Big Data & **Machine Learning Workshop**

Design of Machine Learning Models
in Python for Financial Crime Risk

Krakow Summer Quantitative Bootcamp.
7-10 July, Jagiellonian University, Krakow, Poland

Anna Pastwa, PhD

Your instructor:

Anna Pastwa, PhD

Data Scientist, Assistant Vice President at Risk & Compliance Analytics

Financial Crime Threat Mitigation, Dynamic Risk Assessment

Research interests:
- Machine learning for financial crime risk assessment
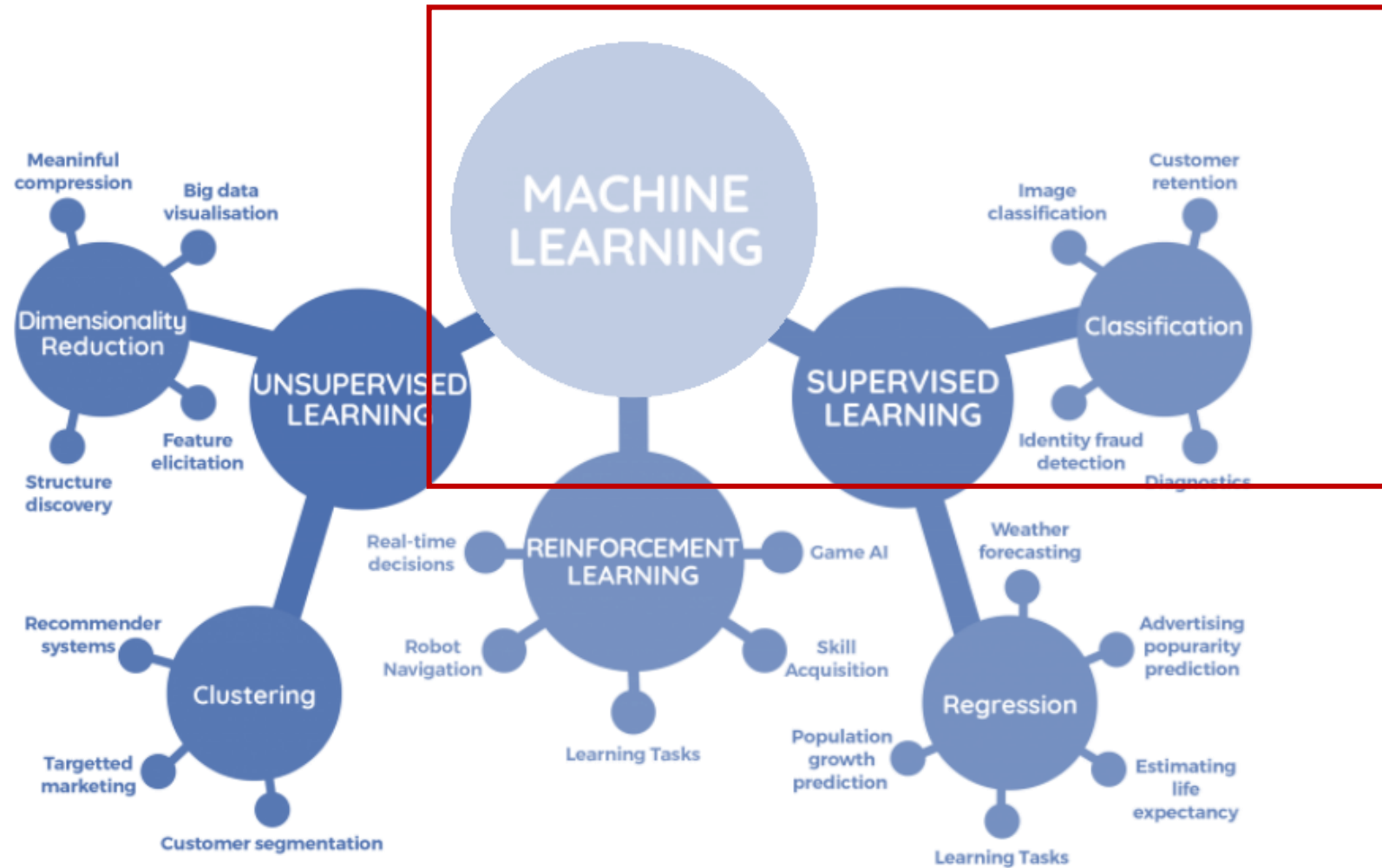- Economics of AI
- FinTech

Workshop outline: 2h

1. **Getting started (5 minutes)** ✔

2. **Setting the context: financial crime detection scale and complexity – theoretical introduction (15 minutes)**

3. **Hands-on workshop in Google Colab**

- **Lab part 1: Data preparation: (25 min)**
  - reading in,
  - preprocessing,
  - targets and features

- **Lab part 2: Building the model: supervised learning (25 min)**
  - Choice of model: imbalanced class problem
  - Train-test split, hyperparameter tuning

- **Lab part 3: Model evaluation and explainability (25 min)**
  - Choice of eval metrics
  - Model explainability

4. **Modelling challenges and considerations – theoretical outtroduction (15 min)**

5. **Wrap-up and Q&A (10 min)**

Setting the context

Financial Crime Risk

MACHINE LEARNING

UNSUPERVISED LEARNING

Dimensionality Reduction
- Meaninful compression
- Big data visualisation
- Feature elicitation
- Structure discovery

Clustering
- Recommender systems
- Targetted marketing
- Customer segmentation

REINFORCEMENT LEARNING
- Real-time decisions
- Game AI
- Robot Navigation
- Skill Acquisition
- Learning Tasks

SUPERVISED LEARNING

Classification
- Image classification
- Customer retention
- Identity fraud detection
- Diagnostics

Regression
- Weather forecasting
- Advertising popurarity prediction
- Population growth prediction
- Estimating life expectancy
- Learning Tasks

Let's get hands-on!

Google Colab workshop:
https://tinyurl.com/ksqb22ml

Q&A

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They do not necessarily reflect the views of her current or past employers.