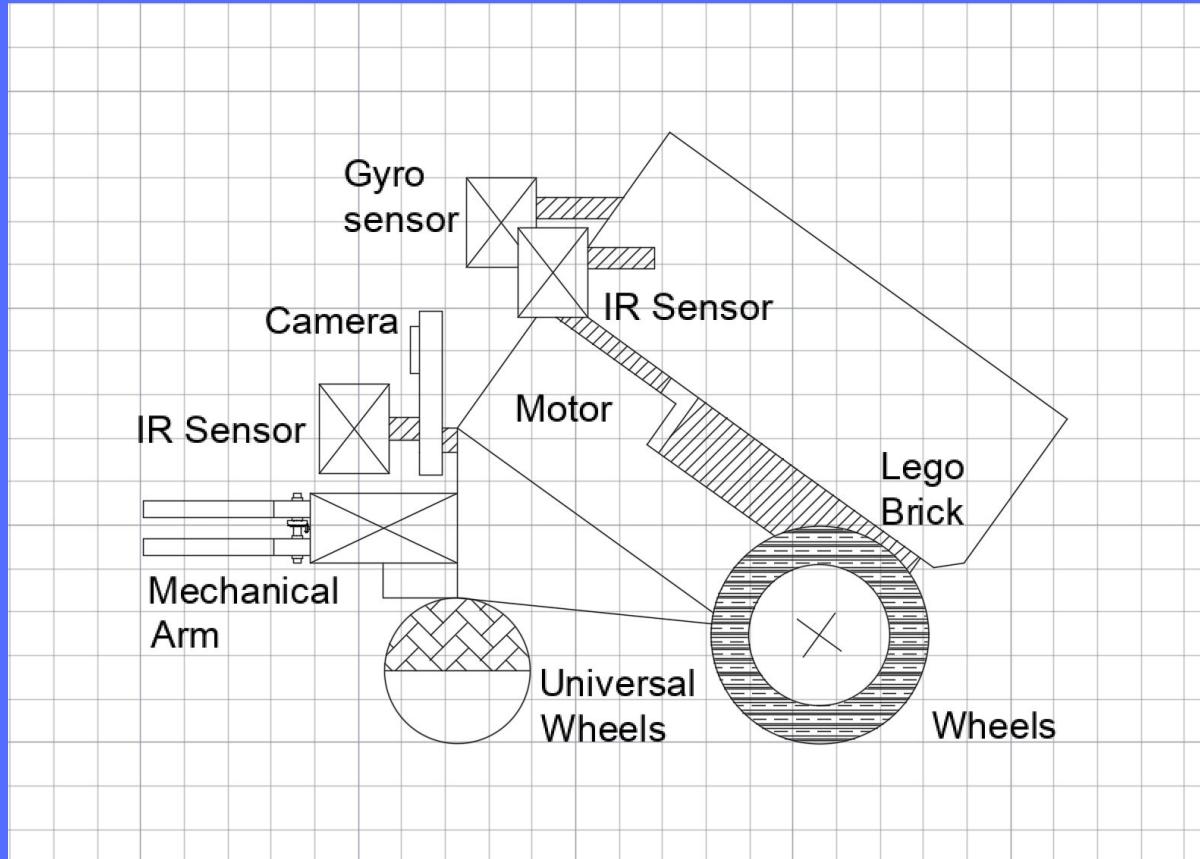
- robot able to pick-up the target + get back to his starting point
- robot able to choose between 3 different tracks
- Robot interact with a remote system + send target's coordinates



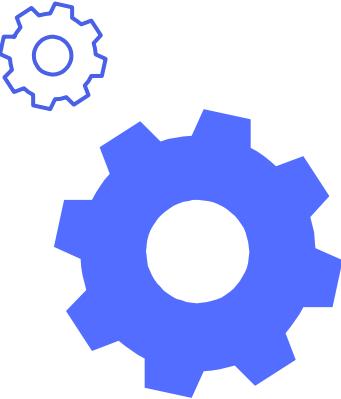
Hardware



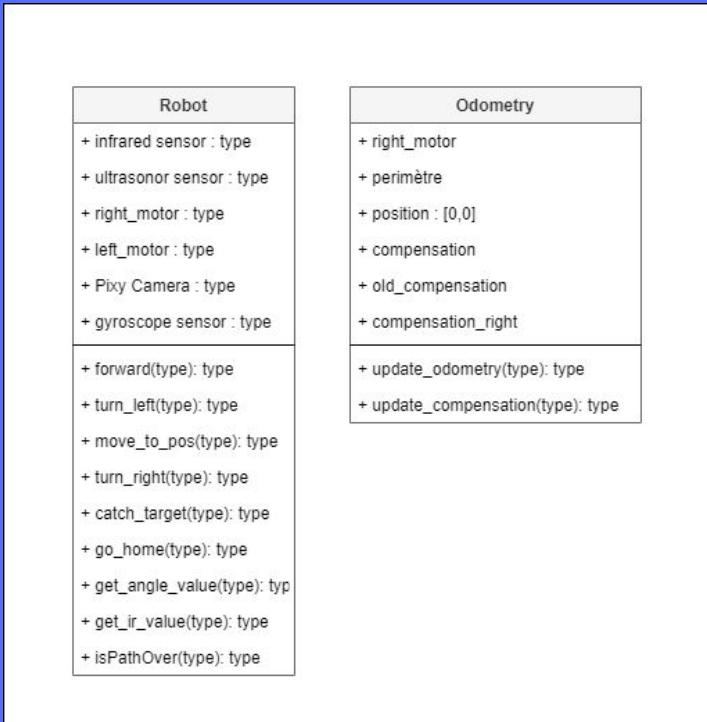
Hardware plan of the Robot



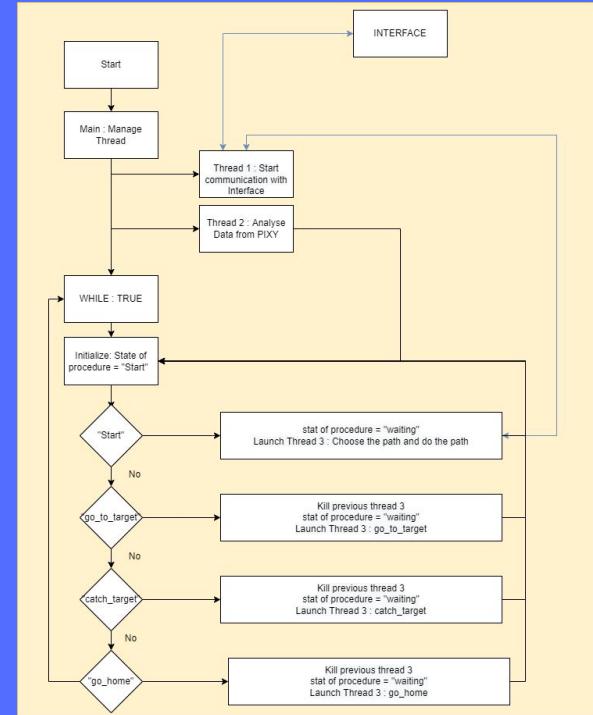
Software



Software architecture



Class Diagram



Algorigram for gold part

Operating of the interface

Two files independents :

