

Artificial Intelligence: Skills, Applications, Careers, and Research - Day 2

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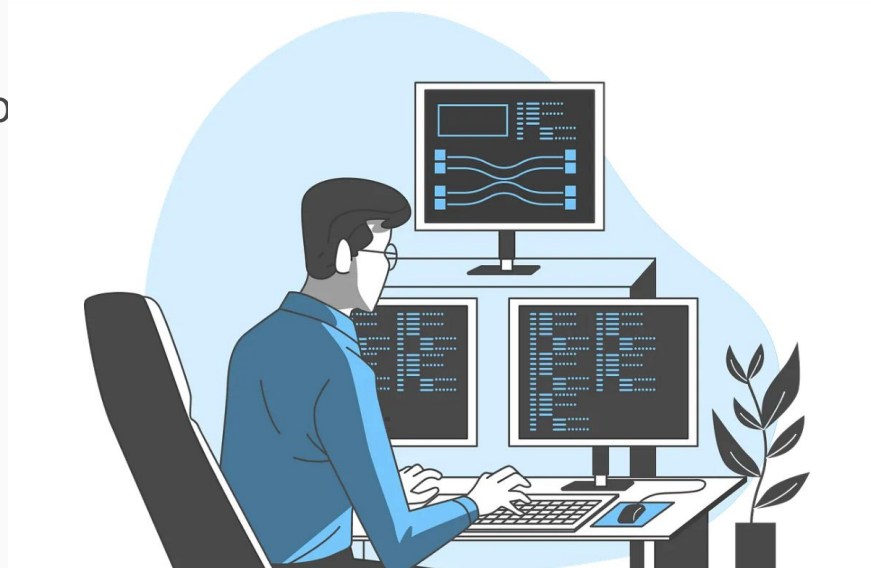
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ABOUT SPEAKER

- Visiting Researcher — Deakin University
- Research Affiliate — Monash University
- Peer Reviewer — Journals in Medicine & Health Sciences
- Research focus: Quantum machine learning, Computational neuroscience
- Experience in AI, research, and applied innovation

Seminar overview

- Why AI is booming
- Why everyone should learn AI now
- Automating tasks using simple Python
- Major branches of AI
- Fields where AI is applied
- AI job opportunities
- Responsibilities of AI roles
- Research conduction process



Why is AI booming ?

- Explosion of data from digital platforms
- Increased computing power (GPUs, cloud computing)
- Breakthroughs in machine learning and deep learning
- Availability of open-source AI tools
- Industry demand for automation and efficiency
- Investment from governments and private sectors
- Integration of AI into everyday tools (ChatGPT, Copilot, etc.)



