National Research University «Higher School of Economics»
Faculty of Computer Science

INDIVIDUAL GRADUATION INTERNSHIP ASSIGNMENT

Barinov Kirill Alekseevich
(Surname, First name, Patronymic, if any)

Year of study 4

Educational Programme	BSc Data Science and Business Analytics
Degree	Bachelor
Field of Study	01.03.02 Applied Mathematics and Information Science
Faculty	Faculty of Computer Science
Type of Internship	Graduation Internship
Internship period (Day/Month/Year)[1]	April 1, 2024 to April 23, 2024

Choose 1 or 2 depending on what is relevant to you

(1) Internship Supervisor from company or external organization[2]

Kurochkin Ilya Ilyich
Surname, First name, Patronymic, if any

Candidate of Technical Sciences, Head of the lab C-1, IITP RAS
Company, Position, Academic title if any

(2) Faculty's Internship Supervisor[3]

Surname, First name, Patronymic, if any

CS Faculty Department, Position, Academic title if any

Internship objectives[4]:

1. Apply preprocessing of spectral data
2. Apply dimensionality reduction methods
3. Select and train models using different combinations of preprocessing and dimensionality reduction methods.

N. Choose the optimal combination of the model with machine learning methods that can classify plants for health and plant type with high accuracy based on their spectral data.

[1] Internship period is defined. You may use your resources flexibly within it
[2] Organization is an external organization relevant to HSE University where a student takes internship
[3] If your Supervisor from among the FCS faculty, indicate his/her data here as of the appointed Internship Supervisor
[4] In accordance with the Internship Programme and plan on thesis implementation

Learning outcomes:
The methods of dimensionality reduction (PCA, LDA, Kernel PCA, Isomap) were successfully used in the work, which made it possible to improve the quality of classification models. The study confirmed that the use of machine learning to analyze spectral data makes it possible to effectively classify plants into healthy and diseased, achieving a high accuracy of 99.7%. The obtained results open up opportunities for further research in the direction of preparing a model for the detection of various diseases and application on various types of crops, which can radically improve technologies in agriculture.

AGREED

Choose 1 or 2 depending on what is relevant to you

(1) Company or external organization Internship Supervisor

Candidate of Technical Sciences, Head of the lab C-1, IITP RAS		***Kurochkin.I.I***
(Position, Academic title if any)	*(Signature)*	*(Surname, Initials)*

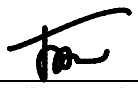
Date of signature:

(2) Faculty's Internship Supervisor:

(CS Faculty Department, Position, Academic title if any)	*(Signature)*	*(Surname, Initials)*

Date of signature:

Assignment has been accepted for fulfilment On April _23__ 2024

Student		Barinov K.A.
	(Signature)	*(Surname, Initials)*