- On file for the server
 - Organize into two classes
 - The tobob code imports the server file, and uses its methods for sending and receiving data
- The other file for the interface
 - The code is composed of several classes, with two threads running asynchronously
 - One thread manages the connection to Tobor and communication between Tobor and the GUI,
 - other thread handles the GUI interface and user interactions.
- The server and the interface use the socket to communicate
 - Each program can wait the other
 - Error handling is also implemented.

Class Diagram

```
+-----+
| ThreadForClient  |
+-----+
| - fin_communication : bool
| + __init__(connexion: socket)
| + run()
+-----+

+-----+
| SendAndReceiveData  |
+-----+
| - data_rec: str
| - message_from_tobor : str
| - success_send : str
| + __init__(connexion: socket)
| + _set_message_from_tobor(message: str)
| + _get_message_from_tobor()
| + reset_message_from_tobor()
| + tobor_say_hello()
| + send_data()
| + rec_data()
| + _get_success_send()
| + _get_data_rec()
| + reset_previous_data_()
+-----+

+-----+
| ExchangeWithUser  |
+-----+
| - connected : bool
| + start_communication(socket: socket)
| + disconnect()
+-----+
```

Server
class
diagram

Interface
class
diagram

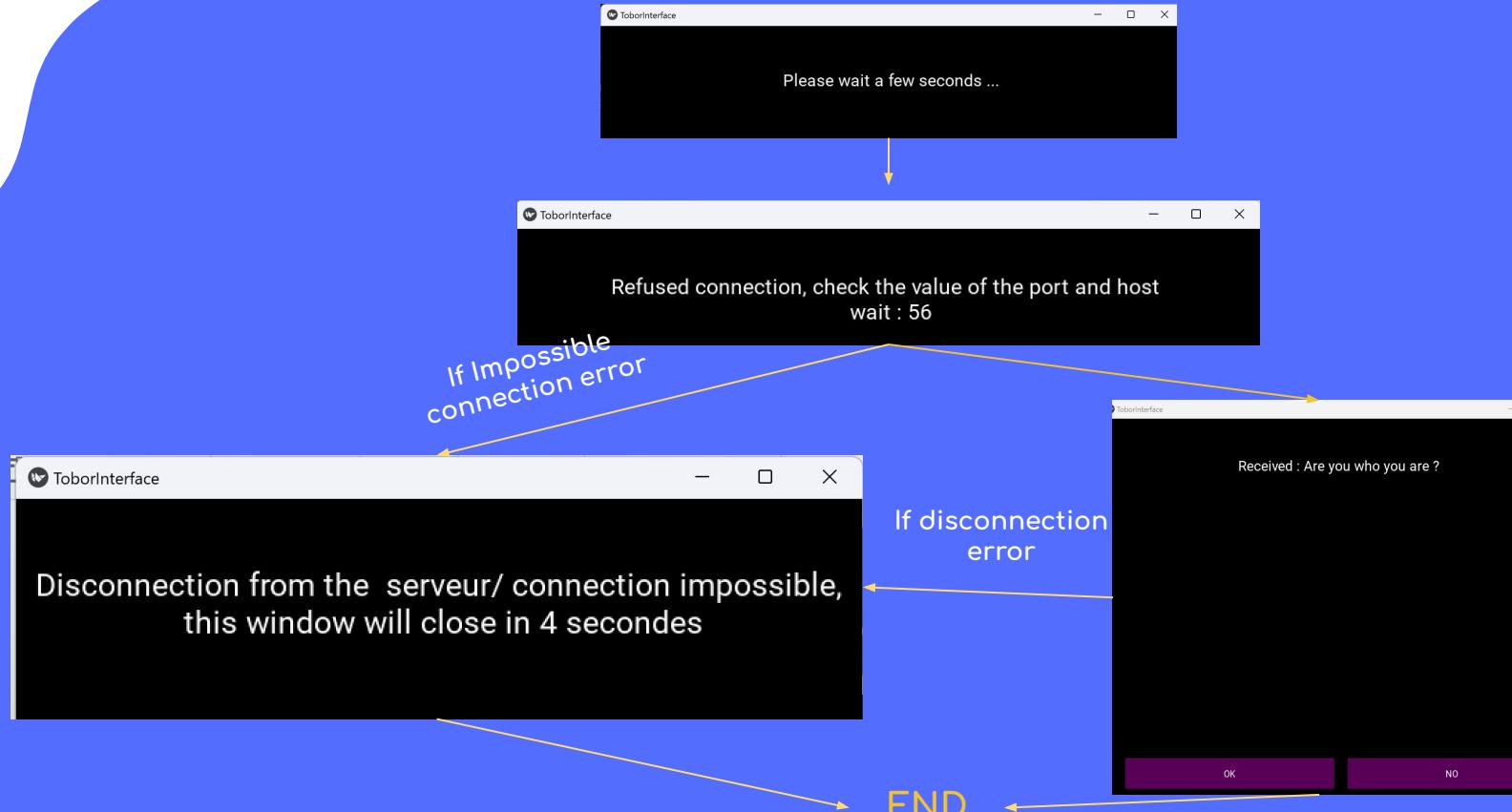
```
+-----+
| Config      |
+-----+
| - time_count_down_for_connection: int
| - time_count_down_deconnection: int
| - tobor_say_str_init : str
| - host: str
| - port: int
| - numClient : str
| - size_Buffer_data_rec : int
| - caractere_question : str
+-----+

+-----+
| MyWidget    |
+-----+
| - tobor_say : StringProperty
| - ok_button : ObjectProperty
| - no_button : ObjectProperty
| - btn_pressed : str
| - window_size_height_percent : ObjectProperty
| + ok_pressed()
| + no_pressed()
| + set_Tobor_say(text: str)
| + set_tobor_say_position()
| + start_connection()
| + close_window()
+-----+

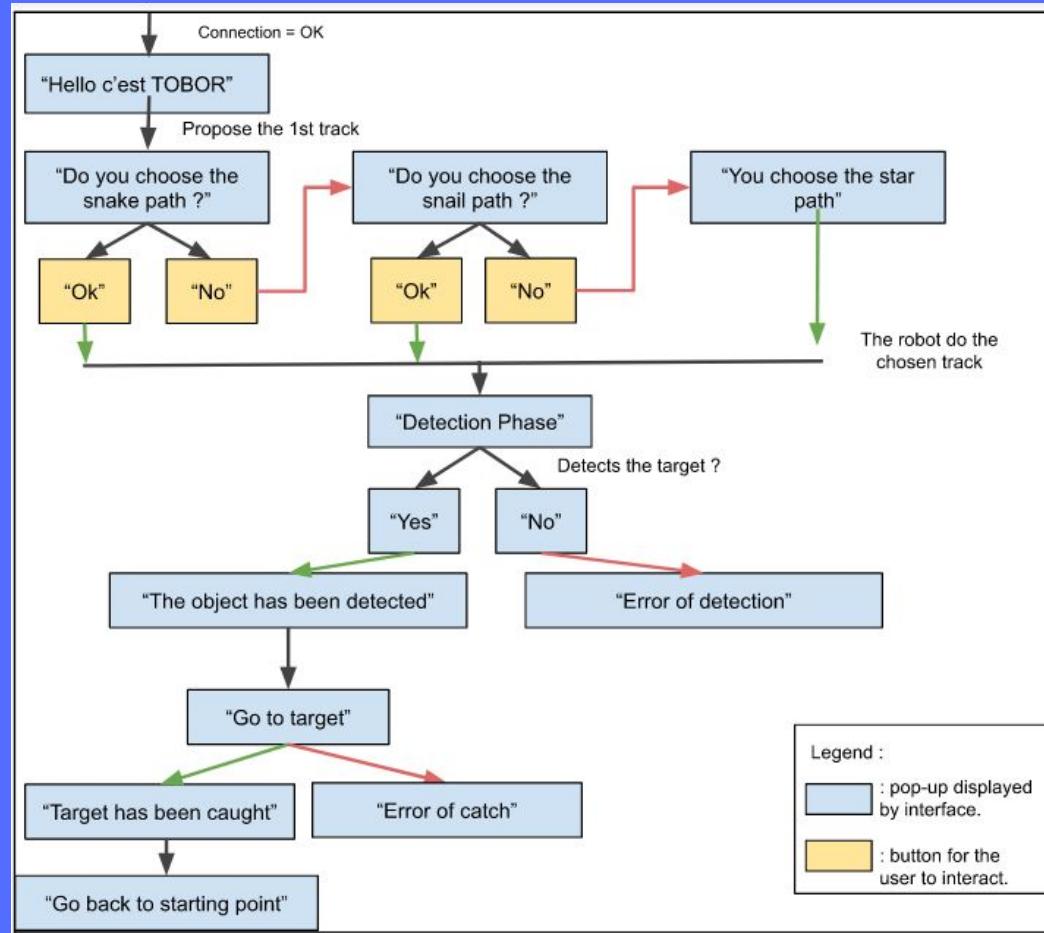
+-----+
| ExchangeBetweenToborAndInterface   |
+-----+
| - connected : bool
| - connexion : socket
| + __init__()
| + start_communication()
| + disconnect()
+-----+

+-----+
| ToborInterface |
+-----+
| + build()
+-----+
```

