

# Model Program Book



## SHORT TERM INTERNSHIP (Virtual)

Designed & Developed by



**ANDHRA PRADESH  
STATE COUNCIL OF HIGHER EDUCATION**

(A STATUTORY BODY OF GOVERNMENT OF ANDHRA PRADESH)

**PROGRAM BOOK FOR**  
**FOR SHORT-TERM INTERNSHIP**  
(Virtual)

**Name of the student** : NOWPADA RAJASEKHAR

**Name of the college** : Kuppam Engineering College

**Registration no** : 22F45A0302

**Period of the internship** : 8 Weeks From: 13-05-2024 To: 06-07-2024

**Name & address of inter  
organization** : Skilldzire Technologies Private Limited (Hyderabad)

**Jawaharlal Nehru Technological University**  
**Anantapur (JNTUA)**  
YEAR (2023-2024)

**An**  
**SHORT-TERM INTERNSHIP REPORT**

**On**

**INDUSTRIAL AUTOMATION**

**Submitted to**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY**  
**ANANTAPUR**

**In the accordance with the requirements for the degree of**

**BACHELOR OF TECHNOLOGY**

**In**

**MECHANICAL ENGINEERING**

**By**

**NOWPADA RAJASEKHAR**

**(22F45A0302)**

**Under the guidance of**

**Mr. K. GANESH, M.Tech., (Ph.D.),**

**Associate Professor**



**DEPARTMENT OF MECHANICAL ENGINEERING**

**KUPPAM ENGINEERING COLLEGE,**

**KUPPAM, CHITTOOR (Dist.) ANDHRA PRADESH 517425**

**(ACADAMIC YEAR:2023-2024)**



# **An Internship Report on**

## **INDUSTRIAL AUTOMATION**

Submitted in accordance with the requirement for the partial fulfillment of degree of Bachelor of  
Technology

Name of the College : **KUPPAM ENGINEERING COLLEGE**

Name of the Department : **MECHANICAL ENGINEERING**

Name of the Faculty Guide : **Mr. K. GANESH, M. Tech, (Ph.D.)**

Duration of the internship : **8 weeks    From: 13-05-2024    To: 06-07-2024**

Name of the Student : **NOWPADA RAJASEKHAR**

Program of Study : **B. Tech**

Year of Study : **IV YEAR I SEMESTER**

Register Number : **22F45A0302**

Date of submission :

## **Student Declaration**

I, **NOWPADA RAJASEKHAR** a student of **INTERNSHIP** Program, Reg. No. **21F41A0307** of the **Department of Mechanical Engineering**, College do hereby declare that I have completed the mandatory internship from **13 May 2024** to **06 July 2024** in **SkillDzire** under the Faculty Guideship of **Mr. K. GANESH, M.Tech., (Ph.D.), Associate Professor, Department of Mechanical Engineering** in **Kuppam Engineering College**.

*(Signature and Date)*

## Official Certification

This is to certify that **NOWPADA RAJASEKHAR** Reg. No.**22F45A0302** has completed his internship in “**SkillDzire**” on “**INDUSTRIAL AUTOMATION**” under my supervision as a part of partial fulfillment of the requirement for the Degree of Bachelor of Technology in the department of **MECHANICAL ENGINEERING IN KUPPAM ENGINEERING COLLEGE KUPPAM.**

*(Signatory with Date and Seal)*

Endorsements

*Faculty Guide*

*Head of the Department*

*Principal*

## Certificate from SkillDzire Organization



### CERTIFICATE OF INTERNSHIP

This is to Certify that Mr./Ms

**Nowpada Rajasekhar**

Enrolled in the **Mechanical Engineering - 22F45A0302**

From College **Kuppam Engineering College**

of university **JNTUA, Anantapur**

has Successfully Completed short-term Internship programme titled

**Industrial Automation**

under SkillDzire for 2 Months. Organized By **SkillDzire** in collaboration  
with **Andhra Pradesh State Council of Higher Education.**

Certificate ID:

SDST-19338

Issued On:

28-Jun-2024



Approved By AICTE



Authorized Signature

## Acknowledgements

An endeavor of a long period can be successful only with the advice of many well-wishers. We take this opportunity to express our deep gratitude and appreciation to all those who encouraged us for successfully completion of the internship work.

I am thankful to my guide **Mr. K. GANESH, M. Tech, (Ph.D.)**, Associate Professor in department of Mechanical Engineering, Kuppam Engineering College, Kuppam, for his valuable guidance and suggestions throughout the period, till the end of internship work.

My special thanks to **Mr. K. Ganesh, M. Tech., (Ph.D.)**, Associate Professor & HOD, Department of Mechanical Engineering, during the progress of internship work, for his timely suggestions and help in spite of his busy schedule.

I would like to express my sincere gratitude to **Principal Dr. S. Sudhakar Babu, M.E., Ph.D.**, for his valuable support and encouragement during internship work. I wish to express my sincere thanks to Management of Kuppam Engineering College, Kuppam for their consistent help and encouragement to complete the internship work.

Finally, I would like to express sincere thanks to internal advisor committee members, internship coordinator, Faculty Members of Mechanical Engineering Department, and Lab technicians, one and all who have helped me to complete the internship work successfully.

