

# **SNS COLLEGE OF TECHNOLOGY**

Coimbatore-35 An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## DEPARTMENT OF AEROSPACE ENGINEERING

### **19ASZ301– ROBOTICS & AUTOMATION IN SPACE**

#### **III YEAR VI SEM**

#### **UNIT 5 – ROBOTIC APPLICATIONS IN SPACE**

#### TOPIC - INDUSTRIAL AND SAPCE APPLICATIONS OF ROBOTS





# **INDUSTRIAL APPLICATIONS OF ROBOTS**

#### **Role of Robots in Industry:**

- Enhance precision, efficiency, and safety
- Replace humans in repetitive, hazardous, or high-speed tasks

### **Major Application Areas:**

- Manufacturing: Welding, assembly, painting
- Packaging: Sorting, palletizing, labeling
- Inspection: Vision-based defect detection
- Warehousing: Automated Guided Vehicles (AGVs), inventory handling

Industry
Automotive
Electronics
Food & Beve
Logistics



	Robotic Task	Benefit
	Welding & assembly	Speed and consistency
	PCB handling, micro-assembly	Precision
erage	Sorting & packaging	Hygiene and speed
	Picking & warehousing	Efficiency and 24/7 operation

# **SPACE APPLICATIONS OF ROBOTS**



#### **Need for Robots in Space:**

- Operate in hostile, remote environments
- Support autonomy, maintenance, and exploration

### **Key Applications:**

- Planetary Rovers: Mars rovers like Perseverance, Curiosity
- Orbital Robots: Canadarm2 on the ISS for satellite deployment & repair
- Autonomous Satellites: Self-correcting orbits, station-keeping
- Lunar/Martian Excavators: ISRU (In-Situ Resource Utilization)







# COMPARISON – INDUSTRIAL VS. SPACE ROBOTS

Aspect	Industrial Robots
Operating Environment	Controlled (factories)
Power Supply	Stable electric source
Control Mode	Mostly pre-programmed
Maintenance	Regular servicing possible
Design Focus	Speed, repeatability

ROBOTIC APPLICATIONS IN SPACE/19ASZ301 ROBOTICS AND AUTOMATION IN SPACE/RAMESH M/AERO/SNSCT



Space Robots

Harsh (vacuum, radiation, extreme temperatures)

Solar, nuclear, or batterypowered

Semi-/fully autonomous, remote-controlled

Difficult or impossible

Robustness, adaptability



Thank You

ROBOTIC APPLICATIONS IN SPACE/19ASZ301 ROBOTICS AND AUTOMATION IN SPACE/RAMESH M/AERO/SNSCT