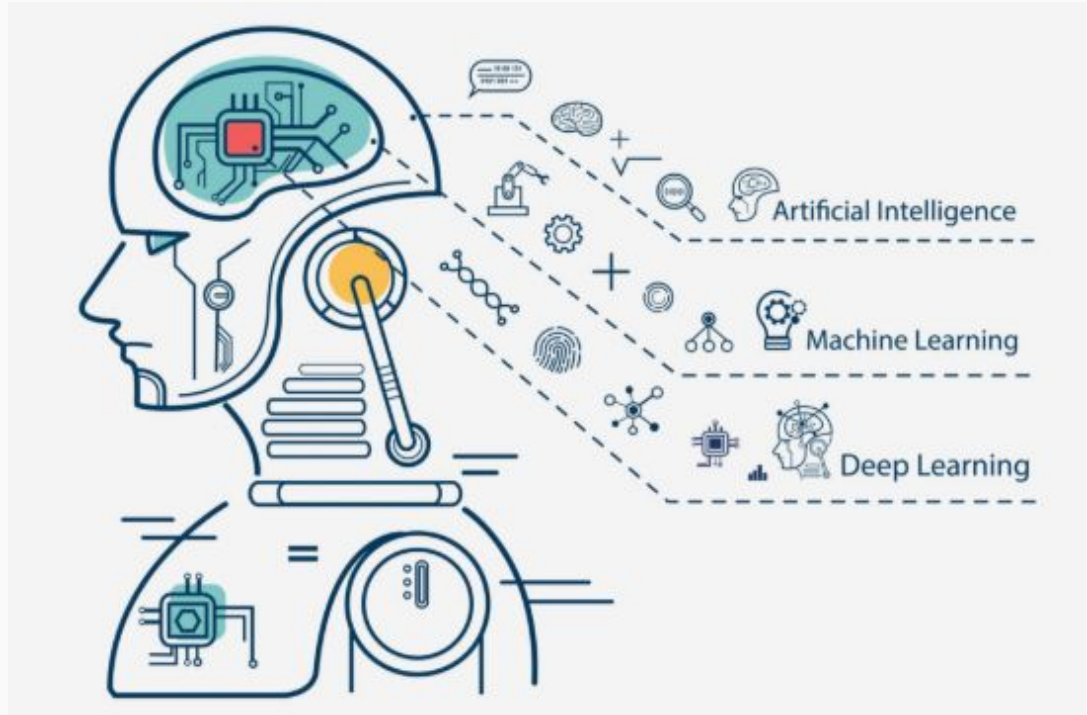
THE AI BOOM

How Executives Are Embracing AI Tools For Communication



Why Everyone Needs to Learn AI Now More Than Ever

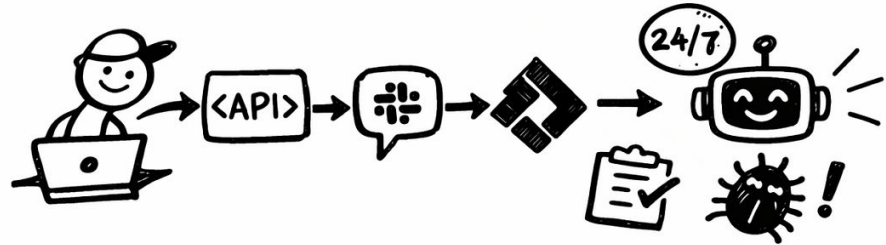
- AI is becoming a core workplace skill
- Automation is reshaping every industry
- AI improves productivity and decision-making
- Competitive advantage in job market
- Enables innovation and entrepreneurship
- AI literacy helps responsible technology use



Automating Tasks with Just a Few Lines of Python

- Automate repetitive Excel work
- Data cleaning and preprocessing
- Email automation
- File organization
- Report generation
- Web scraping for research data

Automate the Boring Stuff
You Keep Doing Manually



Simple Python Automation

- Read data from Excel
- Process and analyze data
- Generate summary
- Export results automatically

