

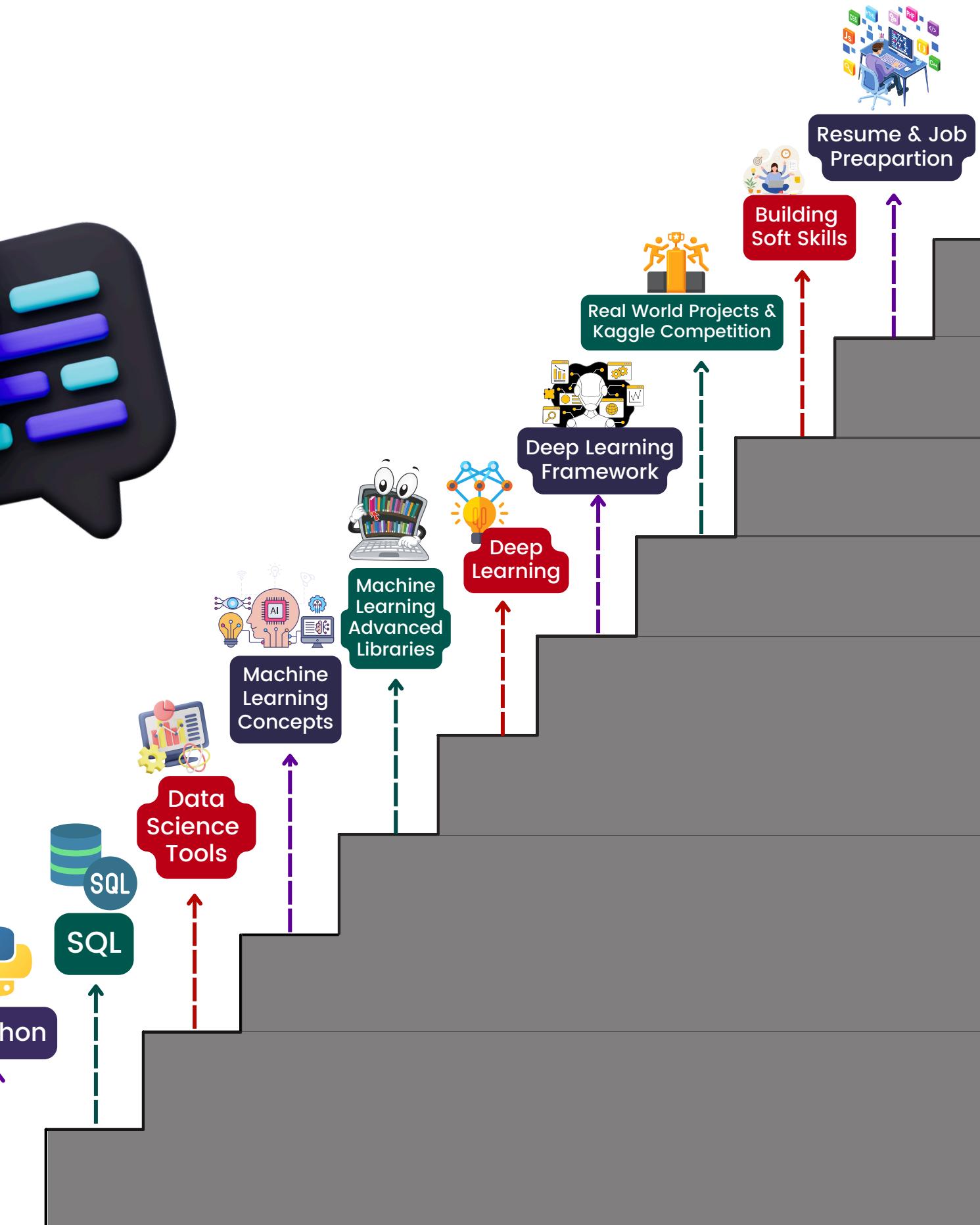
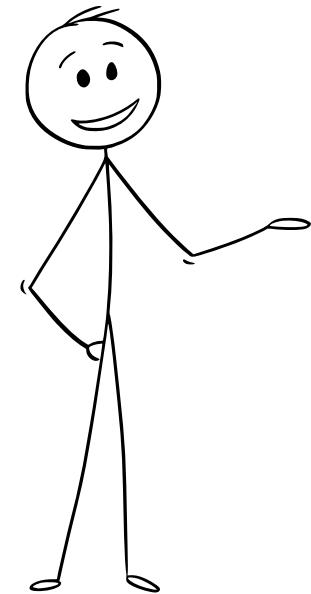
10 VISUALIZATIONS TO BETTER UNDERSTAND AI