With regards

N. RAJASEKHAR

22F45A0302



## CONTENTS

<b>Sl No</b>	<b>Name of the Topic</b>	<b>Page No</b>
1	EXECUTIVE SUMMARY	1-2
2	OVERVIEW OF THE ORGANIZATION	3-5
3	INTERNSHIP PART	6-8
4	ACTIVITY LOGS AND WEEKLY REPORTS	9-24
5	OUTCOMES AND DESCRIPTION	25-28
6	REAL TIME TECHNICAL SKILLS ACQUIRED	29-31
7	MANAGERIAL SKILLS ACQUIRED	32-33
8	COMMUNICATION SKILLS OVERVIEW	34-34
9	ABILITIES IN GROUP DISCUSSION	35-35
10	TECHNOLOGIAL DEVELOPMENTS OBSERVED	36-38

# CHAPTER 1: EXECUTIVE SUMMARY

## 1.1 Learning Objectives and Outcomes

1. **Understanding Automation Systems:** To provide learners with a comprehensive understanding of the key concepts, components, and systems used in industrial automation, including PLCs (Programmable Logic Controllers), SCADA (Supervisory Control and Data Acquisition), and DCS (Distributed Control Systems).
2. **Hands-On Experience with Automation Tools:** To enable learners to gain practical experience using industry-standard automation tools and software, helping them to design, program, and troubleshoot automation systems.
3. **Integration of Automation Technologies:** To teach learners how to integrate different automation technologies and systems effectively within industrial environments, ensuring seamless operation and efficiency.
4. **Safety and Standards Compliance:** To educate learners on the safety protocols, industry standards, and regulations related to industrial automation, ensuring they can implement automation solutions that are both safe and compliant.
5. **Problem-Solving in Automation:** To develop learners' ability to diagnose and solve common issues that arise in automated systems, equipping them with the skills to maintain and optimize these systems in a real-world setting.
6. **Proficiency in Automation Systems:** Learners will become proficient in using and programming PLCs, SCADA, DCS, and other automation systems, enabling them to design and manage automated processes in industrial environments.
7. **Practical Application Skills:** Learners will be able to apply their knowledge to real-world industrial scenarios, from setting up automation systems to troubleshooting and optimizing them for better performance.
8. **Industry-Recognized Certification:** Upon completion of the course, learners will receive a certification that is recognized in the industry, which can enhance their employment prospects in the field of industrial automation.
9. **Enhanced Problem-Solving and Critical Thinking:** Learners will develop strong problem-solving skills specific to industrial automation, allowing them to identify, diagnose, and resolve issues efficiently.
10. **Understanding of Safety and Compliance:** Learners will be knowledgeable about safety protocols and industry standards, ensuring that they can create and maintain automation systems that are safe and compliant with regulations.

## 1.2 Summary of Activities

**1. Development of Specialized Courses:** SkillDzire creates in-depth courses specifically focused on Industrial Automation, covering essential topics such as PLC (Programmable Logic Controllers), SCADA (Supervisory Control and Data Acquisition), DCS (Distributed Control Systems), robotics, and automation systems integration.

**2. Hands-On Training:** The courses emphasize practical, hands-on training, allowing learners to work with real-world automation tools and software. This experience is crucial for understanding the intricacies of automation systems and preparing learners for industry roles.

**3. Certification Programs:** SkillDzire offers certification upon course completion, which is recognized in the industry. These certifications validate the learner's expertise in Industrial Automation and can significantly enhance their career prospects.

**4. Industry Collaboration:** SkillDzire collaborates with industry experts and automation companies to ensure that their course content is current and relevant. These partnerships also provide learners with access to real-world case studies and the latest technologies used in the field.

**5. Workshops and Webinars:** The company organizes workshops, webinars, and live sessions focused on Industrial Automation. These events cover the latest trends, technologies, and best practices, offering learners additional insights and knowledge beyond the standard curriculum.

**6. Career Support and Placement:** SkillDzire provides career support tailored to the Industrial Automation field, including resume building, interview preparation, and job placement services. This support helps learners transition into roles such as Automation Engineer, Control Systems Engineer, and more.

**7. Community Engagement:** The company fosters a community of learners and professionals in Industrial Automation. This community allows for knowledge sharing, networking, and collaborative problem-solving, enhancing the overall learning experience.

**8. Continuous Learning and Updates:** SkillDzire ensures that its courses and content are regularly updated to reflect the latest developments in Industrial Automation. This commitment to continuous learning helps learners stay ahead in a rapidly evolving industry.

## **CHAPTER 2: OVERVIEW OF THE ORGANIZATION**

### **2.1 Introduction of the Organization**

**SkillDzire** is an organization that provides internship opportunities for students in India. The organization was founded in 2020 and is headquartered in K.V Rangareddy, Telangana, India. SkillDzire is India's largest real-time learning platform. It is the best job-oriented training organization. With us, you can explore real-time skills with industry experts.

### **2.2 Vision, Mission, and Values of the Organization**

#### **2.2.1 Vision:**

To be the leading catalyst for professional and personal growth by providing innovative and transformative learning experiences that empower individuals and organizations to thrive in an ever-evolving world.

#### **2.2.2 Mission:**

Our mission at SkillDzire is to bridge the gap between potential and achievement by delivering tailored skill development and training solutions. We are dedicated to enhancing capabilities, fostering continuous learning, and driving success through a commitment to excellence, personalized support, and cutting-edge technology.

