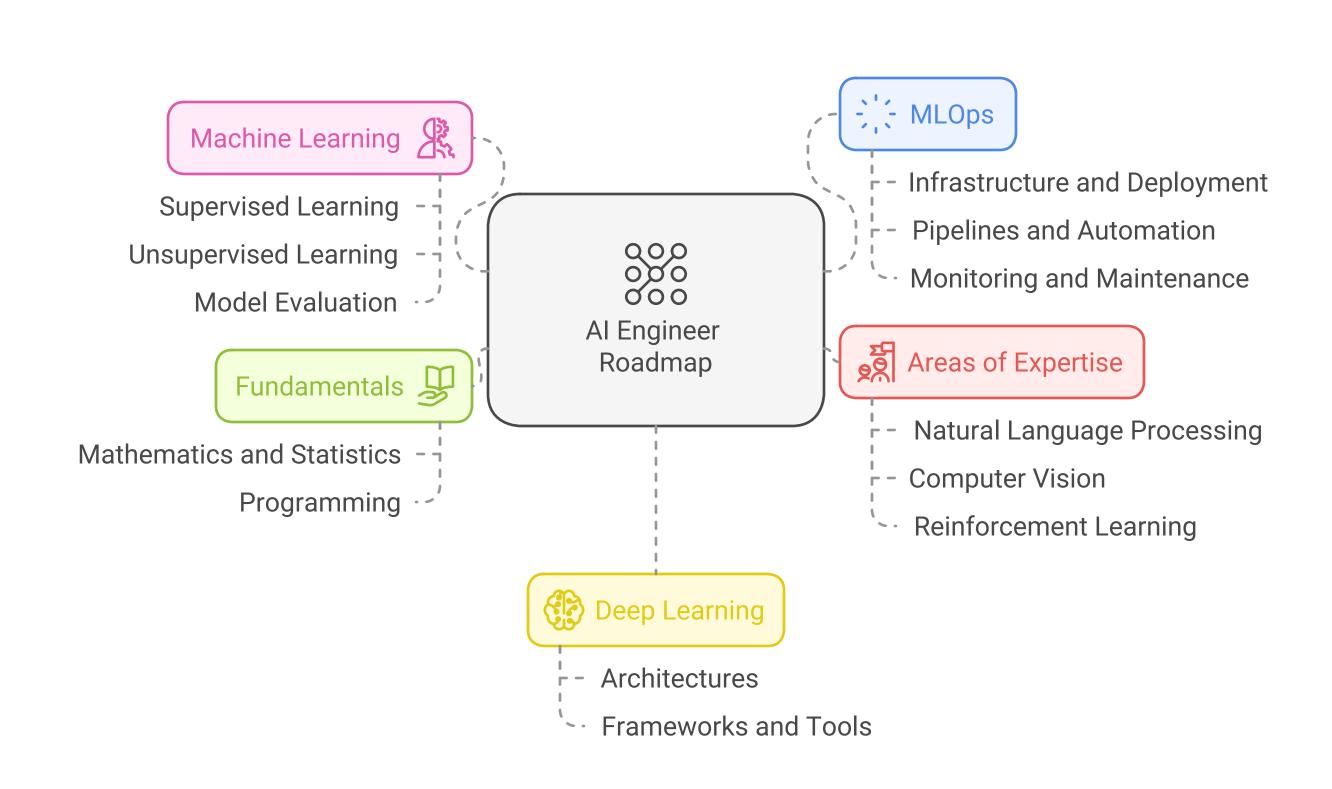
# Al Engineer Roadmap

I. Learning Roadmap



#### distributions, hypothesis testing). Recommended resources: books "Deep Learning" by Ian Goodfellow and "Mathematics for