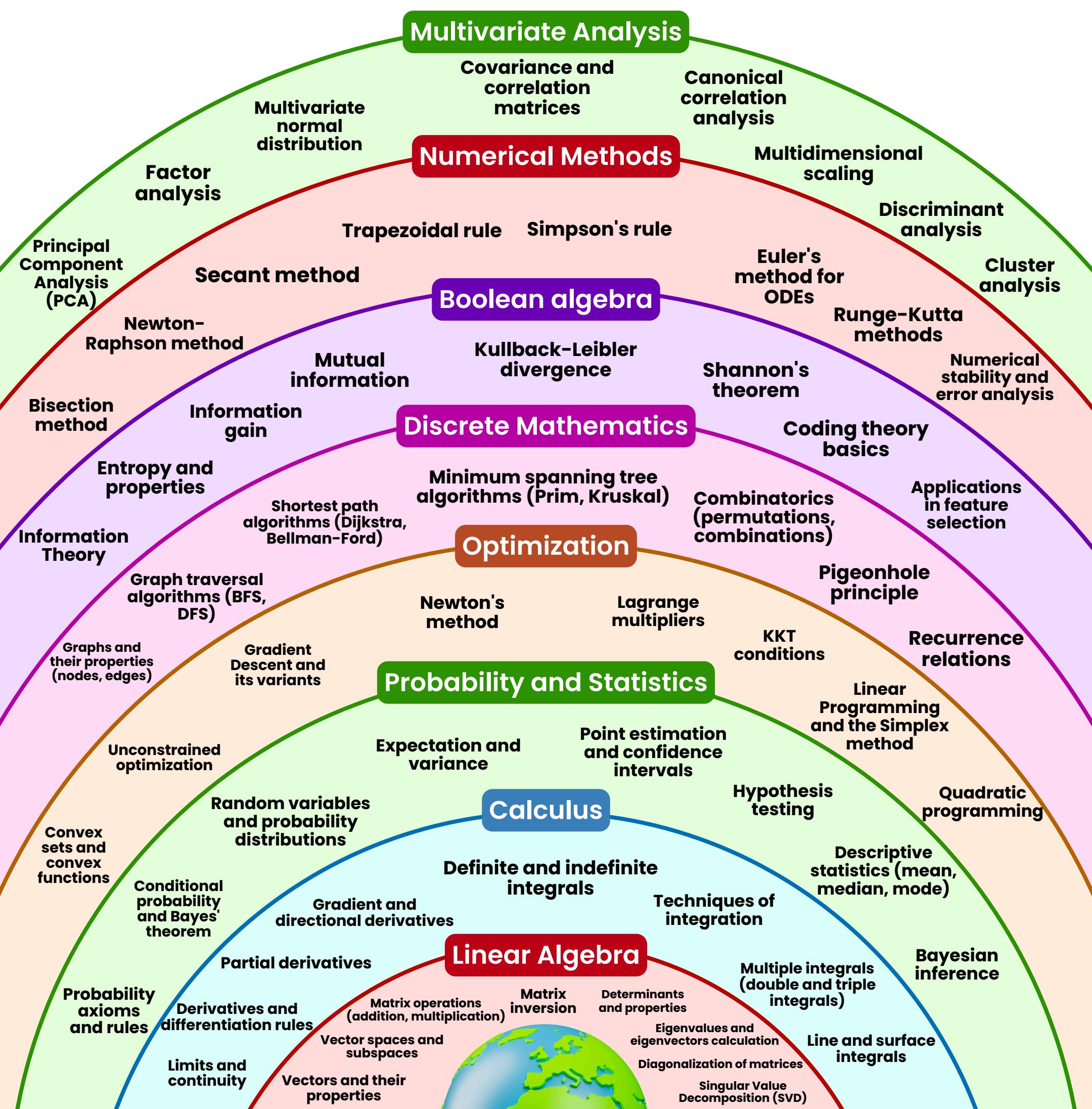
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