Technische Hochschule Rosenheim
Technical University of Applied Sciences

Organization

Introduction to AI – Part II

Johannes Jurgovsky

Summer term 2023

Organization

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Technical University of Applied Sciences

- Lecture: 2 hours per week
  - Thursdays: 8:00 – 9:30 (A3.13)
- Exercise: 2 hours per week
  - Thursdays: 9:45 – 11:15 (S1.30)
  - Thursdays: 11:45 – 13:15 (S1.30)
- Certificate of achievement
  - Written exam
  - 90 minutes
  - End of semester
  - Exam registration in OSC (registration starts on 21.04.)
  - Includes questions about „Introduction to AI – Part I“
- Communication
  - johannes.jurgovsky@th-rosenheim.de
  - Office: B1.10 (Thursdays: 13:30 – 14:30)

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Schedule

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Week	Date	Chapter	
1	16.03.2023	Orga & Introduction	
2	23.03.2023	State-based Models	
3	30.03.2023	Python 1: Scientific Computing	
4			Easter break
5	13.04.2023	Graphical Models	
6	20.04.2023	Differentiable Programming	
7	27.04.2023		Out of Office
8	04.05.2023	Python 2: Text, Image, Audio	
9	11.05.2023	Representation Learning	
10	18.05.2023		Public Holiday (Ascension Day)
11	25.05.2023	Tools from Linear Algebra	
12	01.06.2023	Recommender Systems & Association Rule Mining	
13	08.06.2023		Public Holiday (Corpus Christi)
14	15.06.2023	Metaheuristics	
15	22.06.2023	Localization & Mapping	
16	29.06.2023	Network Analysis	
17	06.07.2023	Review	

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Exercises

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- Question sets about lecture content
- Python programming
- Implementation of algorithms
- Tech Stack
  - Python
  - Jupyter Notebooks
- Exercises are essential
  - Implementation of algorithms fosters understanding
  - Training in Python Programming on-the-fly
  - Knowledge of common data analytics and Machine Learning libraries on-the-fly
    - `numpy, scipy, scikit-learn, pytorch, pandas, nltk, …cython …`

Goals

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Change of Perspective:

Symbolic AI => Statistical AI

Predicate Logic, First-Order Logic	Models, Inference, Learning

Change of Nomenclature:

- The term „Artificial Intelligence“ is vague and highly overloaded
- A term for the general public, institutions and companies to subsume the „technical magic“ behind seemingly smart applications and devices.

- No magic required. Instead:
  - Strong formalisms and algorithms. …whose names are less known to the general public.
  - Data and efficient implementations.

Gist of this course:

- Overview of application domains of AI and adequate terminology
- Understand core concepts, models and algorithms involved in these domains