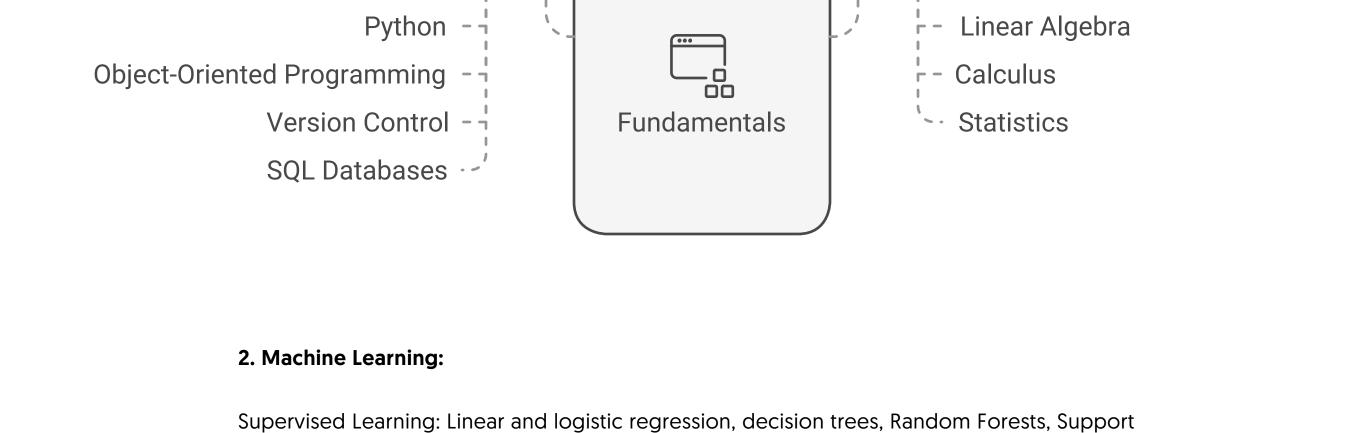
**Programming** 

1. Fundamentals:

Machine Learning" by Marc Peter Deisenroth. Programming: Python is the main language. Knowledge of data structures, object-oriented programming, exception handling, version control (Git), and SQL databases.

Mathematics and Statistics: Mastery of linear algebra, calculus, and statistics (probability,

**Mathematics and Statistics** 



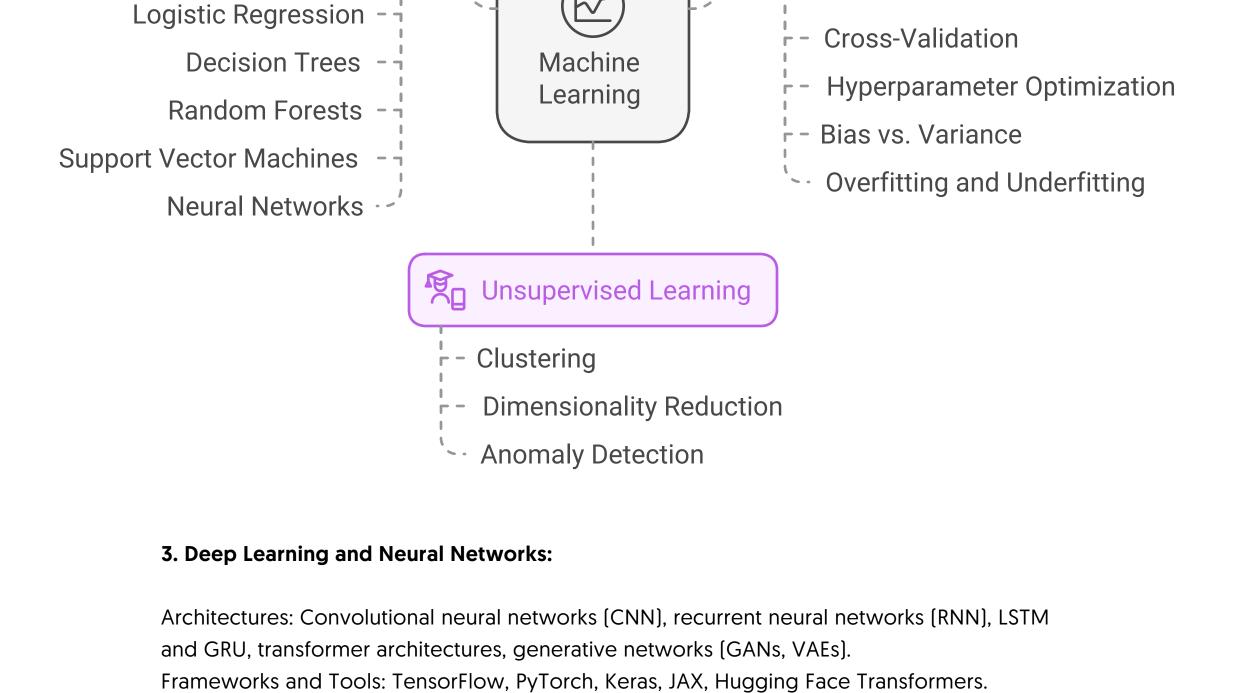
Unsupervised Learning: Clustering (K-means, DBSCAN), dimensionality reduction (PCA, t-SNE),