#### **2.2.3 Values:**

- Innovation
- Integrity
- Collaboration
- Excellence
- Customer-Centricity
- Continuous Improvement
- Empowerment

### **2.3 Policy of the Organization, in relation to the intern role**

**SkillDzire** is committed to providing interns with a positive and enriching experience.

The organization has a number of policies in place to ensure that interns are treated fairly and respectfully. These policies include:

- Interns will be supervised by experienced professionals who will provide them with guidance and support.
- Interns will be given the opportunity to work on real-world projects that will help them develop their skills and experience.
- Interns will be compensated for their work.
- Interns will be treated with respect and dignity.

## **2.4 Organizational Structure**

**SkillDzire** is a flat organization with a team of dedicated professionals who are passionate about helping students succeed. The organization has a number of departments, including:

- Business Development
- Marketing and communication
- Operations
- Human Resources
- Research and Development
- Customer support

## **2.5 Roles and responsibilities of the employees in which the intern is placed**

Interns at **SkillDzire** may be placed in a variety of roles, depending on their skills and experience. Some of the common roles include:

- Marketing Intern
- Business Development Intern
- Operations Intern
- Human Resources Intern
- Research and development Intern
- Innovation and Growth intern

## **2.6 Performance of the Organization in terms of turnover, profits, market reach and market value**

SkillDzire Technologies Private Limited, a growing player in the online learning sector, has shown promising but modest financial performance. The company's revenue for the fiscal year ending March 2023 was under INR 1 crore. Despite its relatively small size, SkillDzire is gaining traction in its market, focusing on providing industry-oriented courses. However, details on its profitability, market reach, and overall market value are limited, suggesting that the company is still in its early stages of growth and market penetration.

## **2.7 Future Plans of the Organization**

**Skilldzire** is committed to continuing to provide high-quality internship opportunities for students. The organization is also planning to expand its offerings to include international internships. SkillDzire is also committed to developing new and innovative ways to help students succeed in their careers.

## **CHAPTER 3: INTERNSHIP PART**

### **3.1 Internship Overview**

An Industrial Automation internship provides a comprehensive, hands-on experience for aspiring automation professionals. Interns are introduced to core concepts such as PLC programming, SCADA systems, and Distributed Control Systems (DCS). The program emphasizes practical application, allowing interns to work with industry-standard tools and software to design, implement, and troubleshoot automation systems. Interns gain real-world experience through project work, where they integrate various automation technologies and solve complex industrial challenges. The internship also includes training on safety protocols and industry standards, ensuring that participants are equipped to create compliant and efficient automation solutions. Guided by industry mentors, interns develop both technical skills and professional competencies, preparing them for careers in roles such as Automation Engineer or Control Systems Engineer.

### **3.2 Working Conditions**

Interns work at desks to design and program automation systems using specialized software, which involves detailed technical tasks and documentation. They also spend time on the industrial floor or in lab settings, interacting with equipment such as PLCs, sensors, and actuators. Safety is a critical aspect, requiring adherence to protocols and the use of personal protective equipment (PPE) like safety glasses and gloves. Physical demands may include standing for extended periods, navigating around machinery, and occasionally lifting or handling equipment. Work hours are generally standard but may include overtime or shift work depending on project needs. Interns receive close supervision and mentorship from experienced professionals, working collaboratively with engineers and technicians. This hands-on experience is designed to provide practical skills and insight into the complexities of automation systems, preparing interns for future roles in the field.

### **3.3 Weekly Work Schedule**

Interns typically work 40 hours per week remotely, following a flexible schedule that accommodates individual needs and time zones. Interns are given the opportunity to attend virtual training sessions and networking events to enhance their knowledge and connect with other professionals in the industry.

### **3.4 Equipment Used**

Industrial automation relies on key equipment such as PLCs (Programmable Logic Controllers) for controlling processes and HMIs (Human-Machine Interfaces) for operator interaction. Sensors and actuators monitor conditions and execute mechanical movements, respectively. Industrial robots automate tasks like assembly and packaging, while VFDs (Variable Frequency Drives) control motor speeds. SCADA systems (Supervisory Control and Data Acquisition) and DCS (Distributed Control Systems) monitor and manage large-scale processes, ensuring efficient and precise operation.

### **3.5 Tasks Performed**

In industrial automation, a wide range of tasks are performed to optimize manufacturing processes and ensure efficiency, precision, and safety. Key tasks include:

#### **3.5.1 System Design and Programming:**

Developing control systems, including PLC programming and configuring HMIs to automate processes.

#### **3.5.2 Installation and Integration:**

Installing automation equipment, such as sensors, actuators, and control panels, and integrating them into existing systems.

#### **3.5.3 Testing and Simulation:**

Running tests and simulations to ensure that automation systems function correctly and meet design specifications.

#### **3.5.4 Troubleshooting and Maintenance:**

Identifying and resolving issues in automated systems, performing routine maintenance to prevent breakdowns.

#### **3.5.5 Monitoring and Control:**

Using SCADA systems or DCS to monitor processes in real-time and make adjustments as needed to maintain optimal operation.

#### **3.5.6 Data Collection and Analysis:**

Gathering data from sensors and systems for analysis, helping to improve processes, reduce waste, and enhance productivity.



## **3.6 Skills Acquired**

To excel in industrial automation, professionals need to acquire a diverse set of skills, including:

### **3.6.1. PLC Programming:**

Proficiency in programming Programmable Logic Controllers (PLCs) using languages like Ladder Logic, Structured Text, and Function Block Diagrams.

### **3.6.2. Electrical and Electronics Knowledge:**

A solid understanding of electrical circuits, sensors, actuators, and motor controls is essential for designing and troubleshooting automation systems.