Outcome

- Reduced human error
- Faster workflow
- Scalable solutions

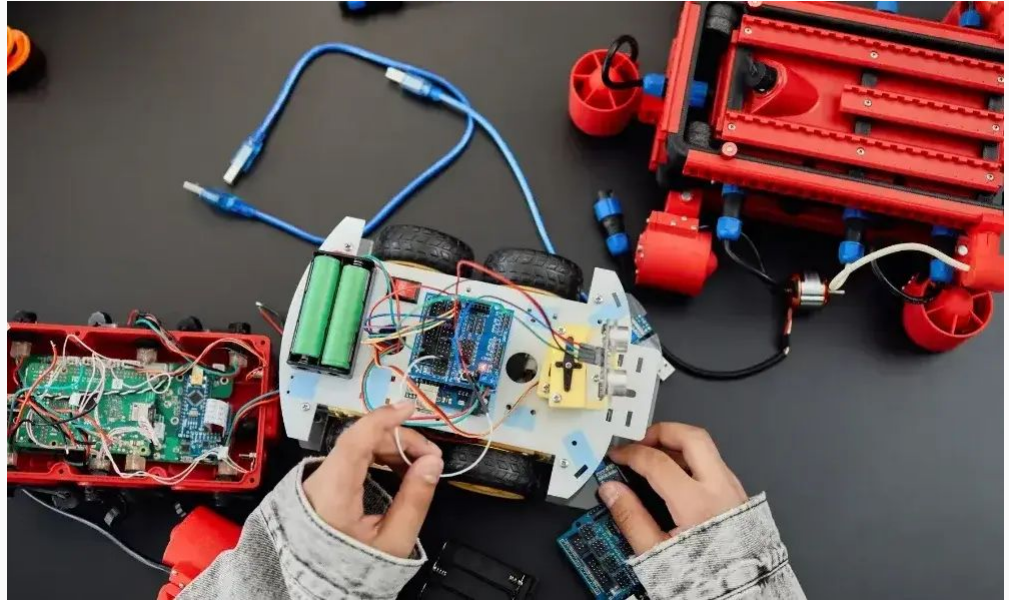


Major Branches of AI

- Machine Learning
- Deep Learning
- Natural Language Processing (NLP)
- Computer Vision
- Robotics
- Expert Systems
- Reinforcement Learning
- Generative AI

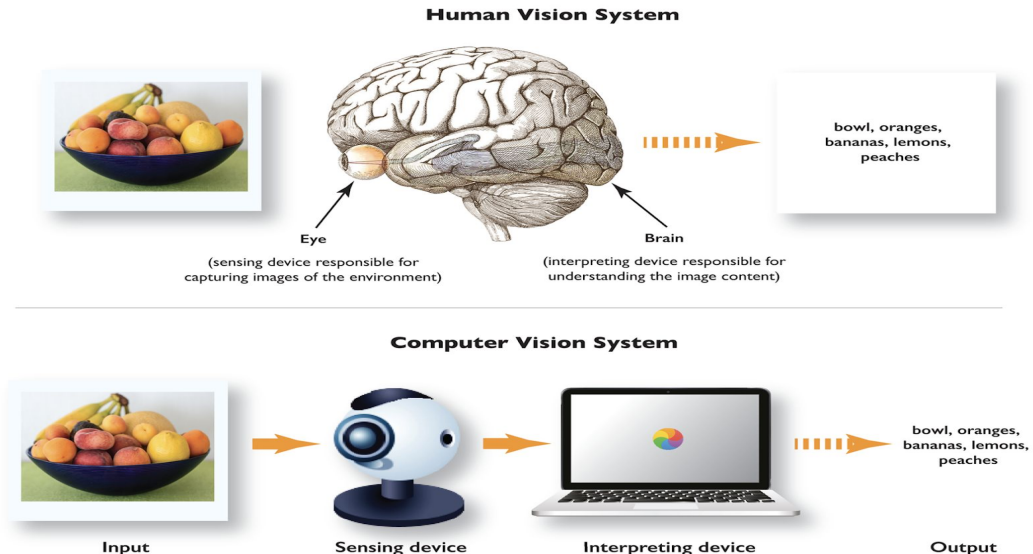
Robotics

- Healthcare & Surgery
- Autonomous Vehicles
- Manufacturing & Industry
- Retail & Customer Service
- Agriculture
- Defence & Security
- Space Exploration