#### anomaly detection.

Vector Machines (SVM), basic neural networks.

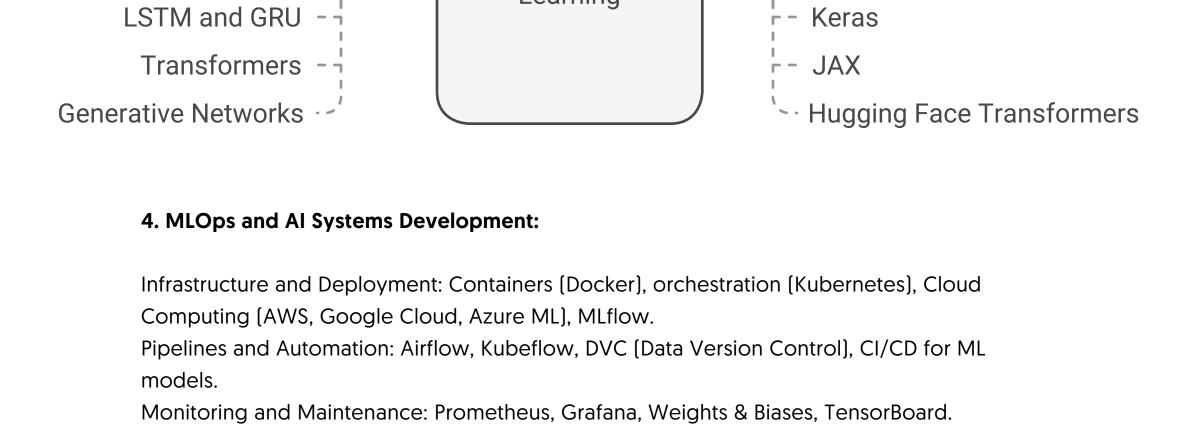
Model Evaluation: Evaluation metrics, cross-validation, hyperparameter optimization, bias vs. variance, overfitting and underfitting.

Supervised Learning A **Co** Model Evaluation **Linear Regression Evaluation Metrics** 



**Architectures** Frameworks and Tools - TensorFlow CNN -Deep RNN -- PyTorch

Learning



### Infrastructure and Deployment

Containers (Docker) Airflow Machine Orchestration (Kubernetes) Kubeflow Learning Cloud Computing (AWS, Google **DVC (Data Version Control)** Ops Cloud, Azure ML)