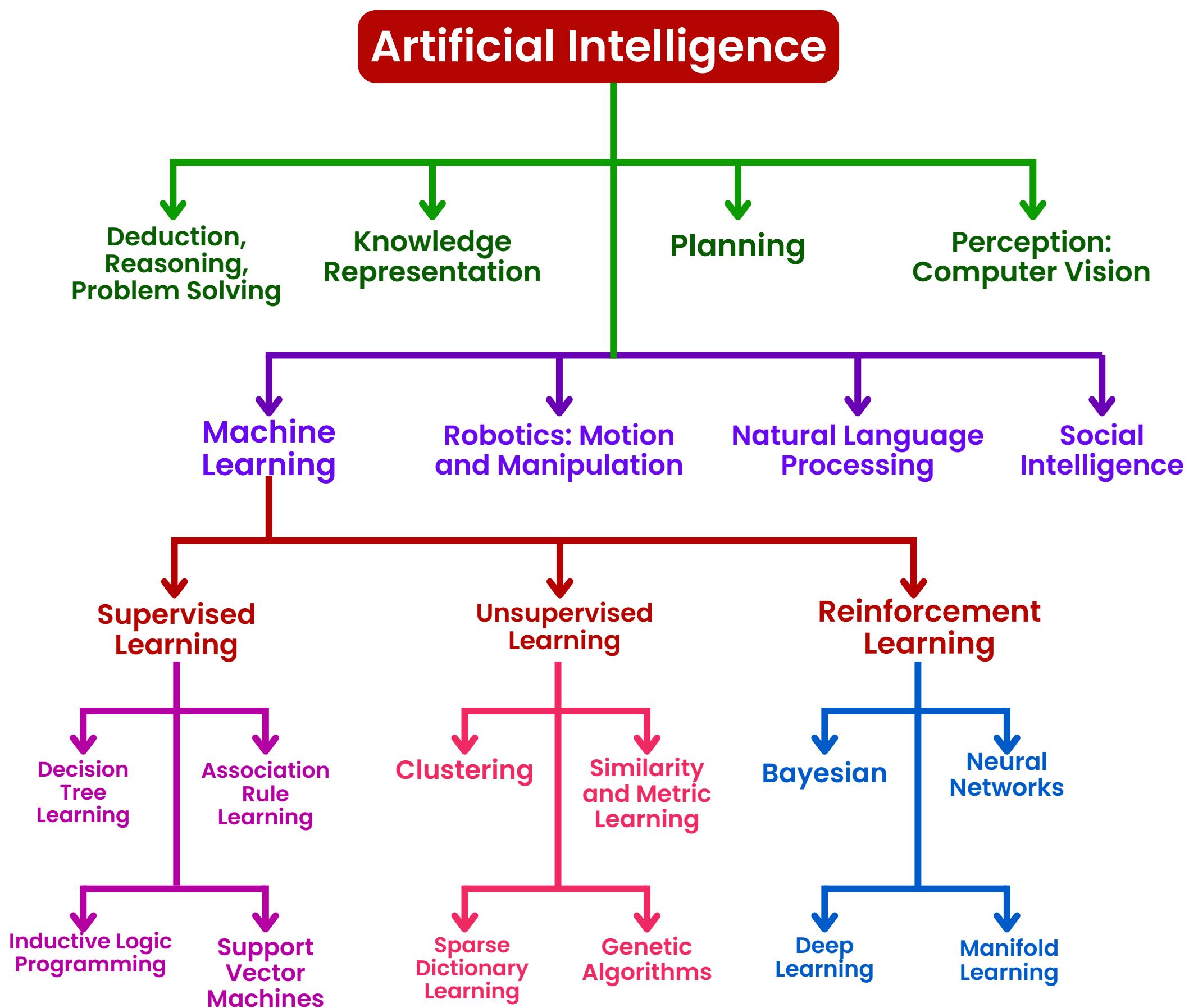
Roadmap To Learn AI



