

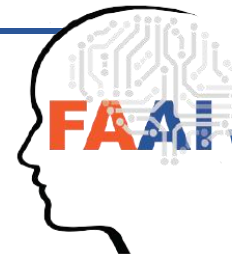


# • Module 5 - Implementation of external AI modules in software applications (description of lectures and learning activities)

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

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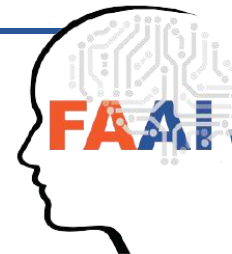


## Competencies covered

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- 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.



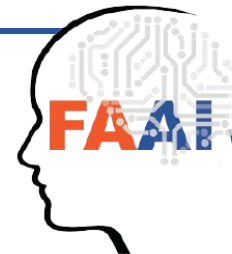


## Competencies covered

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- 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.



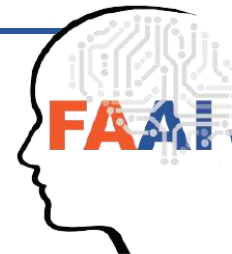


# Topics (covered)

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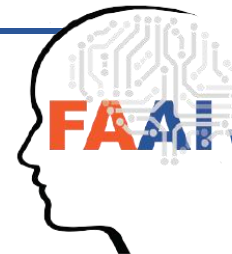


# Module design

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



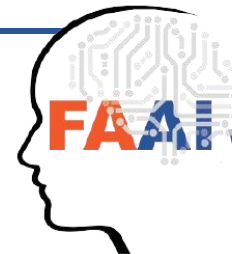


# Module design

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- **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)



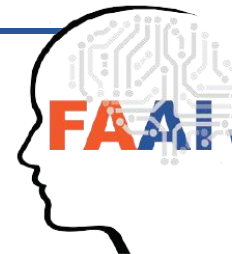


## Module design

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- 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)





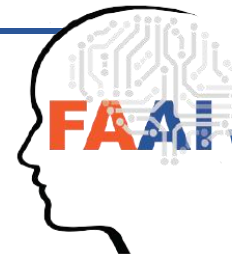
# Lectures

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- 1. External AI modules for classic ML (Da Vinci company)
- 2. External AI modules for image recognition and captioning (Next, Cognex companies)





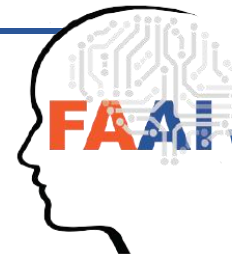


## Practical task in a team (1 per lecture)

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- 1. Assessment of the predispositions of football players
- 2. Classification of signals from power electrical devices



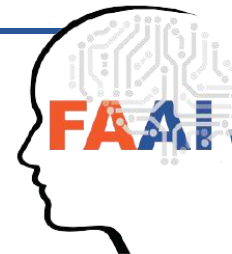


## Learning Scenarios – 1 per lecture

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- Lecture 1:
- Data exploration for classic ML basing on external modules -> Developing ML workflow for classic ML basing on external modules -> Predicting with the help of classic ML models basing on external modules



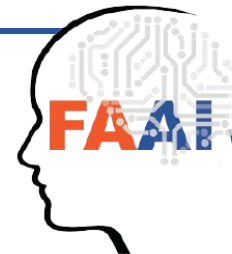


## Learning Scenarios – 1 per lecture

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- Lecture 2:
- Data exploration for deep ML basing on external modules -> Developing ML workflow for deep ML basing on external modules -> Predicting with the help of deep ML models basing on external modules



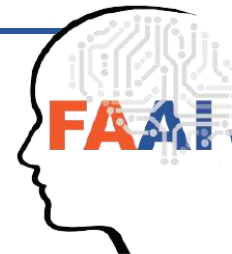


# Tasks for practical tasks – 1 set for 15 persons

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- 1-5. Image recognition basing on external modules
- 6-15. Frequency analysis of the signals



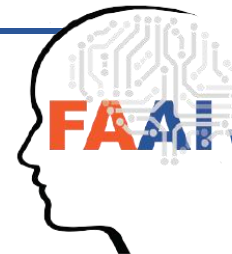


# References to datasets (for practical tasks)

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- Datasets:
  - Bin picking application with robots
  - Signals of power electrical devices
  - Video recording of vehicles on the parking



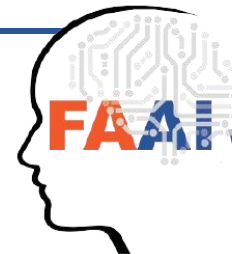


## References:

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- <https://social.hays.com/2019/10/04/skills-competencies-whats-the-difference/>
- [https://www.sac.edu/AcademicAffairs/TracDat/Pages/Competency-Based-Education-\(CBE\)-.aspx](https://www.sac.edu/AcademicAffairs/TracDat/Pages/Competency-Based-Education-(CBE)-.aspx)
- [https://www.acm.org/binaries/content/assets/education/curricula-recommendations/dstf\\_ccdsc2021.pdf](https://www.acm.org/binaries/content/assets/education/curricula-recommendations/dstf_ccdsc2021.pdf)





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Thank you for attention!  
Question??