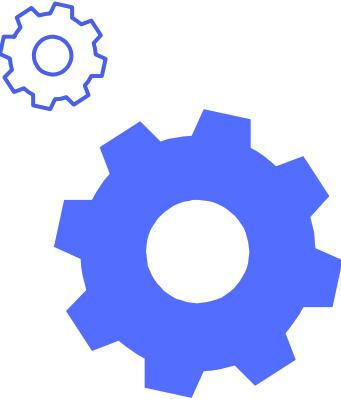
Presentation of the interface



Interaction diagram between the interface and robot



Validation



Testing + Validation process

Condition of tests :

- Perimeter is a square (1m x 1m)
- Flat Surface with wood walls, in the class ISEP
- 1 **red column** = target, somewhere in the area

Initialization :

The robot is off at the corner of the square.

Action :

Start the robot and execute the test 5 times + exchange with the remote interface

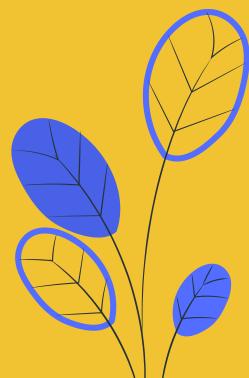
Verification :

- robot is able to do his task 4/5 times (~20% of error).
- robot is able to explore the area (3 tracks – “snake track” / “snail track” / “star track”)
- remote system choose 1 track for him
- robot stops when detect target + sends target's coordinates to remote system

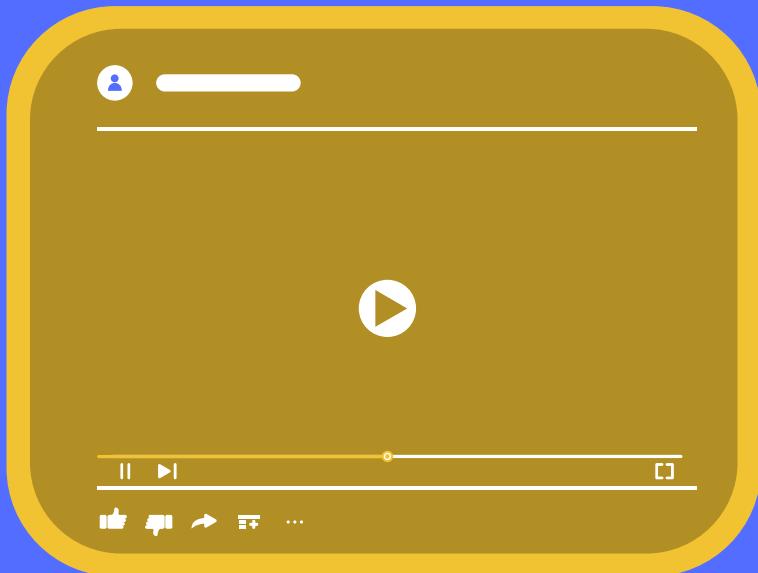


03

DEMONSTRATION



ROBOT DEMO

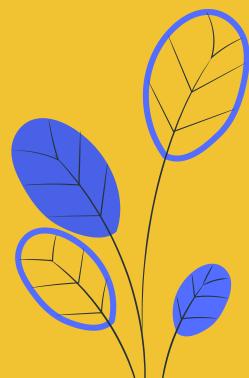


- Autonomously explore the area and detect the target (=red column)
- Pick-up + go home with the target
- Report to remote interface target's coordinates



