

# Lecture 10: Case Studies

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EEEC4400 Data Engineering & Deep Learning  
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## Outline

- Matlab ([matlab.mathworks.com](https://matlab.mathworks.com))
  - Machine Learning & Deep Learning Apps
  - Statistics and Machine Learning Toolbox: HPO etc.
    - Deep Network Designer
  - Reinforcement Learning Toolbox
    - Reinforcement Learning Designer
  - Matlab Co-Pilot
- Optuna ([optuna.org](https://optuna.org))
  - Hyperparameter Optimization
  - Optuna Dashboard with LLM integration
  - OptunaHub: AutoSampler
- Flower Federated Learning framework ([flower.ai](https://flower.ai))
  - TensorFlow & PyTorch Quickstart
  - Application areas: Medical use case (video)
  - Fast distributed training of Foundation Models (video)
- MLflow for Generative AI and AI Agents (video)

## Video links

- Federated Foundation Model for Generalisable Disease Detection
- [https://youtu.be/bIRp\\_L0tq-0](https://youtu.be/bIRp_L0tq-0)
- Foundation Models with Flower
- <https://youtu.be/5jI09CUEVkg>
- GenAI in production with MLflow
- <https://www.youtube.com/watch?v=l9yHmvl4Q-E>

*Thank You*  
**Questions?**

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