



# BORN ON ORBIT



**A New Age of Space Assembly**

# MEET OUR SUPER TEAM



**ABIR BELKHAIR**

Electrical  
Engineering  
Student



**SALMA ACHAQ**

Electromechanical  
Engineering  
Student



# PROJECT OUTLINE

What to Expect From Us

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Who We Are

Our Motivation

Problematic Statement

Our Solution

Impact & Vision

# OUR MOTIVATION

Get to Know Us



# PROBLEMATIC STATEMENT

## Problems and Challenges



**Transportation  
of Larger  
Structures to  
Space**



**Hazardous  
Human Space  
Flights**



**Highly  
Expensive Costs  
of Big Space  
Missions**



**Unreliability of  
Robotic Arm's  
Operations in  
Space**



# OUR SOLUTION

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BECAUSE SPACE  
NEEDS TO BE SMART  
TOO



# SPACE

## 4.0

# OUR SOLUTION CORE'S CONCEPT



MAKING  
SMART  
BUILDING  
BLOCKS TO  
BE SELF  
ASSEMBLED  
IN SPACE

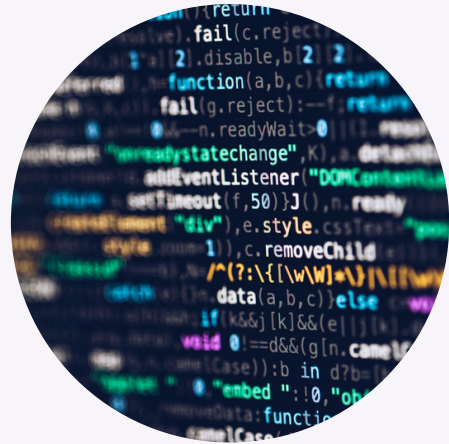
TRAINING  
ALGORITHMS  
(AI/ML) TO  
MAKE  
DECISIONS

USING  
DIGITAL  
TWINS AND  
AR

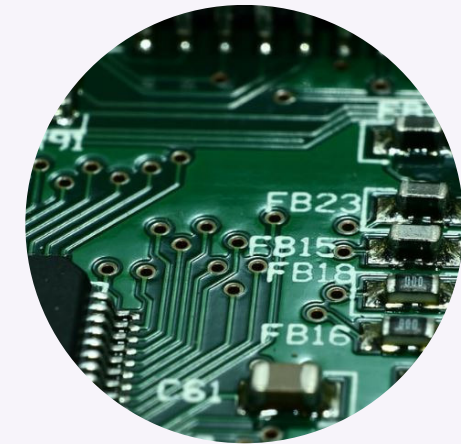
LAUNCHING  
MAIN PART  
FIRST AND  
THEN  
CONNECTED  
B-B