### **3.6.3. HMI and SCADA Systems:**

Skills in configuring and operating Human-Machine Interfaces (HMIs) and Supervisory Control and Data Acquisition (SCADA) systems for monitoring and controlling industrial processes.

### **3.6.4. Mechanical Aptitude:**

Understanding mechanical systems, including robotics, pneumatics, and hydraulics, to integrate and maintain automation equipment effectively.

### **3.6.5. Networking and Communication Protocols:**

Familiarity with industrial communication protocols like Modbus, Profibus, and Ethernet/IP for connecting and communicating between devices.

### **3.6.6. Problem-Solving and Troubleshooting:**

Strong analytical skills to diagnose and fix issues in automated systems, ensuring smooth operation and minimal downtime.

### **3.6.7. Data Analysis:**

Ability to collect, analyze, and interpret data from automated systems to optimize performance and efficiency.

### **3.6.8. Safety Standards:**

Knowledge of industrial safety standards and practices to ensure safe design, operation, and maintenance of automation systems.

## ACTIVITY LOG FOR THE FIRST WEEK

<b>Day&amp; Date</b>	<b>Description of the daily activity</b>	<b>Learning Outcome</b>	<b>Person In- Charge Signatur e</b>
Day - 1			
Day - 2			
Day - 3			
Day - 4			
Day - 5			
Day -6			

**WEEKLY REPORT**  
**WEEK – 1 (From Dt                      to Dt                      )**

**Objective of the Activity Done:**

**Detailed Report:**

## ACTIVITY LOG FOR THE SECOND WEEK

<b>Day&amp; Date</b>	<b>Description of the daily activity</b>	<b>Learning Outcome</b>	<b>Person In- Charge Signatu re</b>
Day – 1			
Day - 2			
Day – 3			
Day – 4			
Day – 5			
Day –6			

## **WEEKLY REPORT**

**WEEK – 2 (From                      to                      )**

**Objective of the Activity Done:**

**Detailed Report:**

## ACTIVITY LOG FOR THE THIRD WEEK

<b>Day &amp; Date</b>	<b>Description of the daily activity</b>	<b>Learning Outcome</b>	<b>Person In- Charge Signatu re</b>
Day – 1			
Day - 2			
Day – 3			
Day – 4			
Day – 5			
Day -6			

## **WEEKLY REPORT**

**WEEK – 3 (From                      to                      )**

**Objective of the Activity Done:**

**Detailed Report:**

## ACTIVITY LOG FOR THE FORTH WEEK

<b>Day &amp; Date</b>	<b>Description of the daily activity</b>	<b>Learning Outcome</b>	<b>Person In- Charg e Signat ure</b>
Day – 1			
Day - 2			
Day – 3			
Day – 4			
Day – 5			
Day –6			



## **WEEKLY REPORT**

**WEEK – 4 (From                      to                      )**

**Objective of the Activity Done:**

**Detailed Report:**

## ACTIVITY LOG FOR THE FIFTH WEEK

<b>Day&amp; Date</b>	<b>Description of the daily activity</b>	<b>Learning Outcome</b>	<b>Person In- Charge Signatur e</b>
Day – 1			
Day - 2			
Day – 3			
Day – 4			
Day – 5			
Day –6			

## **WEEKLY REPORT**

**WEEK – 5 (From                      to                      )**

**objective of the Activity Done:**

**Detailed Report:**

## ACTIVITY LOG FOR THE SIXTH WEEK

<b>Day &amp; Date</b>	<b>Description of the daily activity</b>	<b>Learning Outcome</b>	<b>Person In- Charge Signatu re</b>
Day – 1			
Day - 2			
Day – 3			
Day – 4			
Day – 5			
Day –6			

## **WEEKLY REPORT**

**WEEK – 6 (From            to            )**

**Objective of the Activity Done:**

**Detailed Report:**

## ACTIVITY LOG FOR THE SEVENTH WEEK

<b>Day &amp; Date</b>	<b>Description of the daily activity</b>	<b>Learning Outcome</b>	<b>Person In- Charge Signatu re</b>
Day – 1			
Day - 2			
Day – 3			
Day – 4			
Day – 5			
Day –6			

## **WEEKLY REPORT**

**WEEK – 7 (From                      to                      )**

**Objective of the Activity Done:**

**Detailed Report:**

## ACTIVITY LOG FOR THE EIGHTH WEEK

<b>Day &amp; Date</b>	<b>Description of the daily activity</b>	<b>Learning Outcome</b>	<b>Person In- Charge Signatu re</b>
Day – 1			
Day - 2			
Day – 3			
Day – 4			
Day – 5			
Day –6			



## **WEEKLY REPORT**

**WEEK – 8 (From                      to                      )**

**Objective of the Activity Done:**

**Detailed Report:**

## CHAPTER 5: OUTCOMES DESCRIPTION

### Describe the work environment you have experienced

Here is the description of the work environment you have experienced, tailored to a virtual internship.

### 5.1 People Interactions:

#### Mentorship and Guidance

- **Supervisors/Mentors:** Interns often work closely with experienced engineers or technicians who provide guidance, share knowledge, and offer feedback. These mentors help you understand complex systems, troubleshoot issues, and navigate the professional environment.
- **Regular Check-ins:** You might have scheduled meetings or informal check-ins where mentors review your progress, discuss challenges, and set new goals. These interactions are key to your growth and understanding of the field.

