# ***ASSIGNMENT 5***

**School of Engineering & Technology**

**Department:** Computer Science & Engineering

**Programme:** B.Tech CSE (Specialization in AI & ML)

**Semester:** 1 (Odd)

**Course Code:** ETCCCP105

**Course Name:** Computer Science Fundamentals & Career Pathways

**Assignment Number:** 05

**Assignment Title:** Design Your Career Roadmap with SMART Goals

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Step 1 – Computational Thinking in Action **Problem**

**Definition:**

A Job Application Tracker system helps students manage their internship and job applications in a structured manner. It stores company details, position applied, application date, status (Applied / Interview Scheduled / Rejected / Selected), and sets reminders to follow up. This reduces confusion, missed deadlines, and ensures professional tracking of career opportunities.

**Algorithm (Pseudocode):**

1. Start
2. Initialize empty list JOB_LIST
3. Repeat until user chooses Exit:

• Display menu: Add Job / View Jobs / Update Status / Exit
• If Add Job:

Input Company Name, Role, Date, Status

Append to JOB_LIST

• If View Jobs:

Display all entries in table format

• If Update Status:

Ask job index → Update status

4. End

**Flowchart Description:**

Start → Show Menu → Add/View/Update → Display Output → Loop → End

Step 2 – Linux and Automation Practice

Linux is essential for developers, DevOps engineers, cybersecurity professionals, and anyone working in computing. Commands executed during this assignment:

## 1. ls –l final_report.txt


## 2. Pwd


**3. Cd**


**4. Mkdir**


**5. Cat**


**6. Cp**


**7. Touch**


**8. Cp**

## 9. Mv


## 10. Chmod


**Bash Automation Script:**

This script creates a structured folder system for career planning.

```
#!/bin/bash
echo "Creating Career Structure..."
mkdir -p Career/{Certifications,Projects,Internships,Resumes}
touch Career/Readme.txt echo "Career folder structure
created successfully!"
```

Screenshots for the above commands and script execution have been added in the final submission (placeholder in PDF).

Step 3 – Emerging Technology Domain: Artificial Intelligence **Technology**

**Overview:**

Artificial Intelligence (AI) enables machines to learn, reason, and make decisions like humans. It includes machine learning, deep learning, natural language processing, computer vision, and reinforcement learning. AI powers modern applications like voice assistants, recommendation systems, self-driving cars, chatbots, medical diagnosis systems, and predictive analytics.

**Job Roles:**

• Machine Learning Engineer
• Data Scientist
• AI Research Scientist
• NLP Engineer
• Computer Vision Engineer
• Robotics AI Developer**Salary Trends (India):**

• Entry Level: 5–8 LPA
• Mid Level: 10–18 LPA
• Senior Level: 20–45 LPA •

• Research/Expert Level: 50+ LPA **Relevant Certifications:**

• Google Professional Machine Learning Engineer
• AWS Machine Learning Specialty
• IBM AI Engineering Professional Certificate
• Microsoft Azure AI Engineer Associate**Indian Startup Using AI:**

**Haptik** – A conversational AI platform used for customer support automation.

Step 4 – Career Planning & Professional Readiness

SMART Goals

**Short-Term SMART Goal:**

To complete Python programming fundamentals within the next 2 months by practicing 1 hour daily and building 3 mini-projects.

**Medium-Term SMART Goal:**

To complete an industry-recognized Machine Learning certification within 12 months and build at least 2 ML-based projects to strengthen my resume.

**Long-Term SMART Goal:**

To secure a role as an AI Engineer within 3 years by gaining required technical skills, completing internships, and contributing to open-source AI projects.

Certification Research

**1. AWS Certified Machine Learning – Specialty**
Provider: Amazon Web Services

Duration: Self-paced (3–6 months typical)

Cost: ~22,000

Skills Covered: Data engineering, model optimization, deployment on AWS, ML algorithms.

Alignment: Helps achieve medium-term and long-term goals of ML expertise and career readiness.