# SMART ASSEMBLY

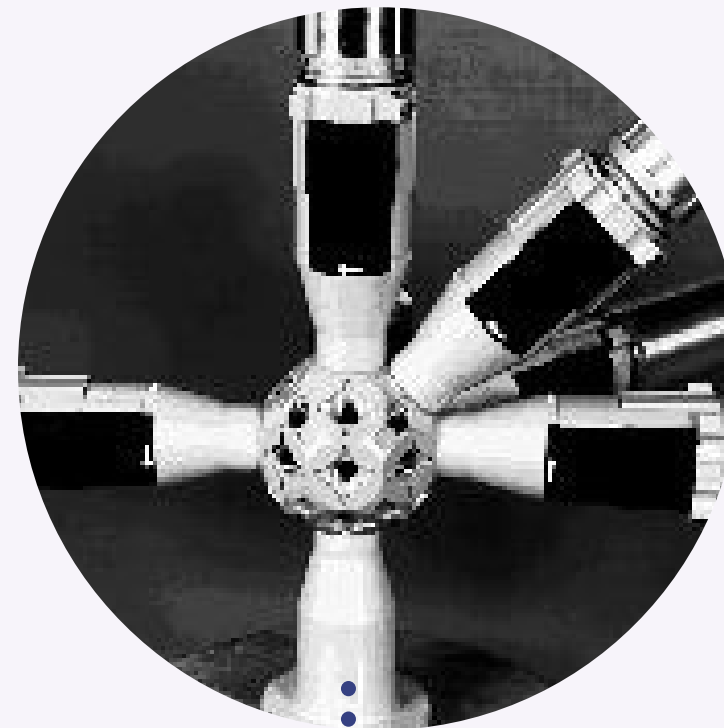
Artificial  
Intelligence



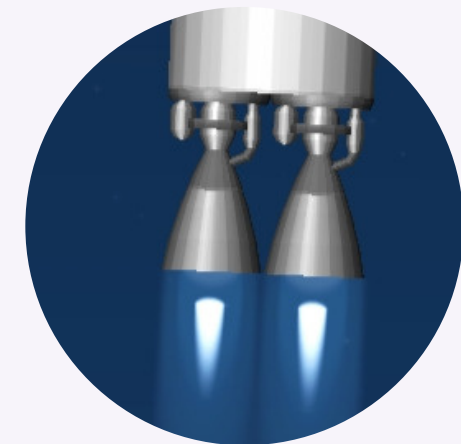
Microcontrollers



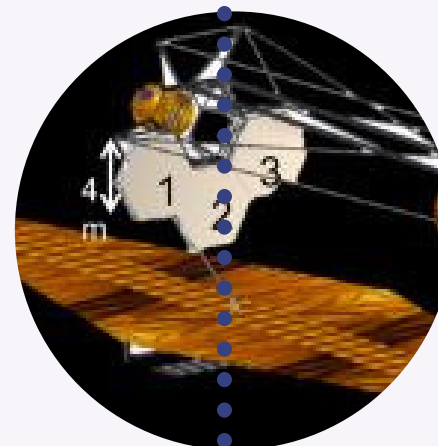
SMART BUILDING  
BLOC



Cameras &  
Sensors



Jet Propulsion



Structures



# ADVANTAGES

We have covered.

**SMALL & LIGHT**

**COST EFFECTIVE**

**HIGHER  
PRECISION**

**ENVIRONNEMENTAL  
STABILITY &  
DURABILITY**

**MANUFACTURABILITY**

**RELIABILITY &  
SECURITY**

## **MODEL INPUTS**

**Assembly Strategies**

**Orbit Design**

**Vehicule Design**

## **MODEL OUTPUTS**

**Metrics /  
Dimensions**



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graph LR; subgraph Inputs [MODEL INPUTS]; A[Assembly Strategies]; B[Orbit Design]; C[Vehicule Design]; end; subgraph Outputs [MODEL OUTPUTS]; D["Metrics / Dimensions"]; end; Inputs --> Outputs;
```

The diagram illustrates a process flow from model inputs to model outputs. On the left, under the heading 'MODEL INPUTS', there is a large yellow rectangular box containing three items: 'Assembly Strategies', 'Orbit Design', and 'Vehicule Design'. A horizontal blue arrow with a yellow triangular head points from this box to a similar yellow rectangular box on the right. This right box is under the heading 'MODEL OUTPUTS' and contains the text 'Metrics / Dimensions'.

# DATA USED

Data is the New Oil.

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**History of  
previous space  
risks ,previous  
failures &  
accidents**



**Space Environnement  
(Weather,radiation...)**



**Models,RCS &  
vehicles design &  
orbits parameters**

# IMPACT



**SAVE  
ASTRONAUTS  
LIFE**



**REDUCE MISSION  
COSTS**



**ALLOW SCIENTISTS &  
RESEARCHERS TO  
EXPLORE LIFE FORMS  
IN DEEPER SPACE**



# OUR VISION

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We're aiming that our smart building blocks will be fully autonomous, reusable and able to make right decisions as well as being reconfigurable depending on the nature of each task to enable us to dig deeper in space.





A photograph of Earth from space, showing a vast expanse of blue oceans and white clouds. The horizon is visible at the top, with a thin layer of atmosphere. The text "Thank you" is written in a large, black, cursive font across the center of the image.

*Thank  
you*