Mathematics in AI



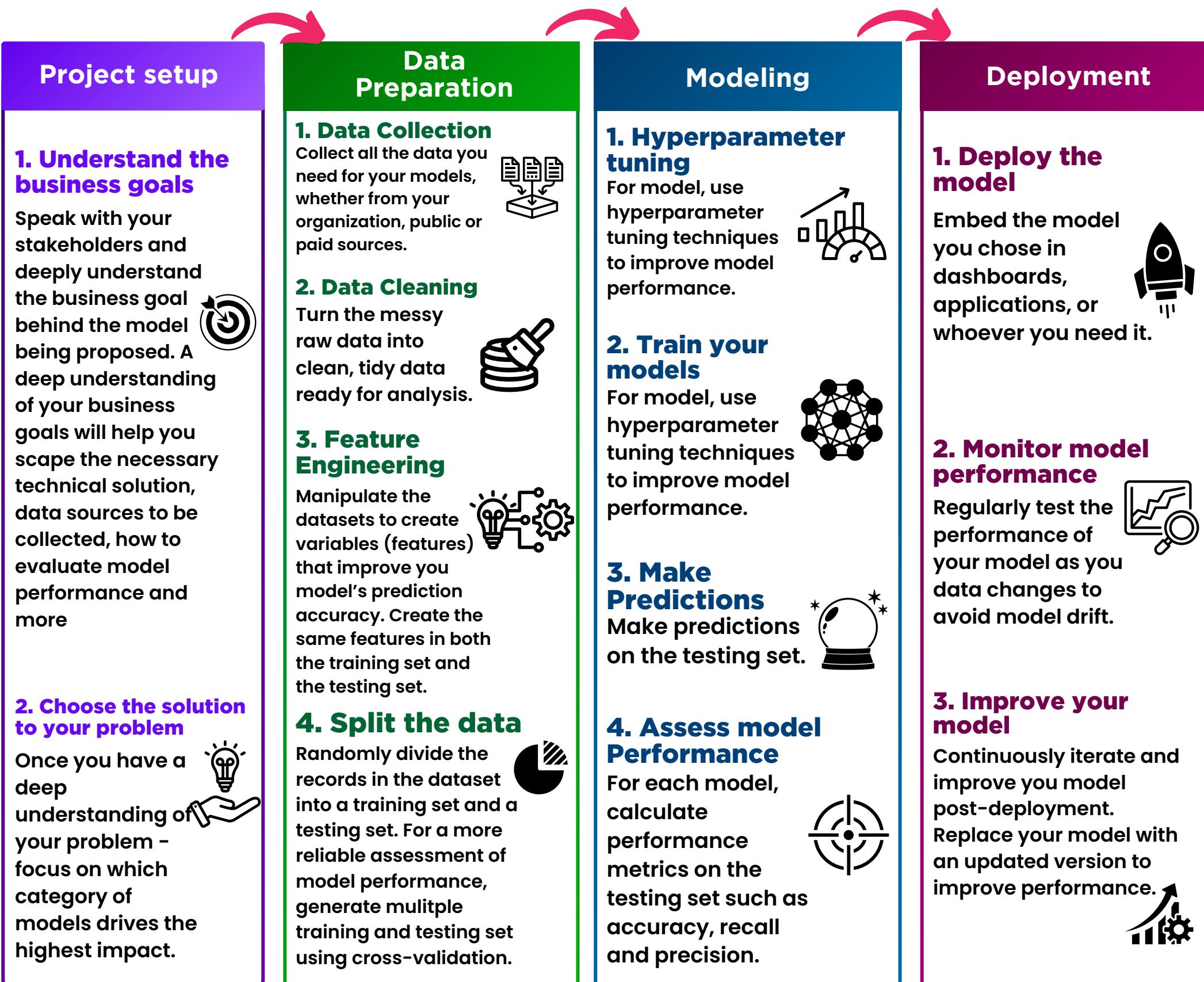
AI Algorithms



Common Problem in AI

1. Overfitting	Model learns noise, poor generalization to new data.
2. Underfitting	Model too simple, fails to capture data patterns.
3. Bias in Data	Training data biases lead to unfair model outcomes.
4. Imbalanced Datasets	Unequal class representation causes biased model performance.
5. Data Quality Issues	Poor quality data leads to unreliable predictions.
6. Scalability	Challenges handling large datasets or real-time processing.
7. Model Interpretability	Complex models are difficult to understand and explain.
8. Ethical Concerns	Issues like privacy and consent in AI use.
9. Data Privacy	Protecting sensitive data from breaches or misuse.
10. Algorithmic Fairness	Ensuring AI doesn't perpetuate existing biases.
12. Robustness	Model's performance under various, unexpected conditions.
13. Generalization	Model's ability to perform well on unseen data.
14. Cost of Computation	High computational cost for training and deploying models.
15. Data Annotation	Time-consuming and expensive process for labeled data.
16. Deployment & Maintenance	Challenges in deploying and maintaining AI models in production.
17. Adversarial Attacks	Vulnerability of models to maliciously crafted inputs.

The AI Workflow: From Data to Deployment.

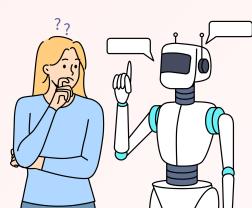


Expectations vs. Reality in AI

01 Can AI Think Like Humans ?