**Pipelines and Automation** 

**Computer Vision** 

**Effective Communication** 

Teamwork

**Problem Solving** 

**Critical Thinking** 

Adaptability

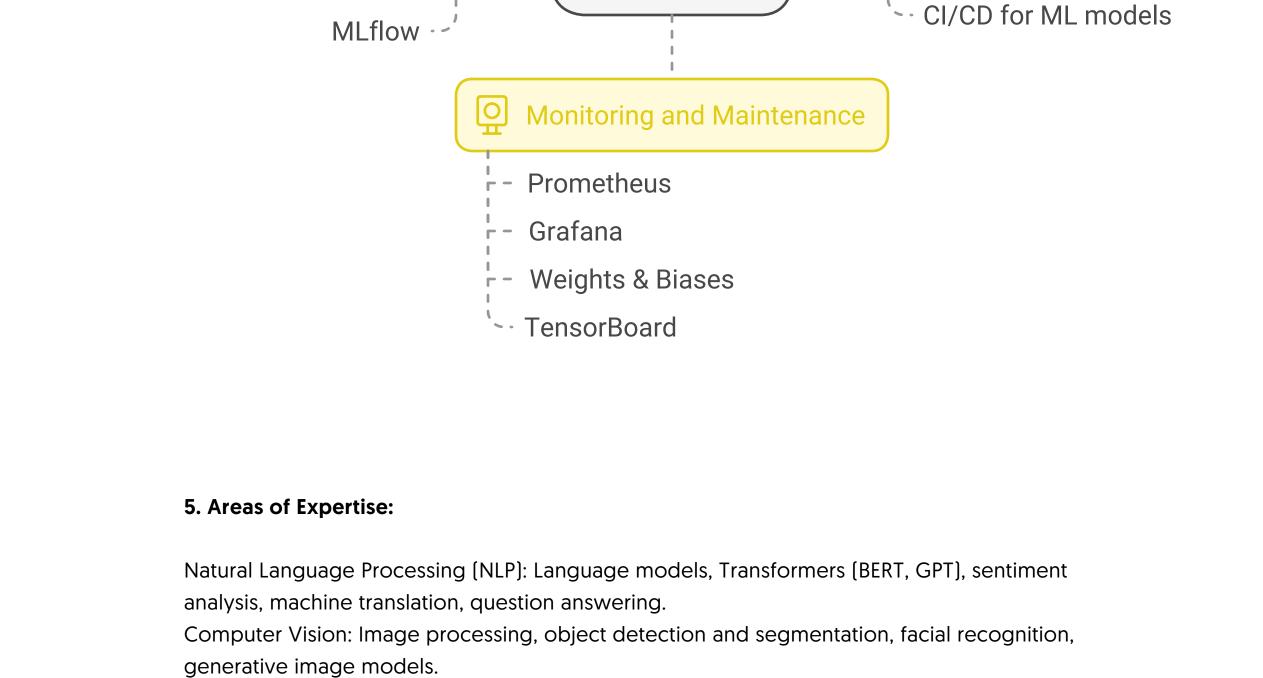
· · DVC

**Hugging Face Transformers** 

**NLP Tools** 

SpaCy

- NLTK



Reinforcement Learning: Q-Learning, Policy Gradient, DQN, Actor-Critic.