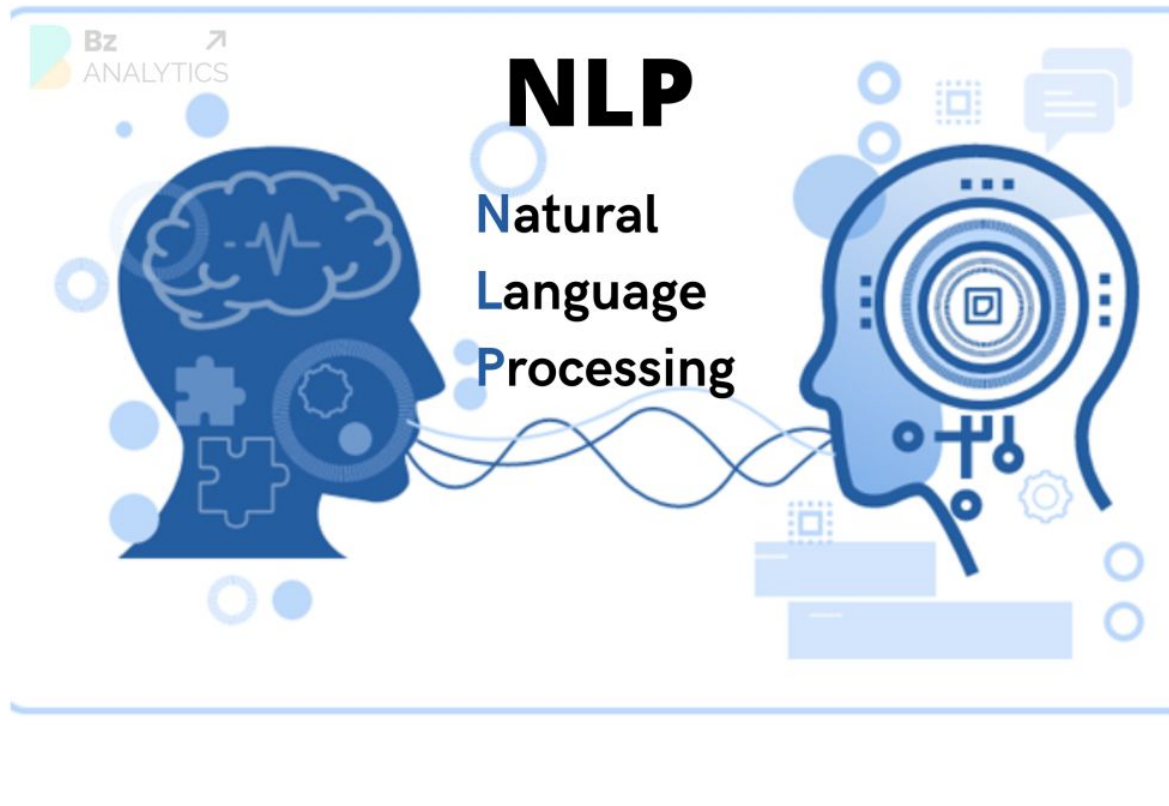
Computer Vision

- Healthcare
- Security & Surveillance
- Autonomous Vehicles
- Retail
- Manufacturing
- Agriculture



Natural Language Processing

- Communication & Translation
- Chatbots & Virtual Assistants
- Text Analysis
- Search & Information Retrieval
- Healthcare
- Content Moderation



Gen Ai

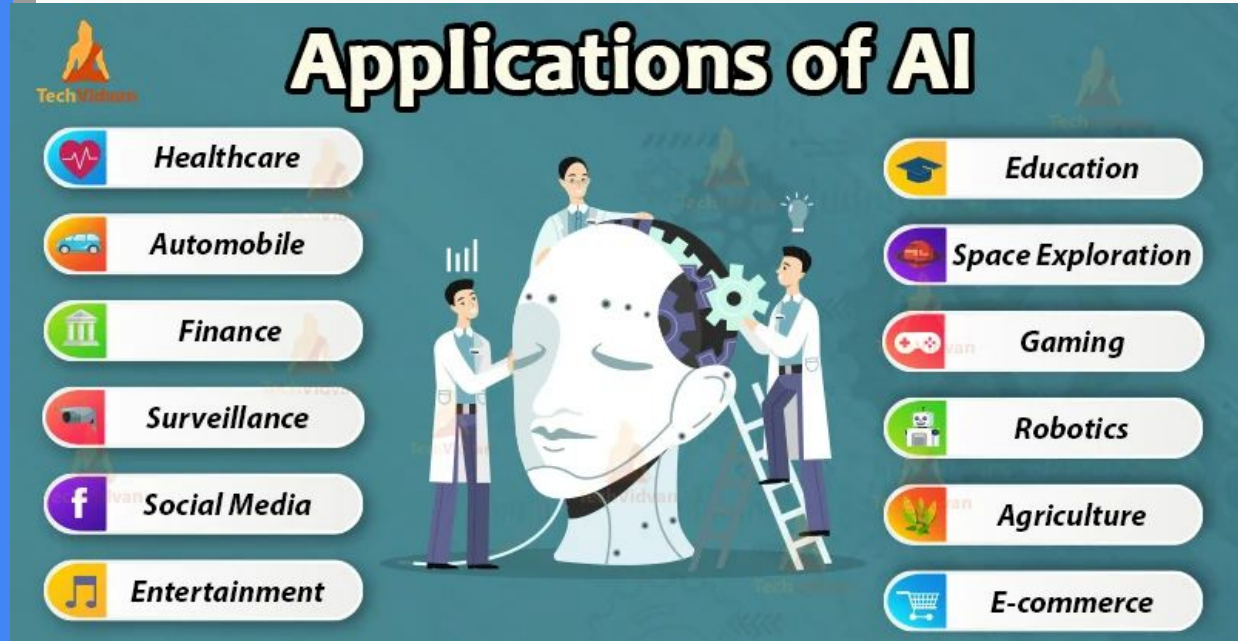
- Content Creation
- Education
- Healthcare
- Business & Marketing
- Design & Creativity
- Gaming & Entertainment
- Software Development