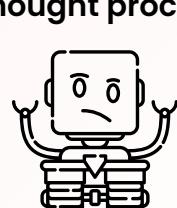
Expectation

AI can think like Humans



Reality

AI lacks consciousness and can't replicate human thought processes.



02 AI Can Learn By Itself ?

Expectation

AI Can Learn and Adapt On Its Own



Reality

AI needs human direction for learning and adaptation



03 AI Will Replace Jobs ?

Expectation

AI Will Lead to Massive Job Displacement



Reality

AI also creates new job opportunities and enhances human work



04 AI Can Replace Human Creativity ?

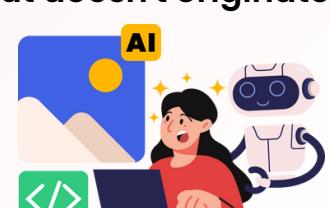
Expectation

AI Can Replace Human Creativity



Reality

AI assists in creativity but doesn't originate it



05 AI Can Understand Emotions ?

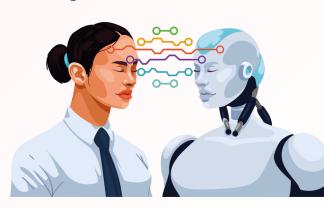
Expectation

AI Can Understand Emotions



Reality

AI detects, but doesn't truly comprehend, emotions.



06 Programming Skills For AI

Expectation

Basic programming knowledge is sufficient to start building AI.



Reality

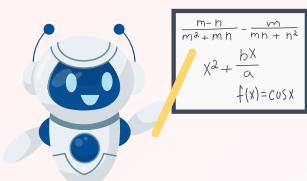
Proficiency in programming, often in Python or R, and understanding of algorithms and data structures is crucial.



07 Maths Isn't Necessary For AI ?

Expectation

High-level math isn't necessary for AI.



Reality

A strong foundation in linear algebra, calculus, probability, and statistics is essential

$$a(b+c) = ab+ac$$

08 Learning AI Is Easy

Expectation

- Instant Expertise
- AI Solves Everything
- Easy Job Market
- Complete Automation
- Autodidact Friendly