#### Team Collaboration

- **Engineering Teams:** Interns typically collaborate with a multidisciplinary team, including electrical, mechanical, and software engineers. These interactions involve brainstorming sessions, project meetings, and problem-solving discussions where each team member contributes their expertise.
- **Technicians and Operators:** On the plant floor, you'll interact with technicians and machine operators who run and maintain the automated systems. Learning from their practical experience helps you understand the real-world applications of your work.

#### Cross-Departmental Communication

- **Project Managers:** Interns often engage with project managers who oversee the entire automation project. This interaction provides insights into project timelines, budget constraints, and the coordination required to keep everything on track.
- **Quality Assurance and Safety Teams:** You may also work with QA and safety teams to ensure that the automation systems meet industry standards and regulations. This involves discussions about compliance, safety protocols, and quality control measures.

### **Peer Interaction**

- **Fellow Interns:** If there are other interns, you'll likely collaborate with them on projects or share experiences. Peer interaction can be a great source of support, learning, and networking.
- **Workshops and Training Sessions:** Interns often participate in group training sessions or workshops, where interaction with peers and instructors helps build both technical skills and professional relationships.

### **Client and Vendor Interaction**

- **Clients:** In some cases, interns may have the opportunity to interact with clients, especially during system installations or demonstrations. Understanding client needs and feedback is valuable for refining automation solutions.
- **Vendors/Suppliers:** You might also interact with vendors who supply automation equipment and software. These discussions can offer insights into the latest technologies and how to integrate them into existing systems.

### **Professional Networking**

- **Industry Events:** Interns may attend industry events, conferences, or company meetings where they can network with professionals in the field. These interactions are essential for building a professional network and learning about career opportunities in industrial automation.

## **5.2 Facilities Available and Maintenance**

### **Preventive Maintenance:**

- **Scheduled Checks:** Interns may assist in routine inspections and preventive maintenance of automation systems, helping to ensure that equipment operates smoothly and efficiently.
- **Documentation:** Part of maintenance work involves documenting the condition of equipment, noting any wear and tear, and updating maintenance logs.

### **Troubleshooting and Repairs:**

- **Diagnostic Tools:** Interns might learn to use diagnostic tools and software to identify issues in automated systems, such as sensor malfunctions, software errors, or mechanical failures.
- **Hands-On Repairs:** Depending on their level of expertise, interns may assist in repairing or replacing faulty components, under the supervision of experienced technicians or engineers.

### **System Upgrades:**

- **Software Updates:** Interns could be involved in updating software for PLCs or SCADA systems, ensuring that the latest features and security patches are applied.
- **Hardware Upgrades:** They may also participate in upgrading hardware, such as installing new sensors or enhancing existing robotic systems to improve efficiency or capacity.

### **Calibration and Testing:**

- **Equipment Calibration:** Interns might help in calibrating sensors, actuators, and other automation equipment to ensure accuracy and consistency in operation.
- **Performance Testing:** Post-maintenance, interns could be involved in testing systems to verify that they are functioning correctly and meeting performance specifications.

## **5.3 Clarity of Job Roles, Protocols, Procedures, and Processes:**

### **Job Roles**

- **Defined Responsibilities:** At the start of the internship, roles and responsibilities are usually clearly outlined. Interns are informed about their specific tasks, such as assisting in system design, programming PLCs, or participating in troubleshooting efforts. This helps them understand where they fit within the larger project or team.
- **Reporting Structure:** Interns are typically made aware of the reporting hierarchy, knowing who their direct supervisor or mentor is, as well as any other team members they may need to collaborate with. This clarity helps streamline communication and ensures interns know whom to approach for guidance or approvals.

### **Protocols**

- **Safety Protocols:** Safety is paramount in industrial settings. Interns are thoroughly briefed on safety protocols, including the proper use of personal protective equipment (PPE), emergency procedures, and specific safety measures related to automated systems (like lockout/tagout procedures). These protocols are usually part of an initial orientation.
- **Data and System Access:** Interns are informed about protocols related to accessing sensitive data or control systems. This includes understanding permissions, confidentiality agreements, and proper handling of proprietary information.

## **Procedures**

- **Standard Operating Procedures (SOPs):** Interns are introduced to SOPs that guide how specific tasks should be performed, such as system calibration, equipment maintenance, or programming processes. These procedures are documented and often provided as part of the training materials.
- **Step-by-Step Guidance:** For complex tasks, procedures are broken down into detailed steps, ensuring interns can follow along without confusion. This might include checklists for testing systems, scripts for software updates, or guidelines for conducting system audits.

## **Processes**

- **Project Workflow:** The overall process for handling projects is usually explained early on, from the initial planning stages through to implementation and post-installation support. This helps interns understand the lifecycle of automation projects and their role within it.
- **Documentation and Reporting:** Interns are trained on the processes for documenting their work, such as logging system changes, writing technical reports, or updating maintenance records. This ensures that their contributions are properly recorded and that they can learn the importance of thorough documentation.

## 6. Describe the real time technical skills you have acquired

These are the current technical skills I have acquired:

### Gaining Technical Skills in the Industrial Automation

#### 6.1 PLC Programming

- **Real-Time Skill:** Gained hands-on experience programming Programmable Logic Controllers (PLCs), which are the backbone of most automated systems. This involved writing and debugging ladder logic, as well as configuring input/output (I/O) modules.
- **Application:** Worked on real-time projects where PLCs controlled machinery or processes, learning to adjust programming to optimize performance and respond to changes in system requirements.

