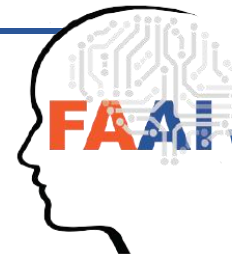


- Module 8 - AI-based solutions for HealthCare (description of lectures and learning activities)

FAAI:
The Future is In Applied Artificial Intelligence
WP4 Teacher Training A 4.5,
Podgorica, Montenegro, 15-19.05.2023
(UBB Team)

Disclaimer: Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Fundacja Rozwoju Systemu Edukacji. Neither the European Union nor the granting authority can be held responsible for them.

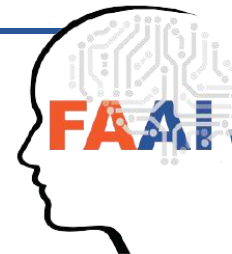




Competencies covered

- 1. Recognize the breadth and utility of machine learning methods
- 3. Select appropriate (classes of) machine learning methods for specific problems.
- 4. Use appropriate training and testing methodologies when deploying machine learning algorithms.
- 5. Explain methods to mitigate the effects of overfitting and curse of dimensionality in the context of machine learning algorithms.

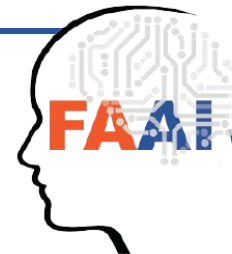




Competencies covered

- 6. Identify an appropriate performance metric for evaluating machine learning algorithms/ tools for a given problem.
- 8. Debate the possible effects -- both positive and negative -- of decisions arising from machine learning conclusions.
- 9. Describe major areas of AI as well as contexts in which AI methods may be applied.
- 12. Be aware of the wide range of ethical considerations around AI systems, as well as mechanisms to mitigate problems.

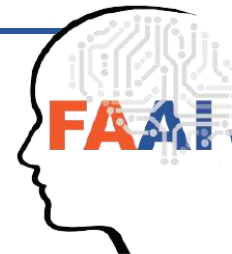




Topics (covered)

-

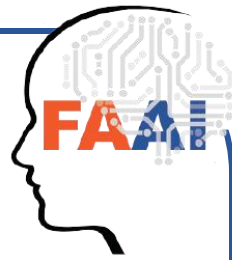




Module design

- 1. Duration: 10 hours
 - 4 hours - lectures
 - 6 hours – other learning activities

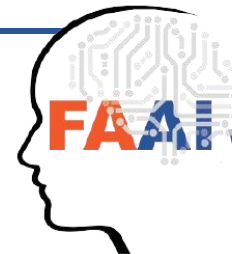




Module design

- **2. Structure**
- Lectures – 2
- Practical task in a team - 1 per lecture
- Learning Scenarios – 1 per lecture
- Guide for practical task – 1
- Tasks for practical tasks – 1 set for 15 persons
- Resources (references)

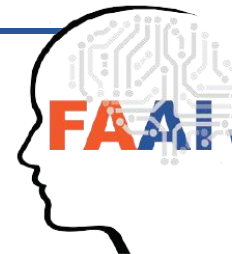




Module design

- Questions for discussion (Q&A session) – min 5
- Quiz: 1 with ~40-50 close questions with 4 answers/distractors each
- Presentations: 1 with min 30 slides per lecture
- Lecture Notes: 1 per lecture
- Learning Video: 2 (basing on the lectures)
- References to datasets (for practical tasks)

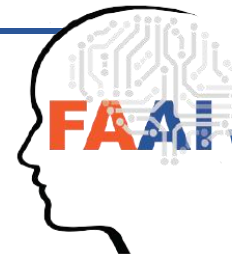




Lectures

- 1. Overview of Hospital Information Systems. Integration of AI into processes of diagnostics, treatment and prophylaxis
- 2. AI models of medical informatics: from classical to deep and reinforcement learning

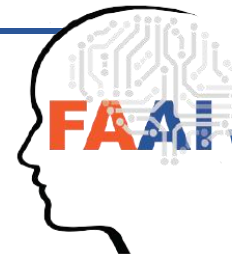




Practical task in a team (1 per lecture)

- 1. Predicting COVID pandemy (data from COVID Datahub)
- 2. Classification of signals from Physionet project

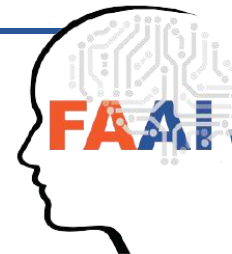




Learning Scenarios – 1 per lecture

- Lecture 1:
- Basics of information processes in healthcare
-> Standards of medical data -> Developing ML workflow for AI problem in healthcare

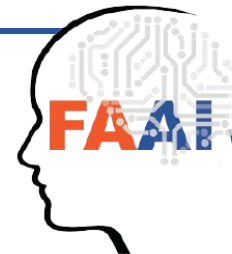




Learning Scenarios – 1 per lecture

- Lecture 2:
- AI models for classic ML in healthcare -> AI models for deep learning in healthcare -> AI models for reinforcement learning in healthcare



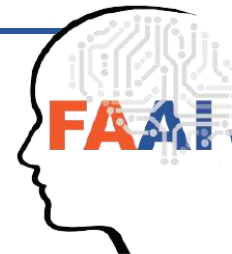


Tasks for practical tasks – 1 set for 15 persons

- 1. Predicting the fractures
- 2. Early diagnostics in cardiology
- 3. Risk assessment of gout
- 4. Polytrauma classification
- 5. Comorbidity states classification (pancreatitis and ascariasis)
- 6. Retinal images classification on U-Net
- 7-10. Medical imaging as DL
- 11-15. Signals from Physionet classification

and prediction

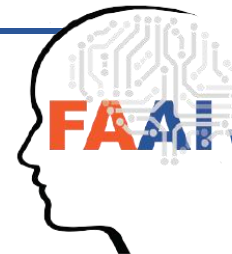




References to datasets (for practical tasks)

- Datasets:
 - Our own datasets from scientific projects
 - Open access datasets of medical images and signals

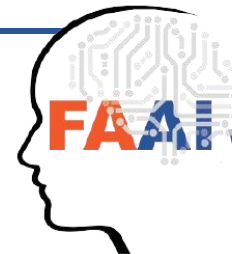




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Thank you for attention!
Question??

