



AI&ML SUMMER WORKSHOP

Seminars will be held on **7 -19 June 2021**

Registration form: <https://clck.ru/VHVWK>

Google meet: <https://meet.google.com/jfv-bvhf-cyi>

Workshop materials: https://www.dropbox.com/s/beyh0u9xnpcanje/MLF_Theory_AI%26ML_SummerWorkop_2021_v_2.8.pdf?dl=0

A number of outstanding results have been recently achieved in the areas of Artificial Intelligence, Machine Learning, and large Neural Networks. During a series of workshops on AI and ML, you will be able to understand what they are and how they solve problems, ask questions and try to complete training exercises.

The seminars are conducted under the auspices of the ACeSYRI (Erasmus +) project. SU (ICIT) is the main organizer of the event held in cooperation with the IICT MES RK and the International Academy of Informatization. **1**

THE WORKSHOPS WILL ADDRESS THE FOLLOWING THREE GROUPS OF ISSUES:



1. BASIC THEORY

– classic machine learning algorithms. In this part, we will review the basic principles of learning programs development. Some knowledge on linear algebra and Python is highly appreciated.



3. DEEP LEARNING MODELS

Here we will briefly discuss the recognition of faces and objects, image and speech processing techniques.



2. EXAMPLES

of machine learning applications. In this section, we will examine the machine learning applications in various fields.

THERE ARE TWO LEVELS OF CERTIFICATION:



FOR PARTICIPANTS.

Seminar participants can limit themselves to listening to lectures and, if desired, answer the test questions.



FOR LISTENERS.

Listeners answer test questions and perform exercises to increase their proficiency in machine learning methods.



Participants and listeners will be certified based on learning outcomes.

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Workshop leader - prof. Mukhamediev R,
assistents: Symagulov A., Baimagambetova D., Abdygalym B.



LIST OF AI&ML WORKSHOP MAIN TOPICS.

PART 1. FUNDAMENTALS OF MACHINE LEARNING

			End time is approximate.
1	7/06	AI&ML. Intro to machine learning. Supervised & Unsupervised learning. Predictions. Linear regression. Python tools for data science.	15.30-17.30
2	8/06	Supervised learning. Linear and polynomial regression by python-numpy. Polynomial regression.	15.30-17.30
3	9/06	Supervised learning. Classification. Logistic regression. Classifiers: Naïve Bayes classifier, K nearest neighbors, Support Vector Machines	15.30-17.30
4	10/06	Artificial neural networks, learning algorithms, multi layer perceptron for classification tasks.	15.30-17.30
5	11/06	Deep learning. Convolution neural networks. Face recognition task.	15.30-17.30

PART 2. APPLIED MACHINE LEARNING

6	14/06	Cough Analyzer: an application and tools for tracking and diagnosing from coughs (Martin Lukac , Associate Professor, Nazarbayev University, Department of Computer Science)	16.00-17.30
7		Application of data mining algorithms in medicine (Jan Rabcan, PhD,University of Žilina, Slovakia)	16.00-17.30
8	15/06	Using Numba and GPU for High Performance Computing (Senior researcher of IICT MES RK Rustam Musabayev)	16.30-17.30
9	16/06	Modern problems of computational linguistics for Slavic and Turkic languages (Vladimir Barakhnin, Institute of Information Technologies SB RAS, Russia)	16.00-18.00
10		Analysis of the semantic and pragmatic characteristics of text using machine learning methods (Olga Kozhemyakina, Institute of Information Technologies SB RAS, Russia)	
11	17/06	Method of lithological classification of rocks based on machine learning (SU PhD student: Yan Kuchin)	16.00-18.00
12		Mass media monitoring and COVID-19 pandemic (SU PhD student: Kirill Yakunin)	
13		Predicting student personal results (SU PhD student: Alibek Abdurazakov, Sanzhar Murzakhmetov)	
14	18/06	Social processes on social-like networks (Tomasz Gwizdalla, University of Lodz),	16.00-18.00

* The topics of the next cycle of workshops (Fall)



Notes.

We do not expect to turn our participants and listeners into programmers. However, we will try to explain the limits of applicability and capabilities of artificial intelligence in solving your problems.

The seminars are open to all. For successful participation in the seminars, it is advisable for student to have a computer with Anaconda installed to analyze the program code and solve basic problems.

The deadline for the submission of the results of laboratory works is June 24.