04

CONCLUSION



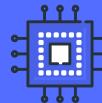
TO CONCLUDE

- Problem encountered :



Software

Handling Kivi library
for the interface



Hardware

Build mechanical arm :
small size + strong strength



Planning

Finding time to test
our robot +
integration phase

- Elements to improve :



Software

Optimized to code to
run more efficiently



Hardware

Add light for better
detection on Camera

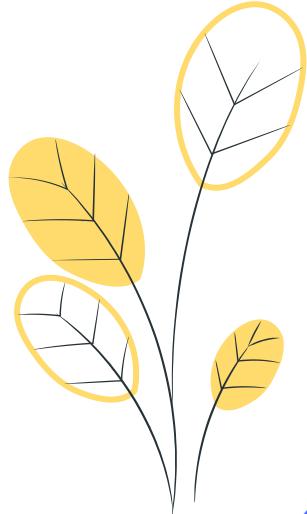
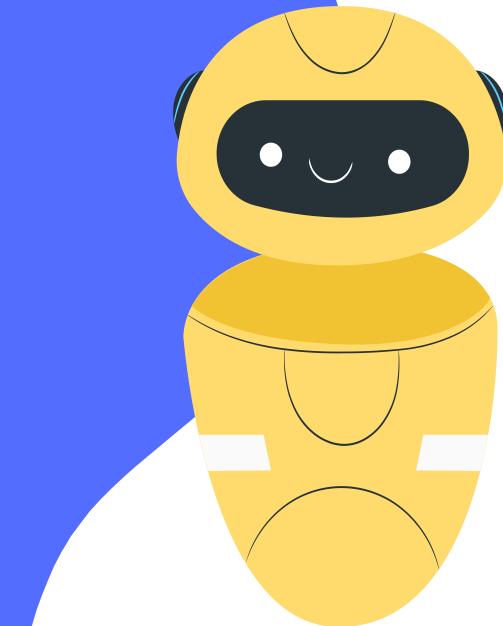


Interface

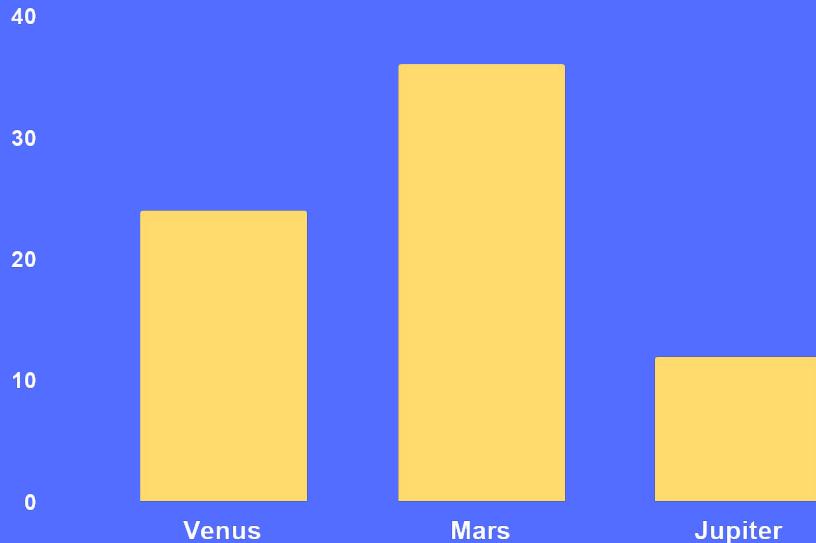
Track the robot's
movements on the
graphical interface

THANKS

Do you have any questions?



TRACTION



Venus has a beautiful name and is the second planet from the Sun. It's terribly hot—even hotter than Mercury

To modify this graph, click on it, follow the link, change the data and paste the new graph here



A PICTURE ALWAYS REINFORCES THE CONCEPT

Images reveal large amounts of data, so remember: use an image instead of a long text

CASE STUDY

	CHALLENGE	RESULTS	SOLUTION
PROJECT 1	Mercury is the smallest planet	Venus has a beautiful name	Mars is actually a cold place
PROJECT 2	Jupiter is the biggest planet	Saturn is the ringed one	Neptune is the farthest planet
PROJECT 3	Earth is where we all live on	Pluto is a dwarf planet	The Moon is a satellite

REVIEWS



HELENA JAMES

Despite being red, Mars is actually a very cold place. It's full of iron oxide dust



TIMMY JIMMY

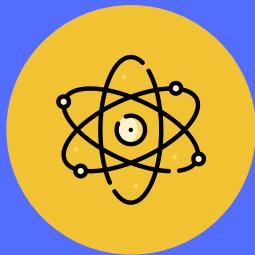
Mercury is the closest planet to the Sun and the smallest one in the Solar System