Generative AI Workflow for Content Creation



Fields Where AI is Applied

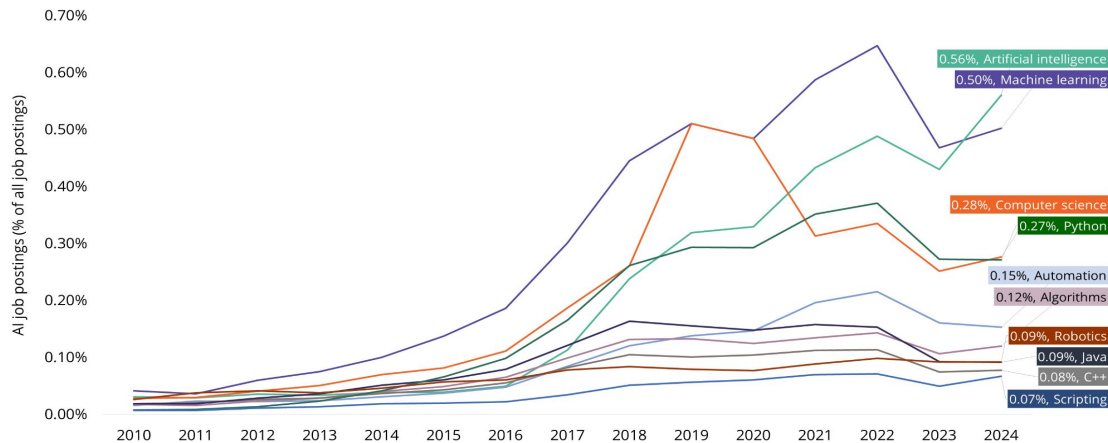
- Healthcare
- Finance
- Education
- Agriculture
- Manufacturing
- Transportation
- Marketing
- Cybersecurity
- Smart Cities
- Research & Academia



AI Job Opportunities

- AI Engineer
- Machine Learning Engineer
- Data Scientist
- Data Analyst
- AI Researcher
- NLP Engineer
- Computer Vision Engineer
- Robotics Engineer
- AI Product Manager
- AI Consultant

