

# ML-DevOps

## Month 1: Foundations of ML-DevOps and Model Development

### Week 1: Introduction to ML-DevOps

- Definition and principles of ML-DevOps
- Key challenges in integrating machine learning with DevOps
- Importance of collaboration between data science and operations teams

### Week 2-3: Basics of Machine Learning

- Overview of machine learning concepts
- Types of machine learning (supervised, unsupervised, reinforcement learning)
- Understanding features, labels, and model training

### Week 4-5: Model Development Practices

- Data preprocessing and feature engineering
- Model training and evaluation
- Version control for machine learning models

### Week 6: Model Deployment and Containerization

- Containerizing machine learning models with Docker
- Deployment options (e.g., Kubernetes, serverless)
- Continuous Integration and Continuous Deployment (CI/CD) for models

## Month 2: Advanced ML-DevOps Concepts and Optimization

### Week 1-2: Model Monitoring and Performance Optimization

- Implementing monitoring for machine learning models
- Handling model drift and retraining strategies
- Techniques for optimizing model performance

### Week 3-4: Explainability and Bias in ML Models

- Importance of model explainability
- Addressing bias in machine learning models
- Tools and techniques for model interpretability

### Week 5-6: Security in ML-DevOps and Final Project

- Security considerations for machine learning models
- Ensuring data privacy and compliance
- Final project: Building an end-to-end ML-DevOps pipeline