SOLUTION

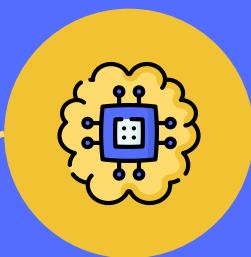


AWARDS



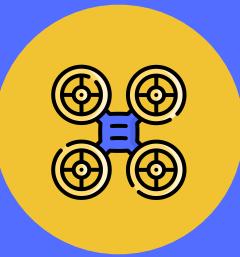
MERCURY

Mercury is the closest planet to the Sun



VENUS

Venus is the second planet from the Sun



MARS

Despite being red, Mars is a cold place

MARKET SIZE

60%

Despite being red, Mars is actually cold

25%

Saturn is a gas giant and has several rings

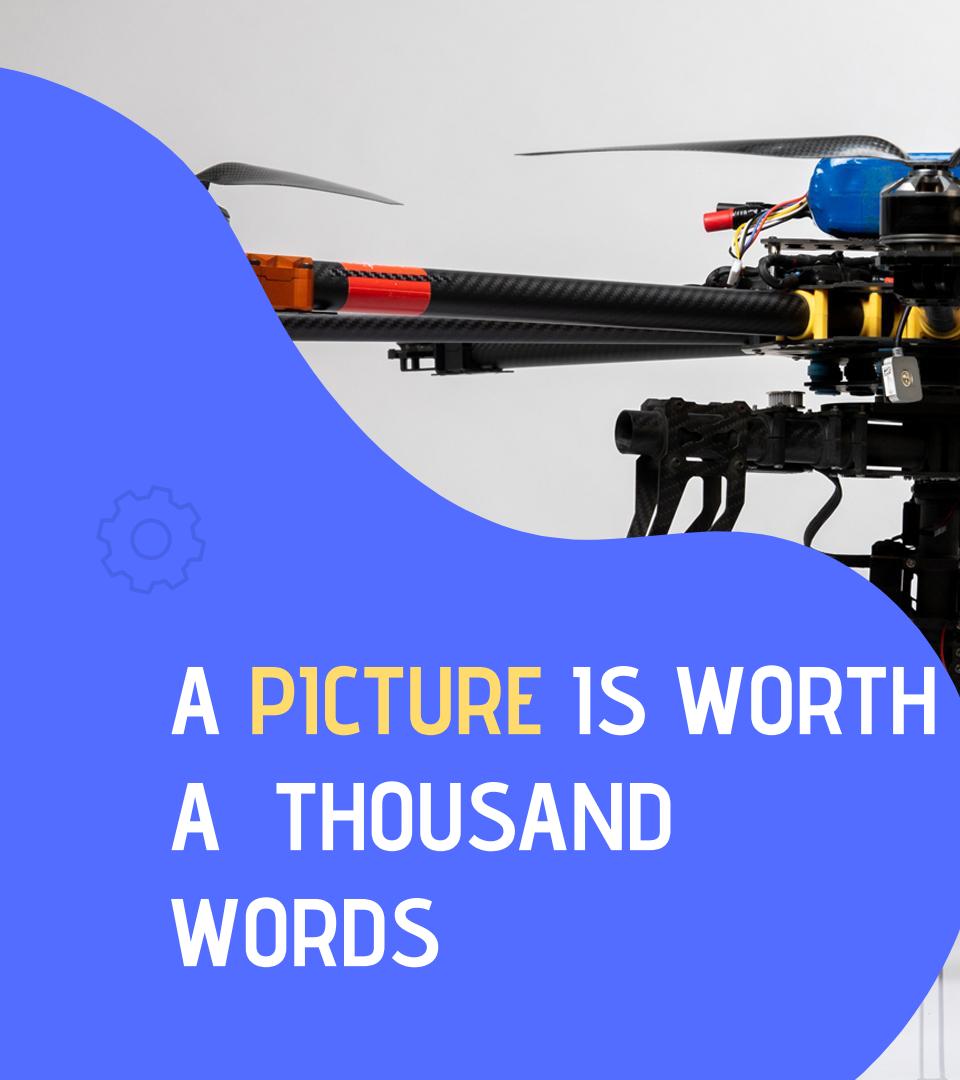


80%

Jupiter is the biggest planet in the Solar System

60%

Mercury is the smallest planet in the Solar System



A PICTURE IS WORTH
A THOUSAND
WORDS



TARGET

GENDER



34% 66%



AGE

30-40



Average spend
per customer

HOBBIES



MARS



VENUS



JUPITER





333,000.00

earths is the Sun's mass

24h 37m 23s

is Jupiter's rotation period

COMPETITORS



COMPANY 1

Mercury is the closest planet to the Sun

COMPANY 2

Venus is the second planet from the Sun



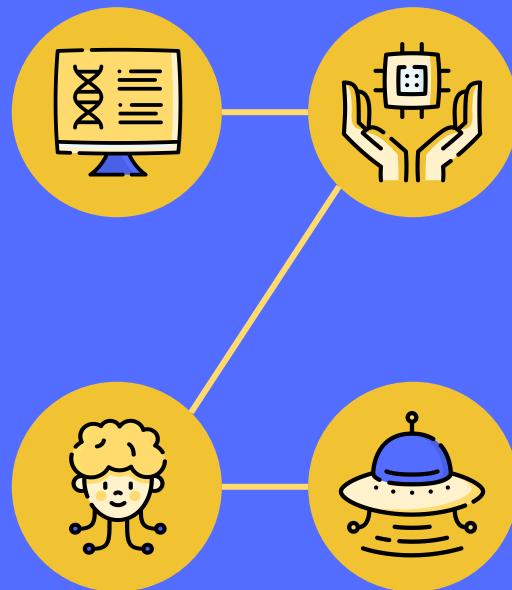
BUSINESS MODEL

MARKETING

Despite being red,
Mars is a cold place

TRAINING

Venus is the second
planet from the Sun



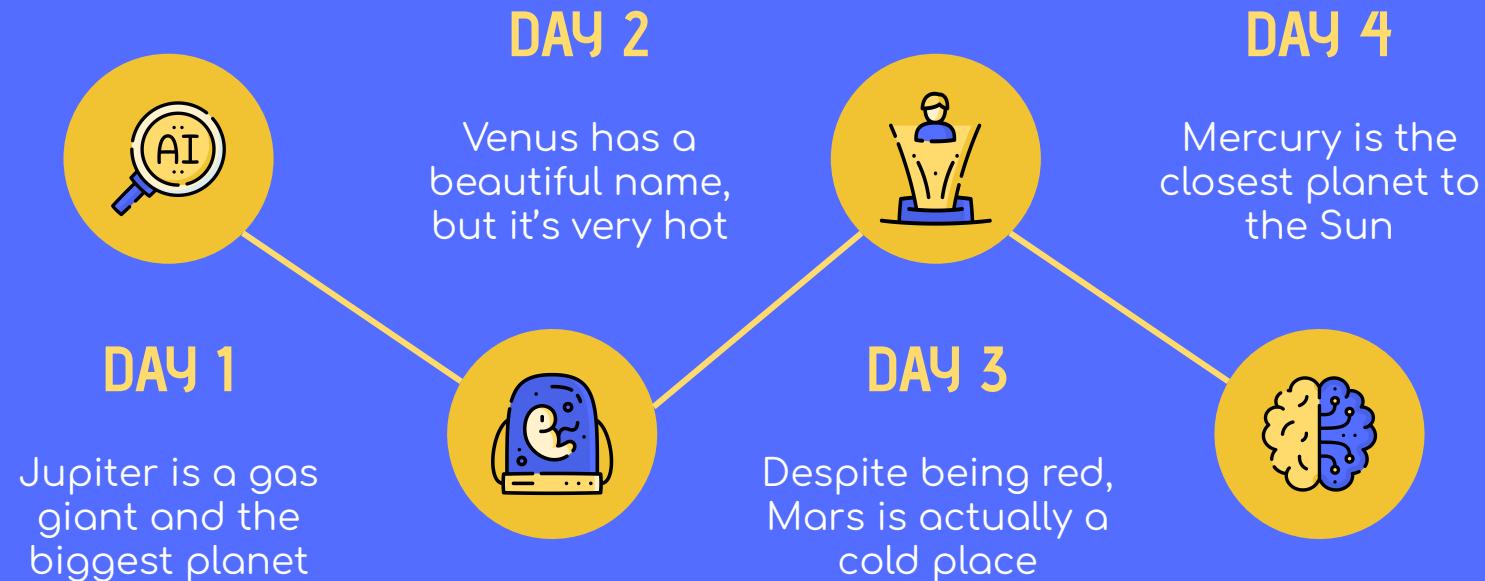
TECHNOLOGY

Mercury is the closest
planet to the Sun

ASSESSMENT

Jupiter is a gas giant
and the biggest

TIMING



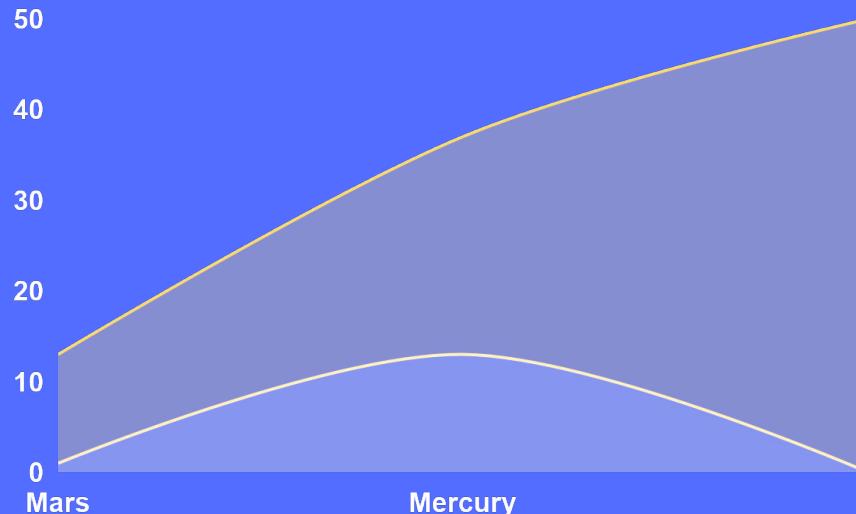
PREDICTED GROWTH