AI job postings (percent of all job postings) in the U.S. by skill cluster



Sources: AVANT by Avison Young, Lightcast

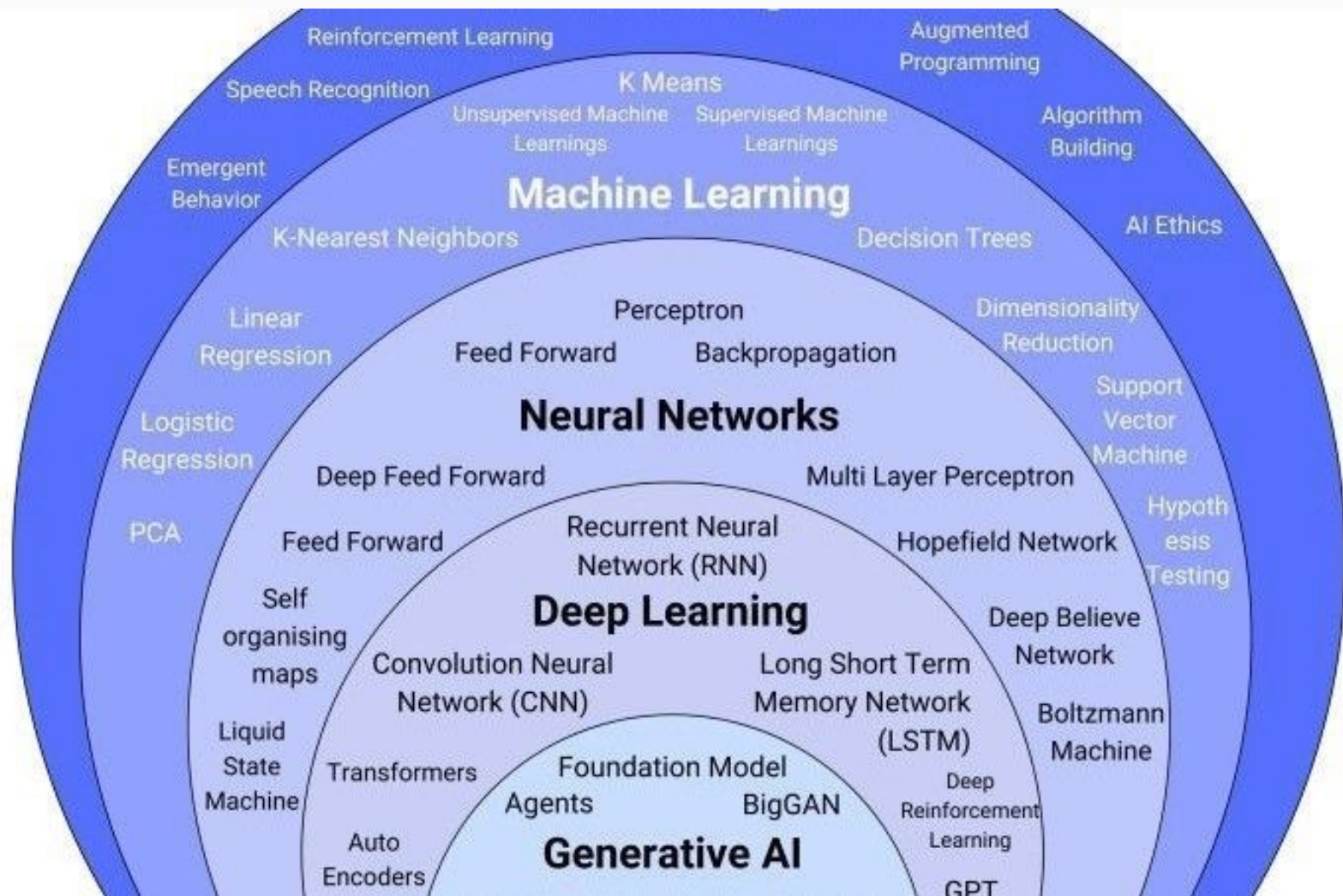
AVANT
by AVISON YOUNG

CIO

The 10 most in-demand tech jobs for 2026

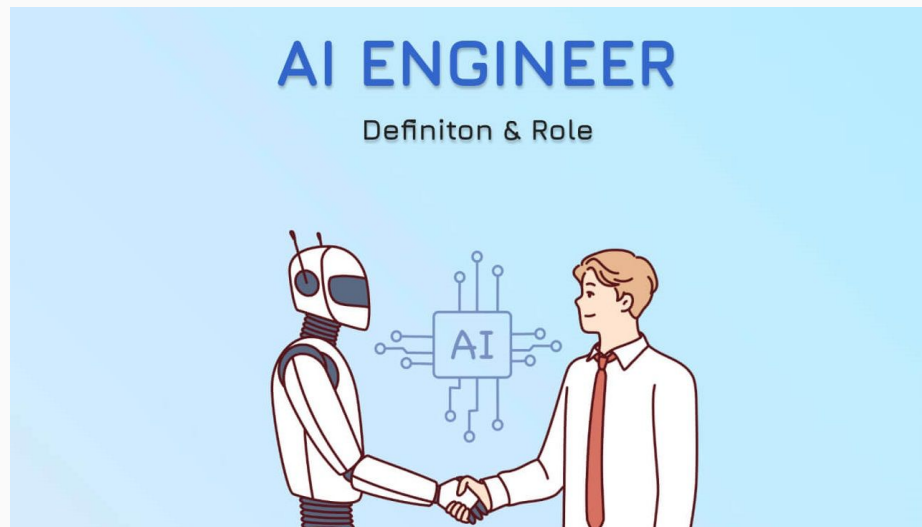
Job	25th percentile	50th percentile	75th percentile
AI/ML engineer	\$134,000	\$170,750	\$179,500
Cybersecurity engineer	\$118,500	\$144,000	\$190,750
Data analyst	\$96,250	\$117,250	\$138,500
Data scientist	\$121,750	\$153,750	\$182,500