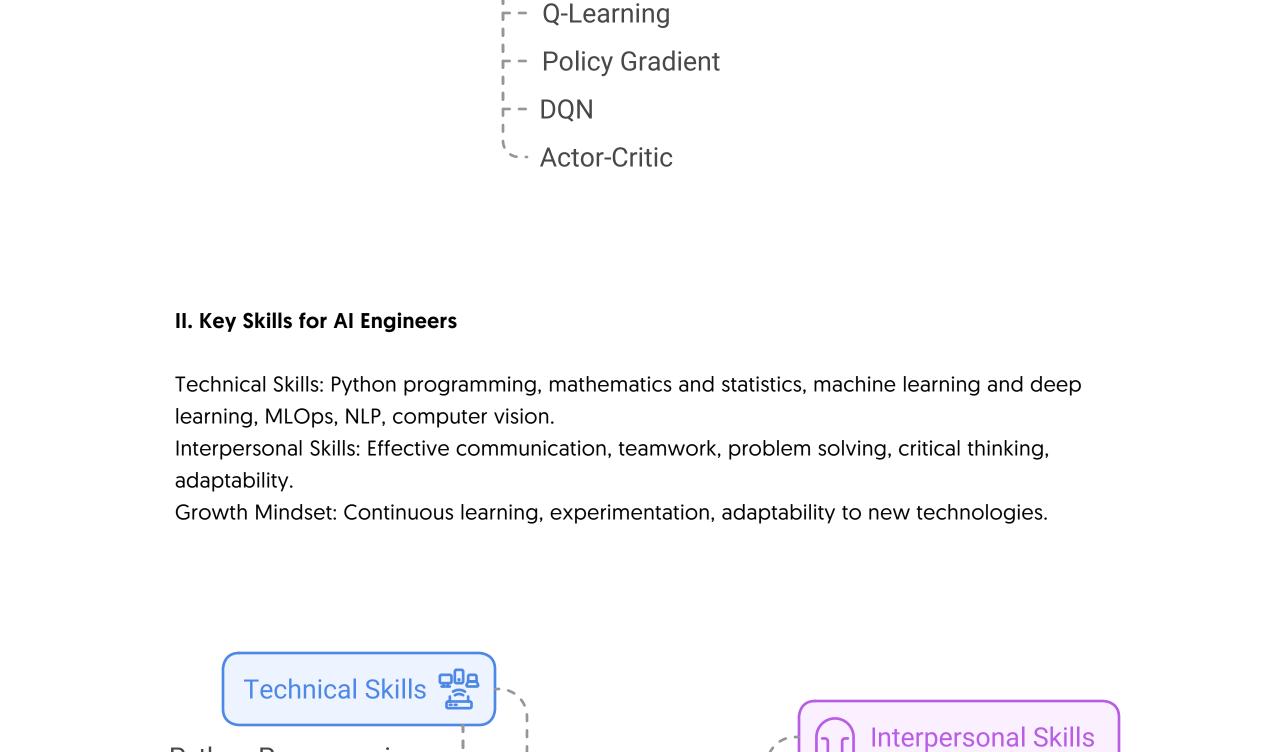
## Language Models

Question Answering ·-

**Natural Language Processing** 

- Image Processing **Transformers** Areas of **Object Detection Sentiment Analysis** Expertise - Facial Recognition **Machine Translation** Generative Image Models

