CERTIFIED DATA SCIENTIST

PEOPLE INFORMATION TECHNOLOGY PROGRAM
Lecture 03

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Agenda

- Product Approach
- Data Science Portfolio
- Job Market for Data Scientists

Group Activity – Brainstorming Project Ideas

Think of a simple data science project.

- What problem does the model solve?
- How will the **user interact** with it?
- How will you **deploy** the model?

What is the Product Approach?

- Students often focus on building models, but in industry, the focus is on turning models into products that solve business problems.
- Data science products are often integrated into apps, websites, or tools that non-technical users can interact with.
- The goal is to make your models useful for people or businesses by building applications around them.
- In product development, your model might need constant updates and improvements based on user feedback.

Tools to Help You Productize

- Streamlit: A framework for turning Python scripts into interactive web applications.
- Flask/Django: Python web frameworks to build and deploy data science models as web apps.
- Heroku/Google Cloud/AWS: Platforms to deploy and host your models and applications.
- Docker: Use Docker to containerize and deploy your models easily across environments.

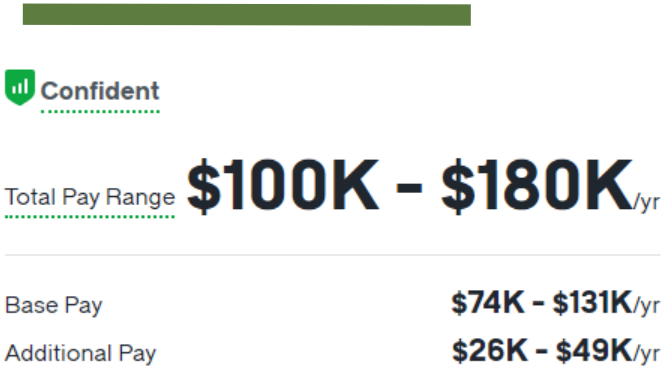
Building a Data Science Portfolio

- A data science portfolio is a collection of projects that showcase your skills, experience, and expertise in solving real-world problems using data science techniques.
- Why Build a Portfolio?
  - Employers look for proof of practical experience beyond just certifications. A portfolio shows that you can apply your skills.
  - Your portfolio can include various skills like data wrangling, visualization, machine learning, and even deployment of models as apps.
  - It encourages you to build and learn through hands-on projects, demonstrating growth over time.

Example Data Science Portfolio

https://www.kaggle.com/discussions/general/272441

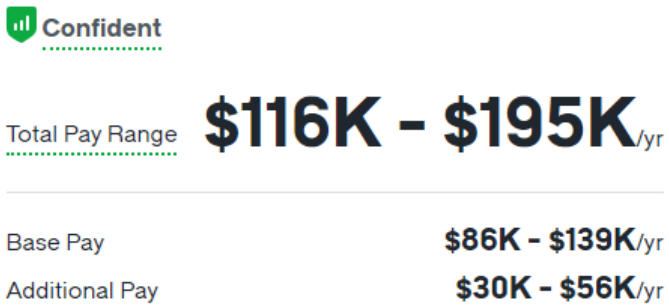
Job Market for Data Scientists



Machine Learning Engineer

- Machine Learning (ML) Engineers develop and implement ML models that enable machines to learn from data and make predictions or decisions.
- Key Responsibilities:
  - Designing and developing algorithms for data analysis and prediction.
  - Implementing supervised, unsupervised, and reinforcement learning models.
  - Evaluating and optimizing model performance.
  - Collaborating with data scientists to integrate ML solutions into products.
- Required Skills:
  - Experience with ML frameworks such as TensorFlow and PyTorch.
  - Strong grasp of statistics and linear algebra.

Job Market for Data Scientists

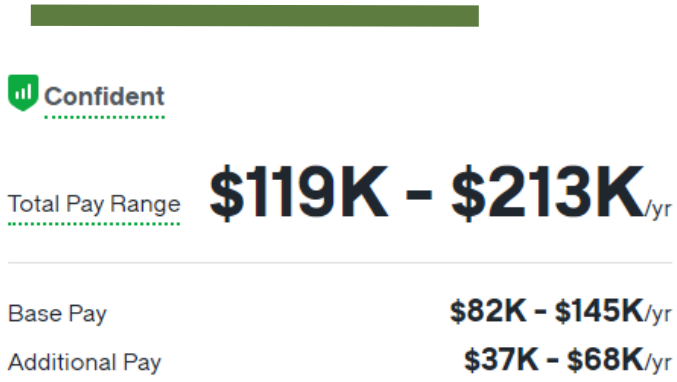


Data Scientist

Data Scientists study complex datasets to extract meaningful insights, helping organizations make data-driven decisions.

- Key Responsibilities:
  - **Collecting and processing** large datasets.
  - Building predictive models to solve business problems.
  - **Visualizing** data to communicate insights.
  - Working with stakeholders to address their **data needs**.
- Required Skills:
  - Strong programming skills (Python, R).
  - Expertise in statistical analysis and visualization tools.
  - Knowledge of machine learning algorithms and data preprocessing techniques.

Job Market for Data Scientists



AI Research Scientist

AI Research Scientists push the boundaries of AI through cutting-edge research and experimentation. They often work in academia or research labs, contributing to advancements in the field

Key Responsibilities:

- Researching to explore new AI methods and techniques.
- Publishing research papers and presenting at conferences.
- Collaborating with teams to apply research to real-world problems.