20,000

Expected income
for 2020

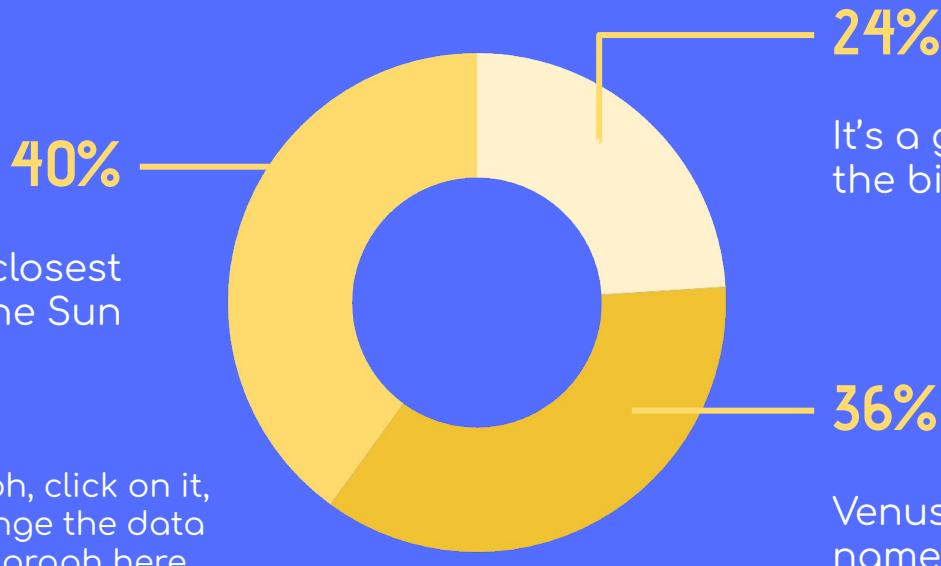
100

New employees
next year



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change the data and paste the new graph here

INVESTMENT



Mercury is the closest planet to the Sun

To modify this graph, click on it, follow the link, change the data and paste the new graph here

It's a gas giant and the biggest planet

36%

Venus has a beautiful name, but it's hot

REVIEW SOME CONCEPTS



MERCURY

Mercury is the closest planet to the Sun



VENUS

Venus is the second planet from the Sun



MARS

Despite being red, Mars is a cold place



JUPITER

It's the biggest planet in the Solar System



SATURN

Saturn is the ringed one and a gas giant



NEPTUNE

Neptune is the farthest planet



ALTERNATIVE ICONS



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- Electronics hobby for men.
- Cheerful woman in laboratory technician.
- Flying drone with silver joystick.
- Young business woman looking at camera in office.
- Group of people working on a business plan in an office.
- Woman with arms crossed.

STORIES

- Artificial intelligence.
- Oops! 404 Error with a broken robot.
- Android.
- Drone Delivery.

ICON

- Technology of the Icon Pack.