**Reinforcement Learning** 



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Skill Set

#### MLOps NLP Computer Vision · ·

**Python Programming** 

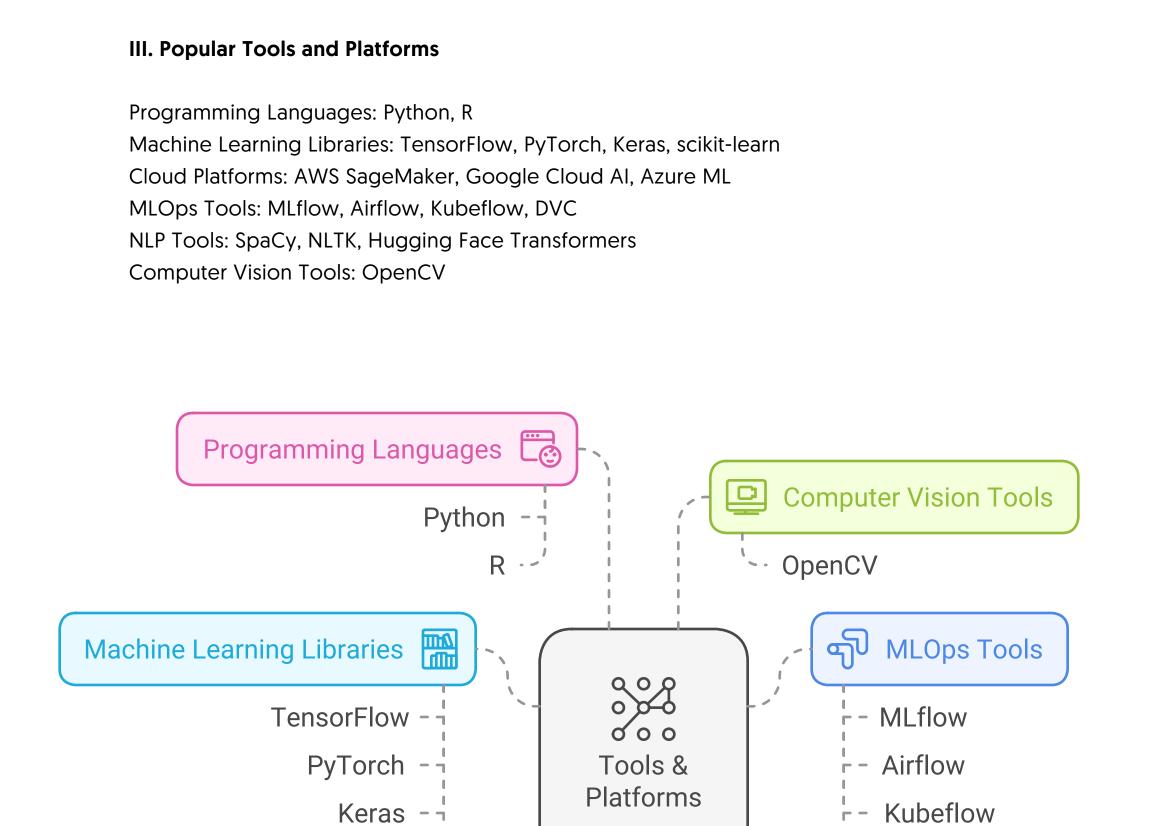
Machine Learning

Deep Learning

**Mathematics and Statistics** 

**Continuous Learning** Experimentation Adaptability to New Technologies

**Growth Mindset** 



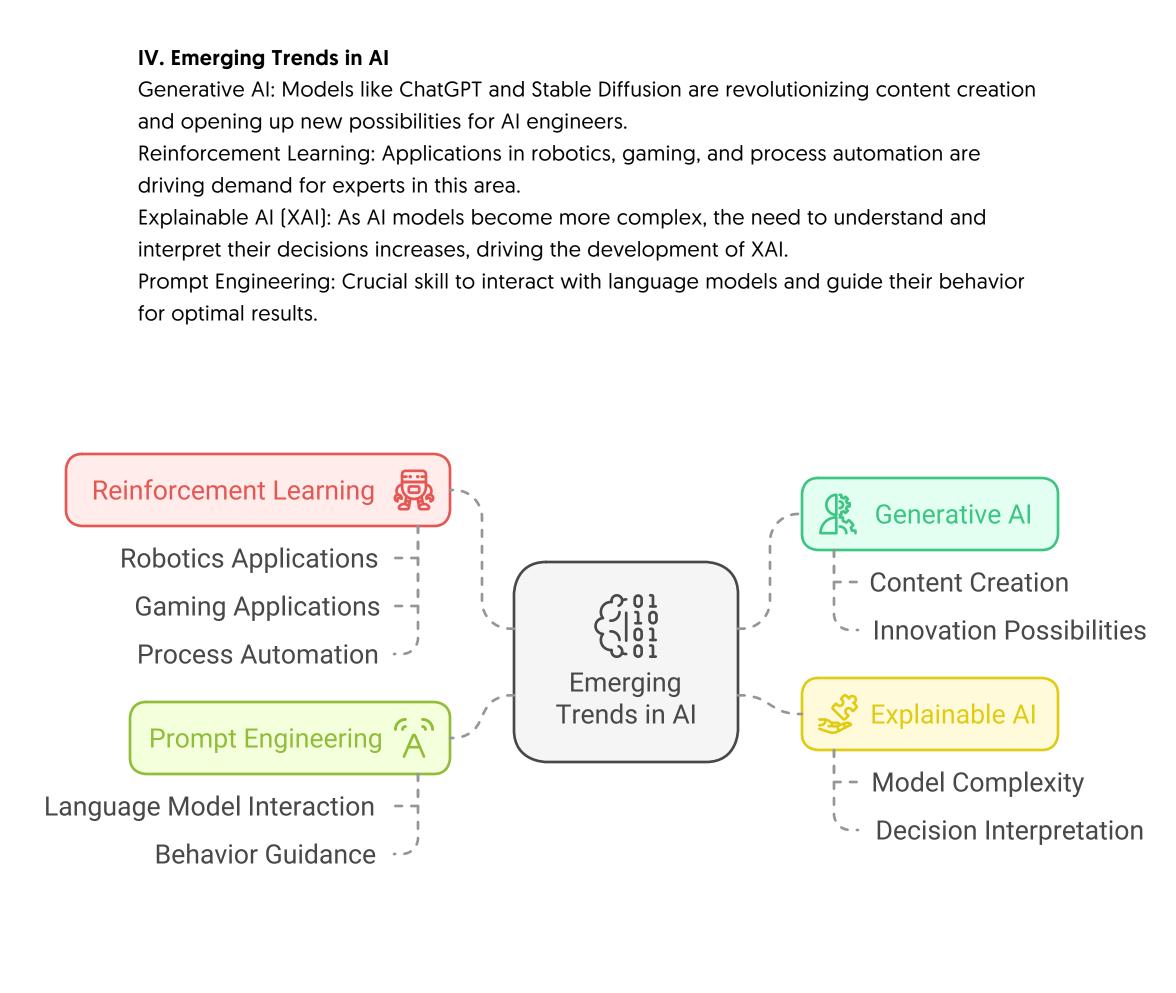
scikit-learn ·-

**Cloud Platforms** 

AWS SageMaker

Google Cloud AI -

Azure ML · ·



Build a Portfolio: Develop personal projects that demonstrate your skills and differentiate you

collaborating on open source projects will help you stay up to date and connect with other

Find Mentors: Connecting with experienced professionals will provide you with guidance