#### 6.2 HMI Development

- **Real-Time Skill:** Developed Human-Machine Interfaces (HMIs) to allow operators to interact with automated systems. This involved designing user-friendly screens, configuring alarms, and setting up data logging.
- **Application:** Created HMI panels for live systems, enabling operators to monitor and control processes effectively. Gained experience in customizing HMIs to meet specific client needs or industry standards.

#### 6.3 SCADA System Configuration

- **Real-Time Skill:** Learned to configure Supervisory Control and Data Acquisition (SCADA) systems, which are used to monitor and control large-scale industrial processes.
- **Application:** Participated in setting up SCADA systems for real-time data acquisition and monitoring, ensuring that the system could handle the required data throughput and provide timely alerts for any anomalies.

#### 6.4 Sensor Integration and Calibration

- **Real-Time Skill:** Acquired skills in integrating and calibrating various sensors (e.g., temperature, pressure, proximity) into automated systems. This included understanding signal types, wiring, and calibration techniques.
- **Application:** Worked on real-time sensor installations and calibrations to ensure accurate data collection and system responsiveness, particularly in environments where precision was critical.

### 6.5 Robotics Programming and Operation

- **Real-Time Skill:** Gained experience in programming and operating industrial robots, including configuring motion paths, setting up end effectors, and ensuring safety protocols.
- **Application:** Participated in live robot programming for tasks like material handling or assembly, learning to optimize robot speed, precision, and coordination with other automated systems.

### 6.6 Troubleshooting and Diagnostics

- **Real-Time Skill:** Developed strong troubleshooting skills, learning to quickly diagnose and resolve issues with automated systems. This involved using diagnostic tools, interpreting error codes, and systematically testing system components.
- **Application:** Engaged in real-time troubleshooting scenarios where prompt action was needed to minimize downtime. Learned to identify root causes of issues and implement fixes efficiently.

### 6.7 Network Setup and Communication Protocols

- **Real-Time Skill:** Learned to set up and configure industrial communication networks, including Ethernet/IP, Modbus, and Profibus. This involved ensuring reliable communication between different parts of an automated system.
- **Application:** Configured real-time communication networks that linked PLCs, HMIs, and SCADA systems, ensuring seamless data exchange and system coordination across large-scale operations.

### 6.8 Preventive Maintenance and System Optimization

- **Real-Time Skill:** Acquired knowledge of preventive maintenance practices, including regular system checks, updating software, and replacing worn components.
- **Application:** Participated in maintenance schedules for live systems, optimizing their performance through regular updates and preventive measures, which helped in avoiding unexpected breakdowns.

## **6.9 Safety System Implementation**

- **Real-Time Skill:** Learned to implement safety systems like emergency stop circuits, safety PLCs, and light curtains, ensuring that automated processes met safety standards.
- **Application:** Installed and tested safety systems in real-time environments, ensuring that all safety protocols were fully operational and compliant with industry regulations.

## **6.10 Documentation and Reporting**

- **Real-Time Skill:** Developed the ability to document technical processes, system configurations, and troubleshooting steps effectively. This included creating user manuals, maintenance logs, and project reports.
- **Application:** Contributed to real-time projects by documenting every step of the process, ensuring that all changes and updates were well recorded for future reference and compliance audits.



## 7. Describe the managerial skills you have acquired

During my experience, I have developed a robust set of managerial skills that are critical for success in any professional setting.

**Planning** has been at the forefront, as I learned to meticulously outline tasks and allocate resources effectively to meet deadlines. I honed my ability to anticipate challenges and prepare contingency plans, ensuring that projects stayed on track even when unexpected issues arose. This skill has been vital in maintaining productivity and achieving objectives within the set timelines.

**Leadership** was another key area of growth. I took on roles that required guiding team members, providing direction, and making strategic decisions. I learned to motivate and inspire others, fostering a collaborative environment where everyone felt valued and empowered to contribute. My leadership style evolved to be more inclusive and empathetic, recognizing the strengths of each team member and leveraging them to achieve collective goals.

**Teamwork** played a crucial role in my development. I engaged in numerous collaborative projects where effective communication and coordination were essential. I learned the importance of active listening, constructive feedback, and mutual respect in ensuring the team functioned smoothly. Working in diverse groups also taught me to appreciate different perspectives and find common ground, which significantly enhanced the quality of our outcomes.

**Behavior and professionalism** were consistently emphasized in my role. I learned to maintain a positive and proactive attitude, even in challenging situations. This involved managing my emotions, staying calm under pressure, and demonstrating reliability and integrity in all my interactions. I also focused on developing my interpersonal skills, which improved my ability to build strong working relationships and navigate complex social dynamics in the workplace.

In terms of **workmanship and productivity**, I became adept at managing my time efficiently. I learned to prioritize tasks based on their urgency and importance, which helped me make the most of my working hours. I also implemented strategies to minimize distractions and maintain focus, which significantly improved my output and the quality of my work.

My experience included a continuous process of weekly improvement in competencies. I set specific goals each week, whether related to technical skills, knowledge acquisition, or soft skills, and worked diligently to achieve them. This ongoing self-assessment and improvement cycle ensured that I consistently grew and adapted to new challenges.

**Goal setting and decision-making** were integral to my role. I learned to set realistic, measurable goals that aligned with the broader objectives of the organization. This involved breaking down larger tasks into manageable milestones and regularly reviewing progress to make necessary adjustments. Decision-making skills were sharpened as I was often required to make informed choices under tight deadlines, balancing short-term needs with long-term goals.