Future

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Pana



Amico



Bro



Rafiki



Cuate

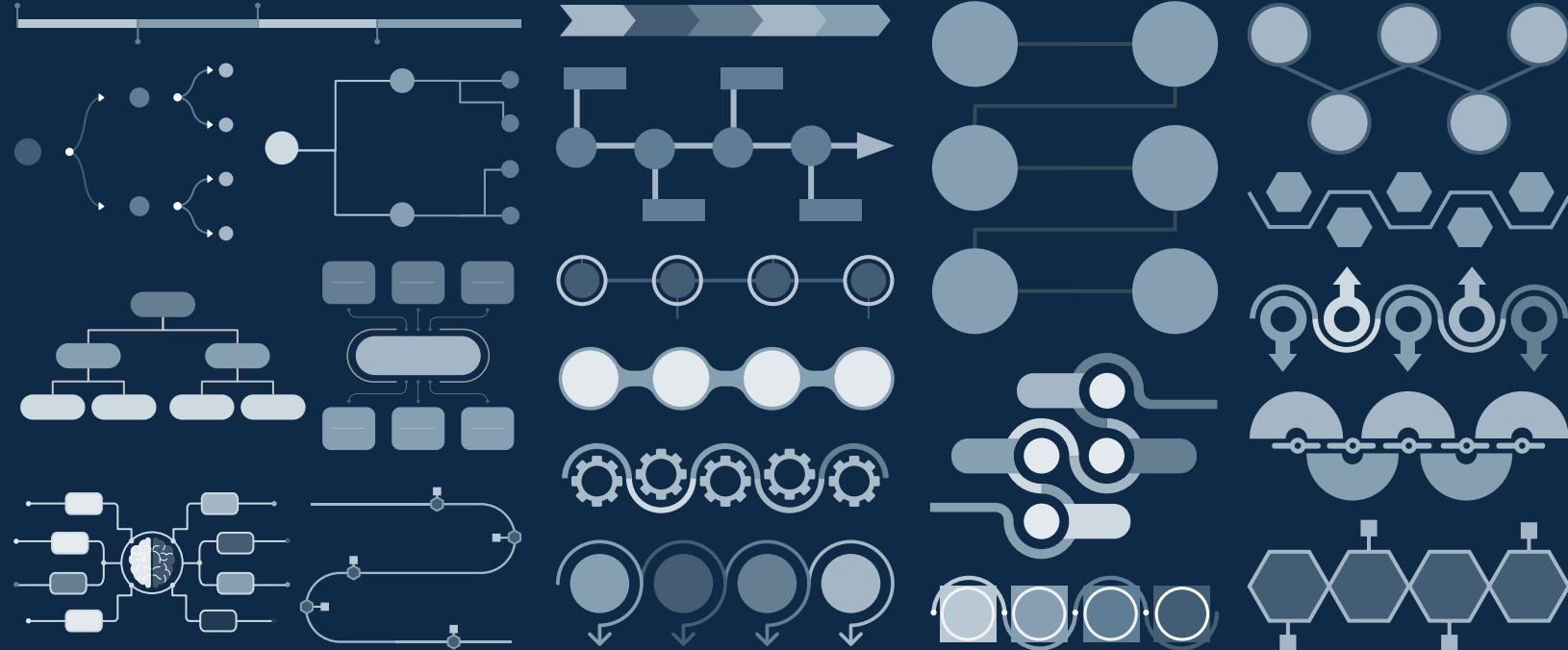
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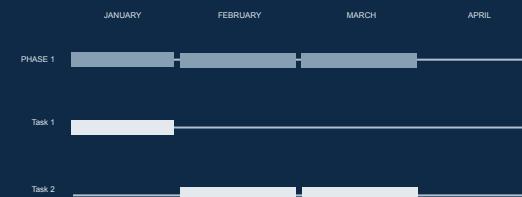
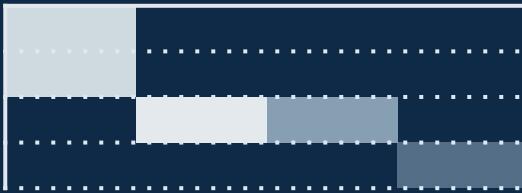
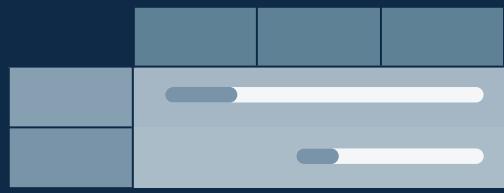
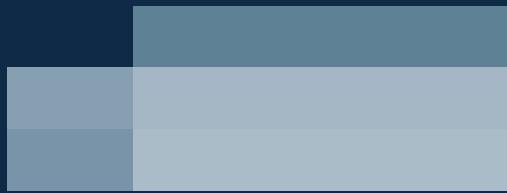
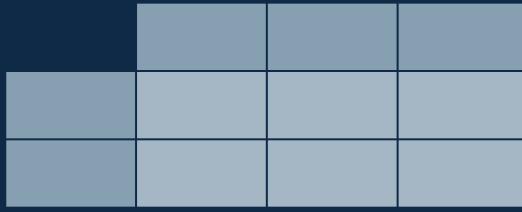
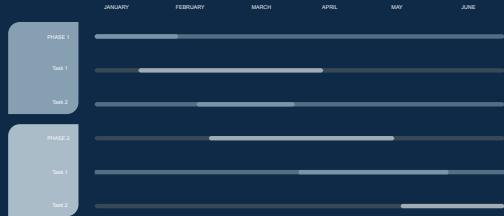
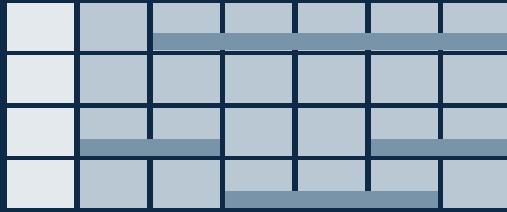
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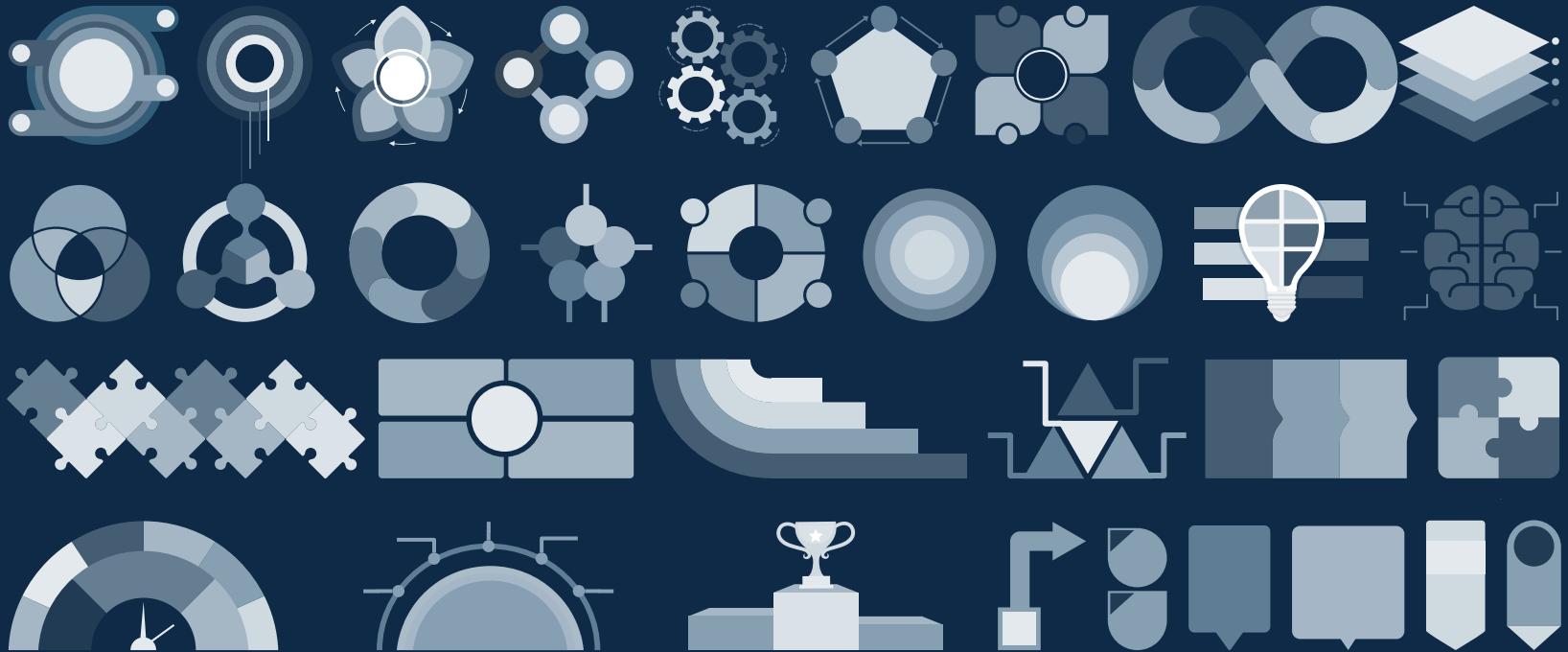
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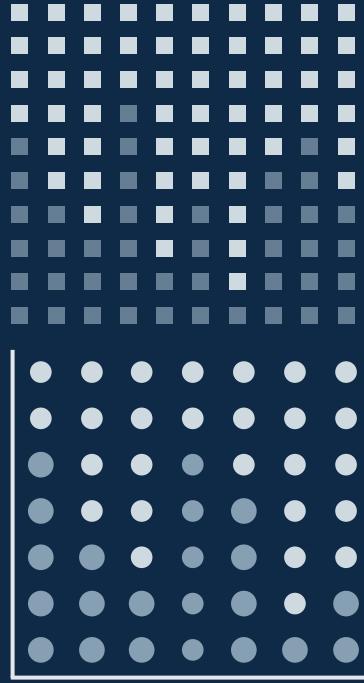