Participate in the Community: Attending conferences, joining online groups, and

# **Career Development Pathway**

**VI. Additional Resources:** 

https://archive.is/1XgPG

do. The exact path I would choose. Al Advances.

Keras & TensorFlow" by Aurélien Géron.

Build a Portfolio

Participate in the

Community

**Find Mentors** 

and support in your career.

V. Additional Tips for Success

in the job market.

professionals.

**Enhanced Career Opportunities** 

Online courses: Coursera, edX, Udemy, Google AI Education, NVIDIA Deep Learning Institute.

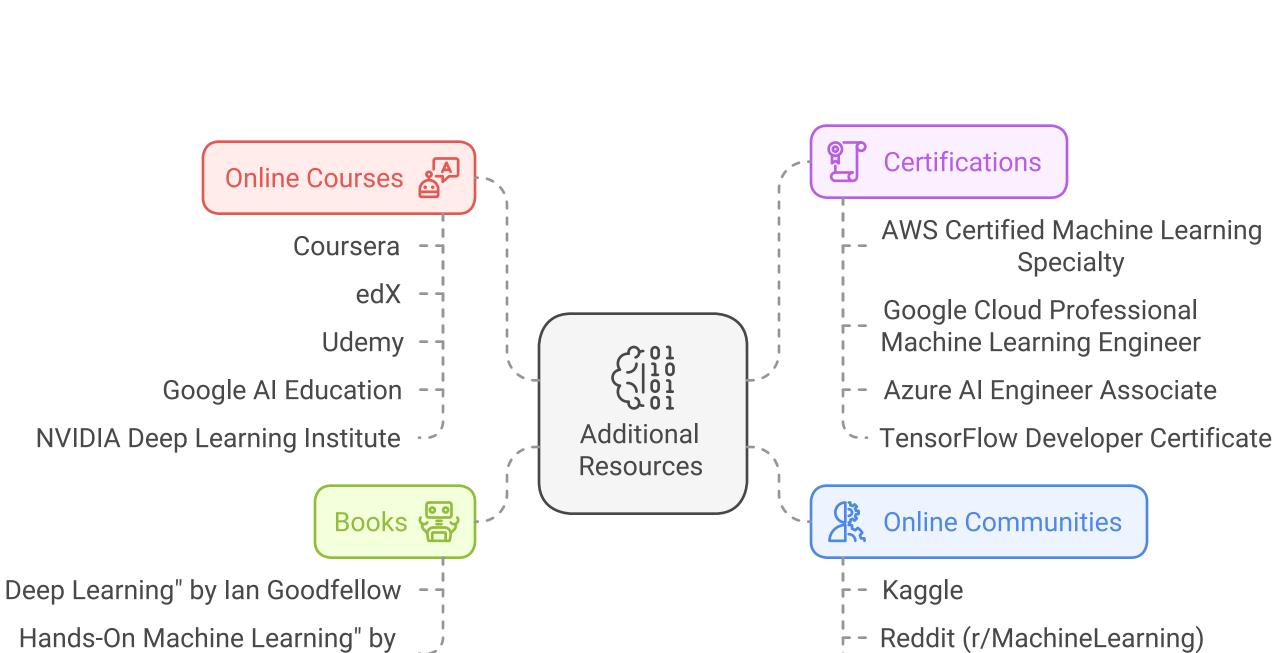
Certifications: AWS Certified Machine Learning Specialty, Google Cloud Professional Machine