Reality

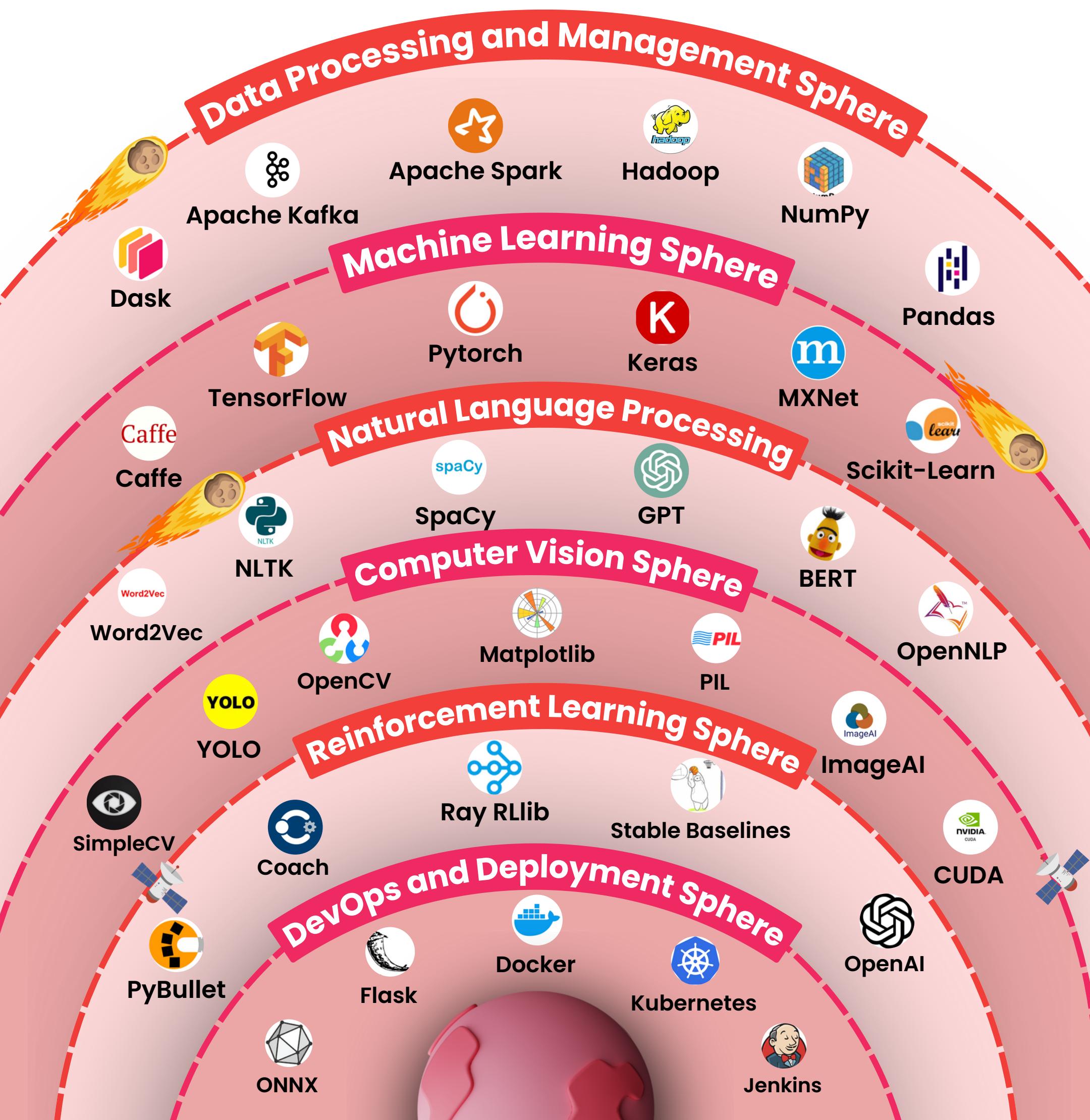
- Steep Learning Curve
- Task-Specific Solutions
- Competitive Field
- Human-AI Collaboration
- Structured Learning