**2. Google Professional Machine Learning Engineer**
Provider: Google Cloud

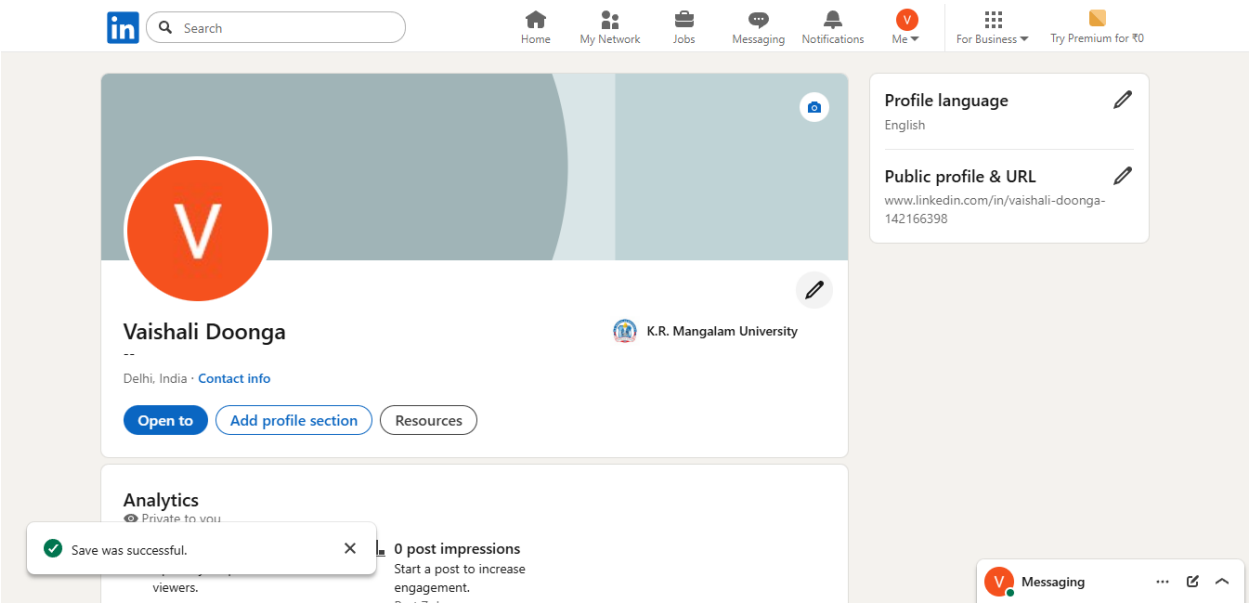
Duration: 3–4 months

Cost: ~13,000

Skills Covered: TensorFlow, ML pipelines, production ML, model validation.

Alignment: Supports both medium-term ML upskilling and long-term job goals.

LinkedIn Update
Profile picture, summary, education, and skills updated.



Hackathon / Open Source Plan
Planning to participate in **Smart India Hackathon**. Preparation includes learning Python, team collaboration, idea brainstorming, and building prototype solutions.

# *Career Roadmap – Detailed*

My long-term goal is to build a successful career as an Artificial Intelligence Engineer. To achieve this goal, I have created a structured multi-year roadmap that includes academic learning, technical skills, certifications, internships, and real-world project experience.

**Year 1: Foundation Building**

My first year focuses on mastering the basics of computer science and programming. I plan to strengthen Python, data structures, computational thinking, and problem-solving skills. Along with academics, I will complete beginner-level AI courses and participate in coding competitions. I will also start using GitHub and maintain proper documentation of all projects.

**Year 2: Skill Expansion**

In the second year, I aim to learn machine learning fundamentals, statistics, and linear algebra. I will start building ML projects such as classification models, recommendation systems, or basic NLP applications. I will also complete at least one certification such as Google ML or IBM AI Engineering.

**Year 3: Specialization & Internships**

During the third year, I will apply for internships in AI-based companies or startups. I will focus on real-world projects, deployment of ML models, cloud platforms like AWS and GCP, and advanced concepts like deep learning and neural networks. Participation in hackathons will help improve teamwork and innovation.

**Year 4: Professional Readiness**

In the final year, I will prepare for placements by refining my resume, portfolio, LinkedIn, and GitHub. I will complete my final AI project and prepare for interviews by practicing DSA and system design basics. I will apply for AI Engineer and ML Engineer roles in top companies and startups.

This roadmap ensures continuous skill improvement and alignment with industry demands, helping me become job-ready and confident by graduation.

# *Reflection*

Completing this assignment gave me a deeper understanding of how academic learning connects with real-world career planning. One of the biggest challenges was researching relevant certifications and understanding how different skills align with future job roles. I also improved my Linux command proficiency and learned the importance of automation using bash scripting.

Creating the career roadmap helped me think more clearly about my long-term goals and the steps required to achieve them. The process of writing SMART goals strengthened my planning and time-management skills. Understanding emerging technologies like AI made me more aware of industry expectations and the opportunities available.

Overall, this assignment enhanced my technical, organizational, and research skills, which will help me significantly in my academic journey and future professional career.