- Required Skills:
  - Advanced degree (usually a Ph.D.) in computer science, AI, or related fields.
  - Strong background in mathematics, including calculus, probability, and statistics.
  - Proficiency in AI frameworks and programming.

Job Market for Data Scientists

AI Ethicist / Compliance Officer

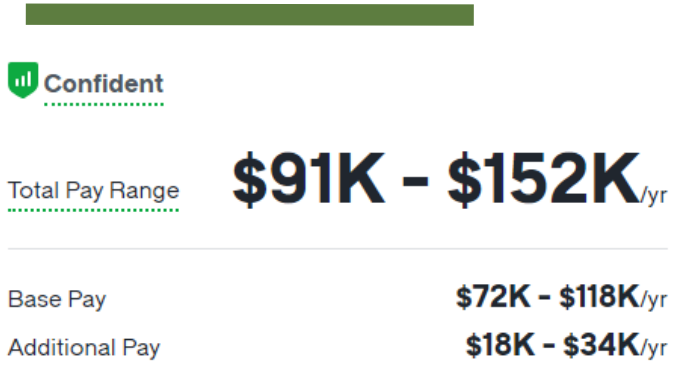
AI Ethicists ensure that AI systems are designed and used ethically. They help organizations navigate the ethical and societal implications of AI technologies.

Key Responsibilities:

- Evaluating the ethical implications of AI technologies.
- Developing guidelines for responsible AI use.
- Conducting risk assessments and suggesting mitigations for ethical concerns.

- Required Skills:
  - Strong background in ethics or philosophy.
  - Understanding of AI technologies and their societal impact.
  - Excellent communication and analytical skills.

Job Market for Data Scientists



Robotics Engineer

Robotics Engineers design, build, and program robots, often integrating AI algorithms to enable autonomous decision-making and action.

Key Responsibilities:

- Designing robotic systems.
- Implementing AI algorithms for perception, decision-making, and action.
- Testing and maintaining robotic systems.

- Required Skills:
  - Knowledge of AI and **mechanical/electrical** engineering.

Job Market for Data Scientists

$154,702 /yr
Engineer

$179,518 /yr
Assistant Director of Engineering

$188,039 /yr
Engineer IV

MLOps Engineer

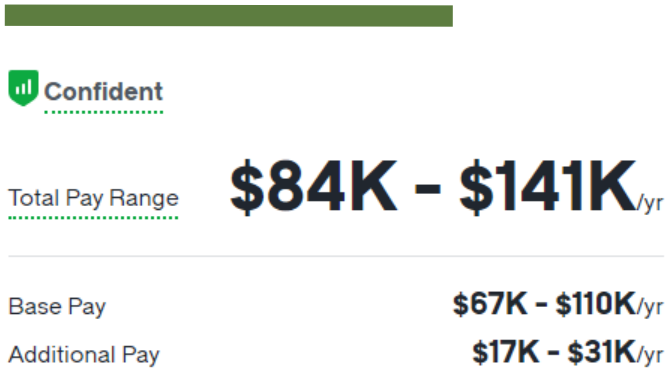
MLOps Engineers ensure that machine learning models are effectively deployed and maintained in production environments, automating key processes for model deployment and monitoring.

Key Responsibilities:

- Implementing CI/CD (continuous integration/continuous delivery) pipelines for ML models.
- Monitoring model performance and automating retraining.
- Ensuring scalability and reliability of ML systems.

- Required Skills:
  - Strong understanding of **DevOps** tools and practices.
  - Experience with **cloud** platforms (AWS, GCP, Azure) and ML frameworks.
  - Proficiency in **containerization technologies** (e.g., Docker, Kubernetes).

Job Market for Data Scientists



Data Engineer

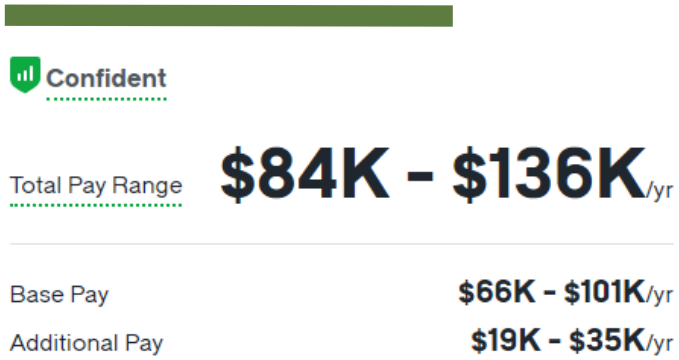
Data Engineers design and manage the data infrastructure, ensuring that data is reliable, accessible, and ready for analysis.

Key Responsibilities:

- Building and maintaining data pipelines.
- Ensuring data quality and reliability.
- Collaborating with data scientists to understand data requirements.

- Required Skills:
  - Proficiency in SQL and database management systems.
  - Experience with big data technologies (Hadoop, Spark).
  - Strong programming skills (Python, Java).

Job Market for Data Scientists



Business / Data Analyst (AI)

Business Analysts identify opportunities for AI implementation to improve business processes and efficiency.

Key Responsibilities:

- Analyzing business operations to identify AI-driven improvements.
- Gathering and documenting requirements for AI projects.
- Evaluating the impact of AI solutions on business performance.

- Required Skills:
  - Expertise in analysis and visualization tools (e.g., Tableau, Power BI).
  - Excellent communication skills for working with stakeholders.