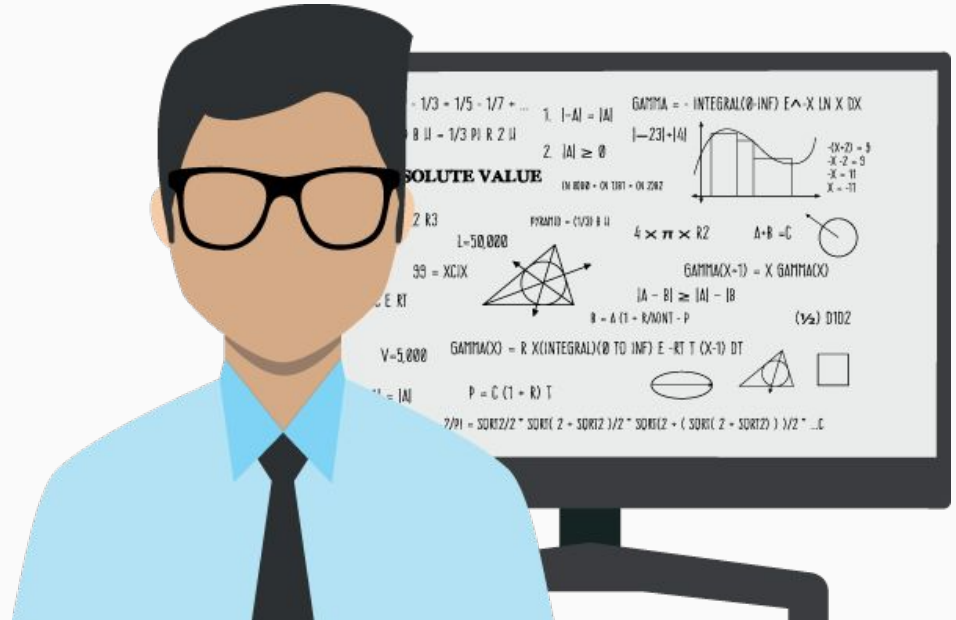
Responsibilities: AI Engineer

- Develop AI-based applications
- Deploy AI models
- Integrate AI into systems
- Optimize performance
- Maintain AI pipelines



Responsibilities: Data Scientist

- Data collection and cleaning
- Statistical analysis
- Model development
- Visualization and reporting
- Business insights generation



Responsibilities: Machine Learning Engineer

- Build ML pipelines
- Train and optimize models
- Deploy models into production
- Monitor performance
- Scale solutions



**MACHINE
LEARNING**

Responsibilities: AI Researcher

- Conduct literature review
- Develop novel algorithms
- Publish research papers
- Experiment with new techniques
- Collaborate with academic and industry partners



Responsibilities: AI Product Manager

- Define AI product strategy
- Coordinate between teams
- Understand user requirements
- Manage roadmap
- Ensure ethical AI use



Research Conduction Process

1. Identify research problem
2. Literature review
3. Define research objectives
4. Methodology design
5. Data collection
6. Data preprocessing
7. Model development
8. Experimentation
9. Evaluation and validation
10. Results interpretation
11. Documentation
12. Publication or implementation

Example AI Research Workflow

- Problem: Predict disease risk
- Data: Medical dataset
- Model: Machine learning classifier
- Evaluation: Accuracy, precision, recall
- Output: Decision support system
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Why This Matters

- AI skills improve employability
- Automation saves time and cost
- AI supports research innovation
- Organizations need AI-ready professionals



Key Takeaways

- AI is transforming every industry
- Learning AI is no longer optional
- Python enables powerful automation
- Multiple career paths available
- Structured research process is essential

Thanks!

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