

Democritus University of Thrace, Kavala, Greece

School of Science Department of Informatics

Department of European and International Programmes – Erasmus+ Agios Loukas, 654 04, Kavala University Campus, Greece 0030-2510-462221 & -290 & -308

Proposed Course for incoming Erasmus students¹

COUTSE Introduction to Machine Learning Regression Neural Networks Probability Distributions Convolutional Neural Networks Graphical Models Autoencoders Restricted Boltzmann Machines Transformers Adversarial Networks Diffusion Models Diffusion Models Aim of the course and target audience • The course will introduce students to Deep Learning • Target audience • Target audience: Undergraduate students of Informatics/ Computer Science OR Education Lectures: 26 hours Hands-on exercises: 26 hours Evaluation:	Responsible for the course (lecturer) (name, phone number, e- mail address) Title of the Course ECTS credits	Professor Stergios Papadimitriou 0030 2510 462 323 sterg@cs.duth.gr Distributed Systems and Big Data 5		
Aim of the course and target audience The course will introduce students to Deep Learning Target audience Teaching Methods duration and Evaluation Lectures: 26 hours Evaluation: Final Action Lectures: 26 hours Evaluation: Final Action: Lectures: 26 hours Evaluation: Evaluation: 	Short contents of the			
Neural Networks Probability Distributions Convolutional Neural Networks Graphical Models Autoencoders Restricted Boltzmann Machines Transformers Adversarial Networks Diffusion Models Aim of the course and target audience • The course will introduce students to Deep Learning • Target audience: Undergraduate students of Informatics/ Computer Science OR Education Teaching Methods duration and Evaluation Lectures: 26 hours Hands-on exercises: 26 hours Evaluation:	course	Introduction to Machine Learning		
Probability Distributions Convolutional Neural Networks Graphical Models Autoencoders Restricted Boltzmann Machines Transformers Adversarial Networks Diffusion Models Aim of the course and target audience • The course will introduce students to Deep Learning • Target audience: Undergraduate students of Informatics/ Computer Science OR Education Teaching Methods duration and Evaluation Lectures: 26 hours Hands-on exercises: 26 hours Evaluation:		e		
Convolutional Neural Networks Graphical Models Autoencoders Restricted Boltzmann Machines Transformers Adversarial Networks Diffusion Models Aim of the course and target audience • The course will introduce students to Deep Learning • Target audience: Undergraduate students of Informatics/ Computer Science OR Education Teaching Methods duration and Evaluation Lectures: 26 hours Hands-on exercises: 26 hours Evaluation:		Neural Networks		
Graphical Models Autoencoders Restricted Boltzmann Machines Transformers Adversarial Networks Diffusion Models Aim of the course and target audience • The course will introduce students to Deep Learning • Target audience: Undergraduate students of Informatics/ Computer Science OR Education Teaching Methods duration and Evaluation Lectures: 26 hours Hands-on exercises: 26 hours Evaluation:		Probability Distributions		
Autoencoders Restricted Boltzmann Machines Transformers Adversarial Networks Diffusion Models Aim of the course and target audience • The course will introduce students to Deep Learning • Target audience: Undergraduate students of Informatics/ Computer Science OR Education Teaching Methods duration Actuation Lectures: 26 hours Hands-on exercises: 26 hours Evaluation:		Convolutional Neural Networks		
Restricted Boltzmann Machines Transformers Adversarial Networks Diffusion Models Aim of the course and target audience • The course will introduce students to Deep Learning • Target audience: Undergraduate students of Informatics/ Computer Science OR Education Teaching Methods duration and Evaluation Lectures: 26 hours Hands-on exercises: 26 hours Evaluation:		Graphical Models		
Transformers Adversarial Networks Diffusion Models Aim of the course and target audience • The course will introduce students to Deep Learning • Target audience: Undergraduate students of Informatics/ Computer Science OR Education Teaching Methods duration and Evaluation Lectures: 26 hours Hands-on exercises: 26 hours Evaluation:		Autoencoders		
Adversarial Networks Diffusion Models Aim of the course and target audience • The course will introduce students to Deep Learning • Target audience: Undergraduate students of Informatics/ Computer Science OR Education Teaching Methods duration and Evaluation Lectures: 26 hours Evaluation:		Restricted Boltzmann Machines		
Aim of the course and target audience • The course will introduce students to Deep Learning • Target audience • Target audience: Undergraduate students of Informatics/ Computer Science OR Education Teaching Methods duration and Evaluation Lectures: 26 hours Hands-on exercises: 26 hours Evaluation: Evaluation:		Transformers		
Aim of the course and target audience • The course will introduce students to Deep Learning • Target audience: Undergraduate students of Informatics/ Computer Science OR Education Teaching Methods duration and Evaluation Lectures: 26 hours Evaluation Evaluation:		Adversarial Networks		
target audience • Target audience: Undergraduate students of Informatics/ Computer Science OR Education Teaching Methods duration and Evaluation Lectures: 26 hours Hands-on exercises: 26 hours Evaluation: Evaluation:		Diffusion Models		
target audience • Target audience: Undergraduate students of Informatics/ Computer Science OR Education Teaching Methods duration and Evaluation Lectures: 26 hours Hands-on exercises: 26 hours Evaluation: Evaluation:				
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Teaching Methods duration and Evaluation Lectures: 26 hours Hands-on exercises: 26 hours Evaluation: Evaluation:	target audience			
and Evaluation Hands-on exercises: 26 hours Evaluation:		Computer Science OR Education		
Evaluation:	•			
	and Evaluation	Hands-on exercises: 26 hours		
		Evoluction		
I 100% Individual ANU/OR Group Assignments		Evaluation: 100% Individual AND/OR Group Assignments		
Offered Period Fall semester	Offered Period			

Indicative bibliography	1.	Christopher M. Bishop, with Hugh Bishop, <i>Deep Learning</i> , Springer 2024
	2.	Ian Goodfellow, Yoshua Bengio, and Aaron Courville, <i>Deep Learning</i> , MIT Press, 2916
	3.	Sergios Theodoridis, Machine Learning: A Bayesian and
		Optimization Perspective, Second Edition, Academic Press 2020
	4.	Bharath Ramsundar, Peter Eastman, Patrick Walters, Vijay,
		Deep Learning for the Life Sciences, O'Reily, 2019
	5.	Charu C. Aggarwal, Neural Networks and Deep Learning, Second Edition,
		Springer 2023

¹ Could be easily used and offered for TS movement to our Erasmus partners