Books: "Deep Learning" by Ian Goodfellow, "Hands-On Machine Learning with Scikit-Learn,

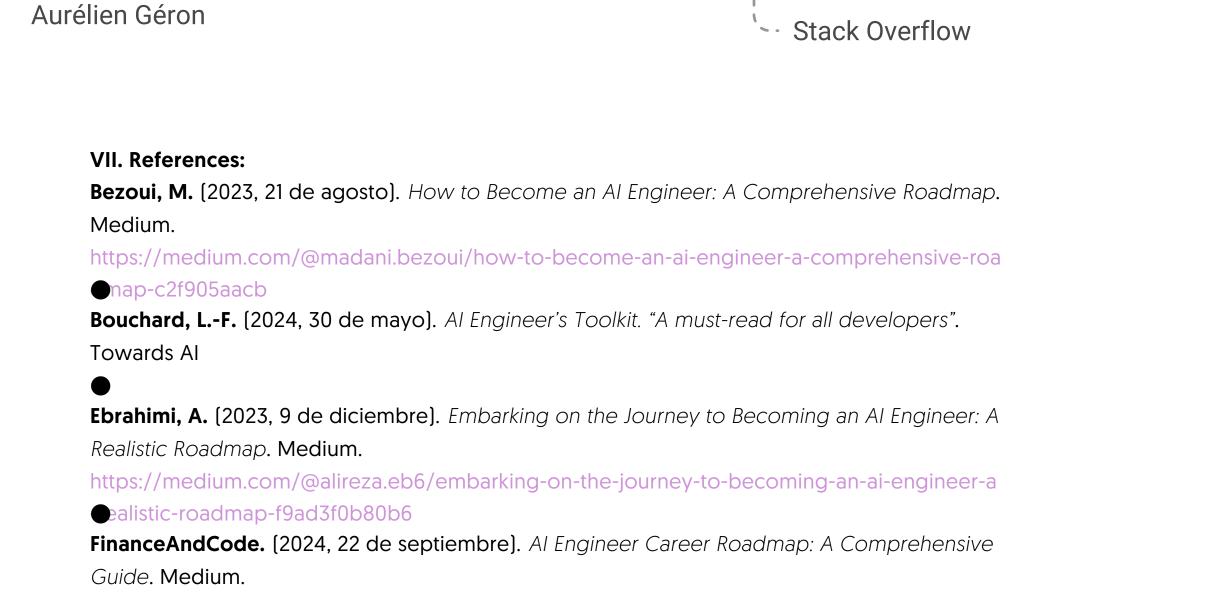
Learning Engineer, Azure Al Engineer Associate, TensorFlow Developer Certificate.

Online Communities: Kaggle, Reddit (r/MachineLearning), Stack Overflow.

**Career Aspirations** 



Specialty



Ograbek, K. (2024, agosto). 6 Hard-learned Lessons from My First Project as a Freelance Al Engineer. Al Advances. Singh, T. (2024, 1 de noviembre). The 2025 Al Engineer Roadmap: Must-Have Skills, Tools, and Trends to Watch. Medium.

Meinardus, B. (2025, 3 de enero). How I'd learn ML in 2025 (if I could start over). Towards Al.

Ograbek, K. (2024, 3 de junio). If I started learning AI Engineering in 2024, here's what I would

Tyagi, H. (2024, 29 de abril). Roadmap to Become an Al Engineer. Skills, learning resources, and project ideas to become an AI Engineer in 2024. Medium. https://dswharshit.medium.com/roadmap-to-become-an-ai-engineer-roadmap-6d9558d970 cf