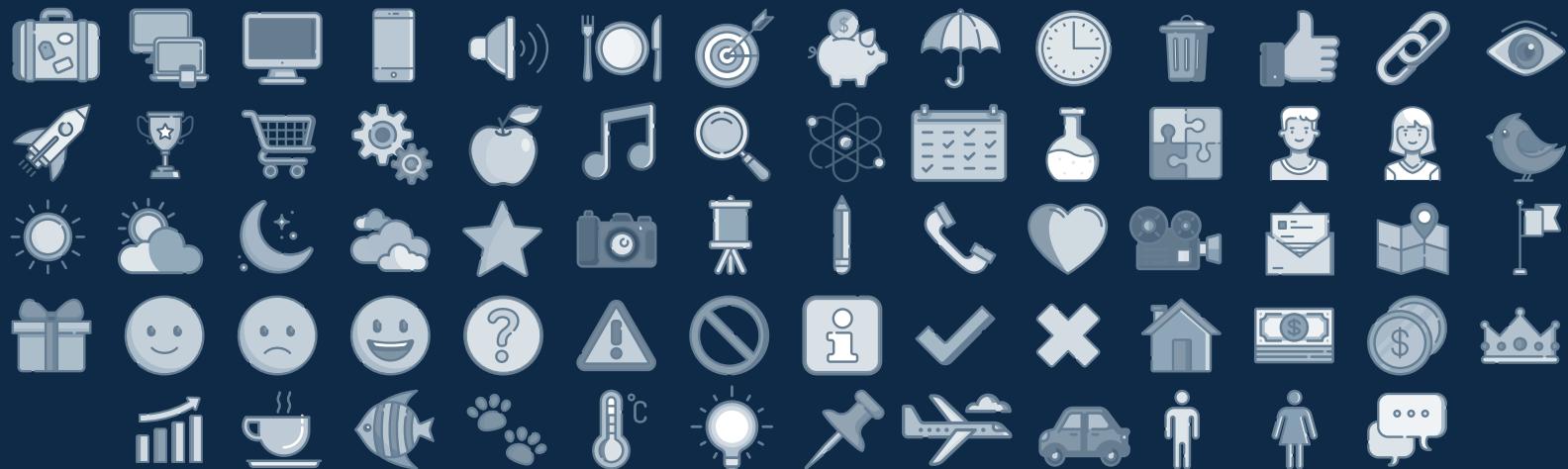


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Medical Icons



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Teamwork Icons



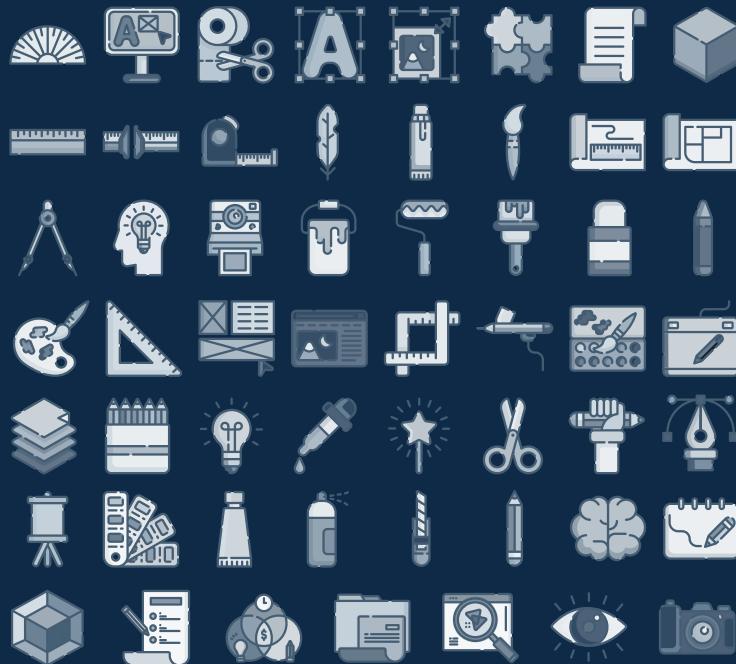
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Performing Arts Icons



Nature Icons



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