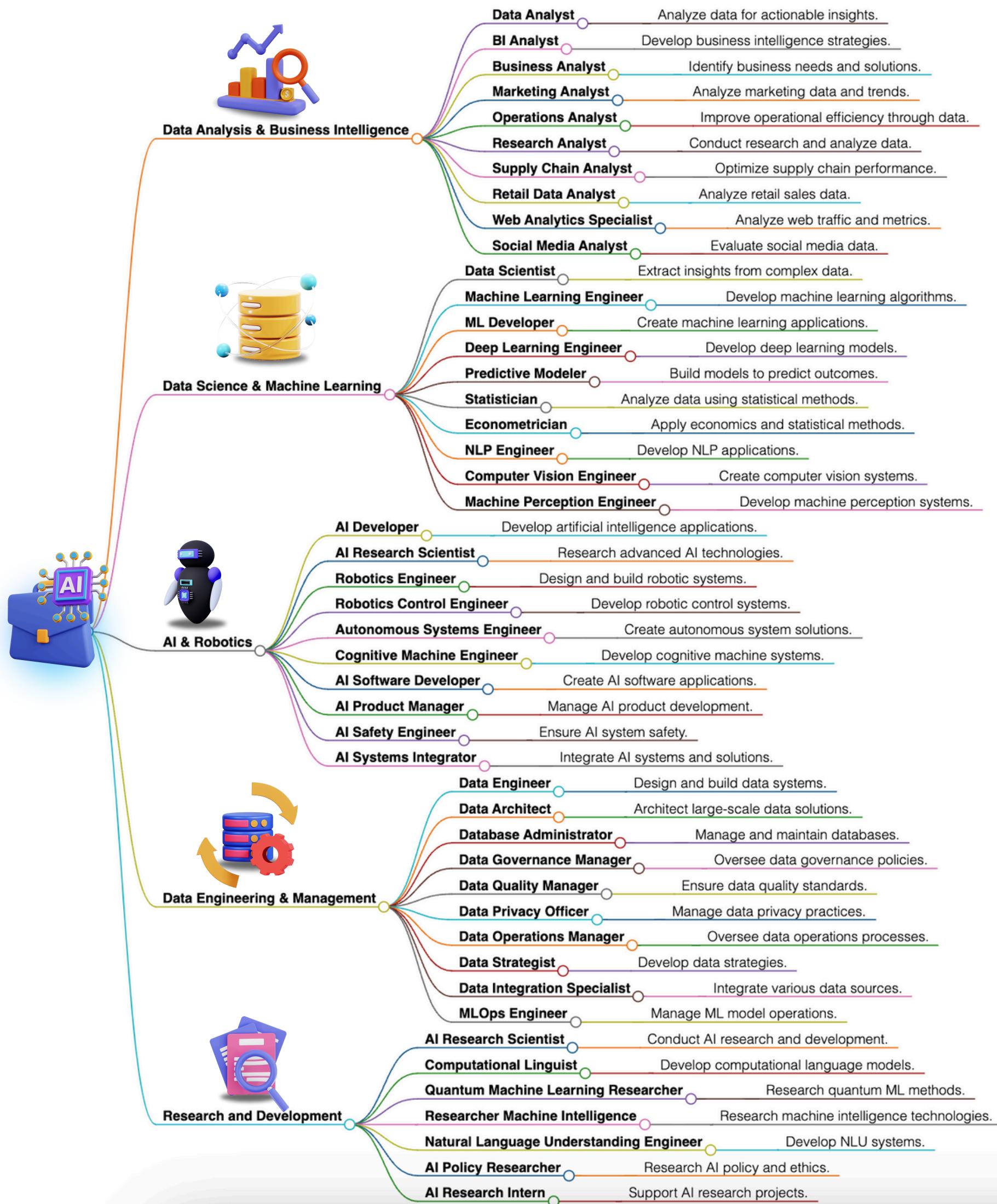
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AI Tools and Libraries



AI Jobs Ecosystem



Bias and Fairness in AI

Does the model encourage feedback loops that can produce increasingly unfair outcomes?

Draft and Design of an AI System

Is an algorithm an ethical solution to the problem?

Is the algorithm misused in other context?

Is the model deployed on a population for which it was not trained or evaluated?

Are there unequal effects across users?