Finally, **performance analysis** was a critical component of my managerial development. I learned to evaluate both my performance and that of my team, using metrics and feedback to identify areas for improvement. This reflective practice enabled me to implement changes that enhanced efficiency and effectiveness, ensuring that we continuously delivered high-quality results.

These managerial skills, cultivated through practical experience and ongoing reflection, have equipped me with the tools needed to lead, collaborate, and succeed in a dynamic professional environment.

## **8. Describe how you could improve your communication skills**

Improving communication skills is essential for both personal and professional growth. To enhance my abilities in various aspects, I plan to focus on practicing clear and concise speech. Engaging in public speaking opportunities, such as presentations or seminars, will help me articulate my thoughts effectively and build confidence in delivering messages. Recording and reviewing my speeches can also assist in identifying areas for improvement. Additionally, refining my written communication by studying effective writing techniques and practicing different forms of writing, such as reports, emails, and proposals, will contribute to enhancing clarity and coherence in my documents. Regularly reading well-written materials and seeking feedback on my writing will further aid in this development.

Improving conversational skills will involve engaging more frequently in meaningful conversations with colleagues, friends, and mentors. Actively listening and asking insightful questions will enable me to better understand others and contribute to more productive discussions. Building confidence while communicating can be achieved through consistent practice and preparation, setting small, achievable communication goals, and reflecting on successful interactions to boost self-esteem and reduce hesitation during conversations. Managing communication anxiety will also be a focus, incorporating relaxation techniques like deep breathing and mindfulness, and thoroughly preparing for discussions or presentations to reduce anxiety and improve overall performance.

To ensure that my messages are understood, I will work on organizing my thoughts clearly before communicating and using simple, precise language. Asking for feedback to confirm that my message was received correctly can help address any misunderstandings promptly. Enhancing my ability to speak extemporaneously will involve practicing impromptu speaking exercises, participating in debates, or joining discussion groups where quick thinking and spontaneous speech are required. Summarizing and highlighting key points during conversations and presentations using structured methods will ensure that important messages are conveyed clearly. Additionally, I will be mindful of maintaining professional niceties and adhering to communication protocols, such as proper greetings, thanking others, and showing appreciation, to foster respectful and positive interactions.

**9. Describe how you could enhance your abilities in group discussions, participation in teams, contribution as a team member, leading a team/activity.**

To enhance my abilities in group discussions, team participation, and leadership in the context of industrial automation, I would focus on the following areas:

**1. Domain knowledge expansion:** Continuously update my knowledge base with the latest developments, trends, and technologies in industrial automation, such as Industry 4.0, IoT, robotics, and machine learning.

**2. Technical skill development:** Improve my understanding of automation tools, programming languages (e.g., Python, C++, PLC programming), and software used in industrial automation (e.g., SCADA, DCS).

**3. Communication skills refinement:** Enhance my ability to articulate complex technical concepts clearly and concisely, ensuring effective communication with team members and stakeholders.

**4. Collaboration and active listening:** Develop my capacity to engage in constructive dialogue, ask insightful questions, and actively listen to others' perspectives, fostering a collaborative team environment.

**5. Leadership and initiative:** Take the lead in guiding discussions, setting goals, and delegating tasks while encouraging team members to share ideas and take ownership of their responsibilities.

**6. Problem-solving and adaptability:** Cultivate my ability to analyze complex problems, develop creative solutions, and adapt to changing project requirements or technical challenges.

**7. Emotional intelligence and empathy:** Improve my understanding of team members' strengths, weaknesses, and motivations to foster a positive and inclusive team dynamic.

## **10. Describe the technological developments you have observed and relevant to the subject area of training (focus on digital technologies relevant to your job role)**

In the context of an internship focused on industrial automation, several significant technological developments are shaping the industry. These innovations not only enhance efficiency but also redefine how automation systems are designed, implemented, and managed. Here are some key technological developments relevant to industrial automation training:

### **10.1 Industrial Internet of Things (IIoT):**

- **Overview:** The integration of IoT in industrial environments is revolutionizing automation. IIoT allows machines and sensors to communicate and share data in real-time, leading to smarter and more efficient processes.
- **Relevance:** Training now often includes understanding how to connect and manage these devices, analyze data from various sensors, and ensure the security of these connected systems.

### **10.2 Advanced Robotics and Cobots:**

- **Overview:** Robotics has seen significant advancements, with robots becoming more adaptable, precise, and capable of complex tasks. Cobots, or collaborative robots, work alongside humans, making automation more flexible.
- **Relevance:** Interns are often trained on programming these robots, integrating them into production lines, and ensuring they work safely alongside human operators.

### **10.3 Artificial Intelligence and Machine Learning:**

- **Overview:** AI and ML are increasingly being integrated into industrial automation for predictive maintenance, quality control, and optimizing production processes.
- **Relevance:** Training includes using AI algorithms to predict equipment failures before they happen, improving product quality through automated inspections, and optimizing process parameters for better efficiency.

#### **10.4 Edge Computing:**

- **Overview:** Edge computing involves processing data close to the source, reducing latency and the need for cloud connectivity. This is particularly important in time-sensitive industrial applications.
- **Relevance:** Understanding how to implement and manage edge computing devices is crucial for modern automation systems, making it a key part of training.

#### **10.5 Digital Twins:**

- **Overview:** Digital twins are virtual replicas of physical systems used for simulation and analysis. They allow engineers to test and optimize processes in a virtual environment before applying changes to the real system.
- **Relevance:** Training often includes working with digital twin technologies to simulate production processes, predict outcomes, and test new configurations without disrupting actual operations.