Monitoring & Feedback

Problem Formation

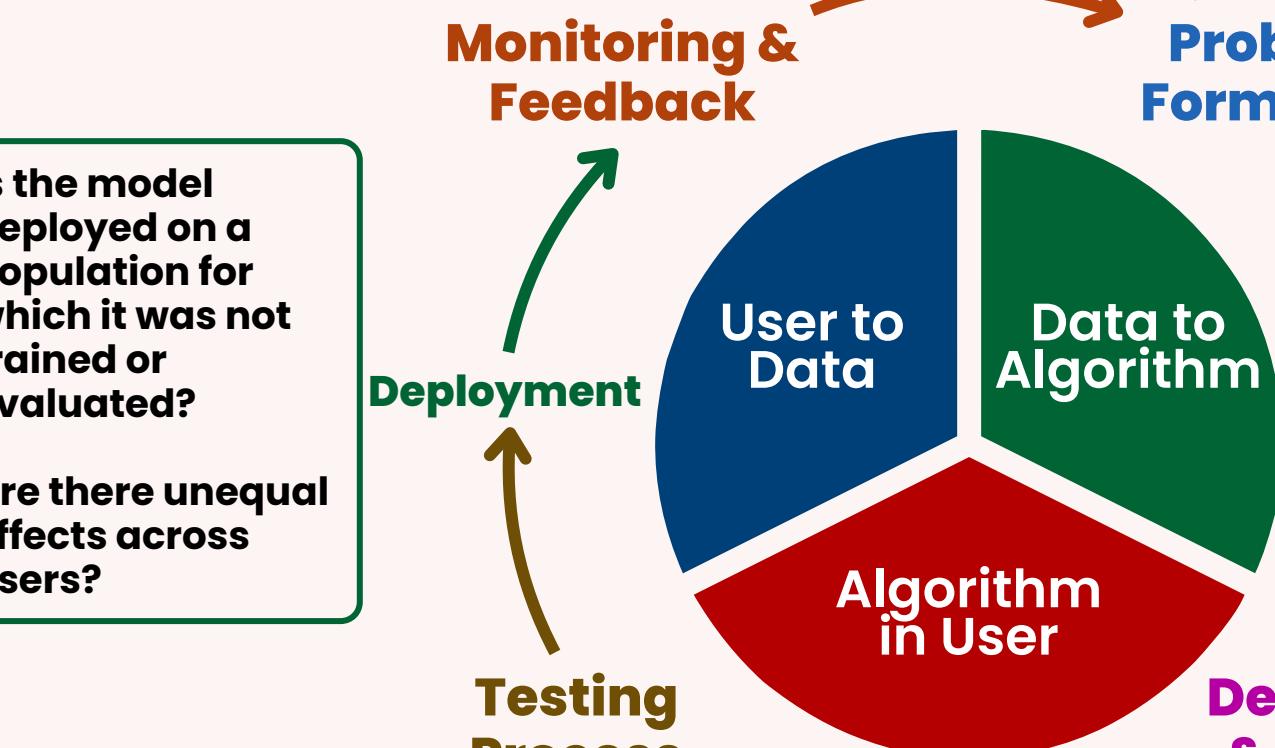
Is the training data representative of different groups?

Are there biases in labels or features?

Does the data need to be modified to mitigate bias?

Has the model been evaluated using relevant fairness metrics?

Can the model be evaluated on other datasets beyond the test set?



Training Process

Development & Algorithm Selection

Do fairness constraints need to be included in the object function?

Should minorities be modeled separately?

Does the proxies really measure what they should do?

Use Cases of AI



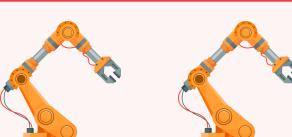
E-Commerce

AI tailors shopping experiences, powers support chatbots, and combats fraud.



Education

AI automates administrative tasks and personalizes the learning journey.



Robotics

AI equips robots with real-time decision-making and interaction capabilities.



GPS & Navigation

AI enhances route optimization and real-time traffic predictions.



Healthcare

AI assists in early disease detection and streamlines patient care processes.



Automobiles

AI contributes to driver assistance, traffic flow analysis, and self-driving tech.



Agriculture

AI analyzes soil health, manages pests, and assists in crop monitoring.



Human Resource

AI simplifies recruitment, onboarding, and employee performance evaluation.



Lifestyle

AI personalizes recommendations and enriches online shopping experiences.



Social Media

AI detects fraud, analyzes sentiments, and customizes user content feeds.



Gaming

AI enhances game realism, assists players, and improves testing.



Astronomy

AI analyzes cosmic data, classifying events and aiding research.



Chatbots

AI-driven chatbots deliver multi-lingual and adaptive customer service.



Surveillance

AI detects threats, predicts behavior, and analyzes real-time footage.



Finance

AI identifies fraudulent transactions and assesses financial risks.



Data Security

AI prevents data breaches by identifying and responding to cyber threats.



Travel and Transport

AI customizes travel plans and predicts transportation demands.



Marketing

AI targets customer segments and creates relevant advertising content.



Entertainment

AI curates personalized content and enhances user engagement.



Military

AI aids in strategic decision-making, cyber defense, and operative training.

Save for later



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ChatGPT and AI