#### **10.6 5G and Wireless Communication:**

- **Overview:** The advent of 5G technology is enhancing communication speed and reliability in industrial environments, enabling more robust and flexible automation systems.
- **Relevance:** Training may involve setting up and managing 5G networks, understanding their role in automation, and exploring new possibilities for mobile robots and remote monitoring.

#### **10.7 Advanced Human-Machine Interfaces (HMIs):**

- **Overview:** HMIs have evolved to become more intuitive, with touchscreens, voice commands, and augmented reality (AR) interfaces becoming more common.
- **Relevance:** Interns are trained on designing and using these interfaces to interact with complex automation systems, making it easier to monitor and control industrial processes.

### **10.8 Cybersecurity for Industrial Systems:**

- **Overview:** As industrial systems become more connected, they are also more vulnerable to cyber-attacks. Ensuring robust cybersecurity measures is critical.
- **Relevance:** Training includes understanding the vulnerabilities in industrial automation systems and implementing cybersecurity protocols to protect against threats.

### **10.9 Additive Manufacturing (3D Printing):**

- **Overview:** 3D printing is being used not just for prototyping but also for producing end-use parts in industrial settings, offering flexibility in manufacturing.
- **Relevance:** Training might involve using 3D printers for custom components or tooling, integrating them into production lines, and understanding their role in rapid prototyping.

### **10.10 Big Data and Analytics:**

- **Overview:** The massive amount of data generated by automation systems can be analyzed to improve efficiency, reduce downtime, and optimize processes.
- **Relevance:** Training includes learning how to collect, analyze, and utilize big data from industrial systems to make informed decisions and improve overall performance.

These technological developments are integral to modern industrial automation, and gaining hands-on experience with them during an internship is crucial for preparing for a career in this rapidly evolving field.

## *Student Self Evaluation of the Short-Term Internship*

**Student Name** : NOWPADA RAJASEKHAR

**Registration No** : 22F45A0302

**Term of Internship:** 8 weeks      **From:**                      **To:**

**Organization Name & Address:** Skilldzire Technologies Private Limited  
(Hyderabad)

**Date of Evaluation:**

**Please rate your performance in the following areas:**

**Rating Scale:**                      **Letter grade of CGPA calculation to be provided**

1	Oral communication	1	2	3	4	5
2	Written communication	1	2	3	4	5
3	Proactiveness	1	2	3	4	5
4	Interaction ability with community	1	2	3	4	5
5	Positive Attitude	1	2	3	4	5
6	Self-confidence	1	2	3	4	5
7	Ability to learn	1	2	3	4	5
8	Work Plan and organization	1	2	3	4	5
9	Professionalism	1	2	3	4	5
10	Creativity	1	2	3	4	5
11	Quality of work done	1	2	3	4	5
12	Time Management	1	2	3	4	5
13	Understanding the Community	1	2	3	4	5
14	Achievement of Desired Outcomes	1	2	3	4	5
15	OVERALL PERFORMANCE	1	2	3	4	5

**Date:**

**Signature of the Student**



### *Evaluation by the Supervisor of the Intern Organization*

<b>Student Name:</b>	N. RAJASEKHAR	<b>RegistrationNo:</b> 22F45A0302
<b>Term of Internship:</b>	<b>From:</b>	<b>To :</b>
<b>Date of Evaluation:</b>		
<b>Organization Name &amp; Address: :</b> Skilldzire Technologies Private Limited (Hyderabad)		
<b>Name &amp; Address of the Supervisor with Mobile Number</b>		

Please rate the student's performance in the following areas:

Please note that your evaluation shall be done independent of the student's self- evaluation

Rating Scale: 1 is lowest and 5 is highest rank

1	Oral communication	1	2	3	4	5
2	Written communication	1	2	3	4	5
3	Proactiveness	1	2	3	4	5
4	Interaction ability with community	1	2	3	4	5
5	Positive Attitude	1	2	3	4	5
6	Self-confidence	1	2	3	4	5
7	Ability to learn	1	2	3	4	5
8	Work Plan and organization	1	2	3	4	5
9	Professionalism	1	2	3	4	5
10	Creativity	1	2	3	4	5
11	Quality of work done	1	2	3	4	5
12	Time Management	1	2	3	4	5
13	Understanding the Community	1	2	3	4	5
14	Achievement of Desired Outcomes	1	2	3	4	5
15	OVERALL PERFORMANCE	1	2	3	4	5

**Date:**

**Signature of the supervisor**

## PHOTOS & VIDEO LINKS

**Git Hub Link:** <https://github.com/BHASKAR-0307/INDUSTRIAL-AUTOMATION-file/upload/main>

# **EVALUATION**

## INTERNAL ASSESSMENT STATEMENT

**Group** : MECHANICAL ENGINEERING

**Register No/H.T. No** : 22F45A0302

**Name of the College** :KUPPAM ENGINEERING COLLEGE

**University** :JNTUA

<i>Sl. No</i>	<i>Evaluation Criterion</i>	<i>Maximum Marks</i>	<i>Marks Awarded</i>
1.	Activity Log	25	
2.	Internship Evaluation	50	
3.	Oral Presentation	25	
	GRAND TOTAL	100	

Date:

**Signature of the Faculty Guide**

**Certified by**

Date:

**Signature of the Head of the Department/Principal**

Seal:



# **ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION**

**(A Statutory Body of the Government of Andhra Pradesh)**

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