

	FORM FOR PROPOSING A TOPIC IN THE SECOND CYCLE OF STUDIES	Oznaka	SAO-FENS.4.24.0-ENG
		Datum usvajanja	05.03.2019
		Datum/Br. revizije	-
		Stranica	1/1

Department	Information Technologies
Master thesis title:	Cloud Computing Threat Detection using Big Data Analytics and Machine Learning Methods
Mentor/professor - contact:	Assist. Prof. Dr. Zerina Mašetić zerina.masetic@ibu.edu.ba

Thesis background:	Cloud Computing is the technology being used almost in every industry and business. Therefore, it has been a target for various types of attacks. Cloud Security Alliance (CSA) performs the survey on the security of the cloud computing systems and identifies the top security attacks for the current year. These results enable cloud computing vendors to work on the development of attack detection and prevention mechanisms.
Thesis objective:	The aim of the thesis is to develop a attack detection and prevention mechanism which will help cloud computing vendors in securing the access and usage of the services and products, hosted in the cloud.
Literature:	<ol style="list-style-type: none"> 1. Top Threats Working Group, C. (2016). The Treacherous 12 Cloud Computing Top Threats in 2016. Cloud Security Alliance. 2. About CSA. from https://blog.cloudsecurityalliance.org/about-cloud-security-alliance/ 3. Zerina Masetic, Kemal Hajdarevic, Nejdete Dogru, Cloud computing threats classification model based on the detection feasibility of machine learning algorithms, 40th International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO), 2017

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Department	Information Technologies
Master thesis title:	Comparison of feature extraction methods for heart disease classification
Mentor/professor - contact:	Assist. Prof. Dr. Zerina Mašetić zerina.masetic@ibu.edu.ba

Thesis background:	The development of the detection mechanisms using machine learning methods have been very popular in the healthcare and medicine in the recent years. One of the challenges in the accurate disease detection is the selection of the appropriate feature extraction methods. These features are used as input to ML algorithms.
Thesis objective:	The aim of the thesis is to compare the performance of feature extraction methods on the ECG signals, for the accurate heart disease detection.
Literature:	<ol style="list-style-type: none"> 1. Shanti Chandra, Ambalika Sharma & Girish Kumar Singh (2018) Feature extraction of ECG signal, Journal of Medical Engineering & Technology, 42:4, 306-316, DOI: 10.1080/03091902.2018.1492039 2. Li, H.; Yuan, D.; Wang, Y.; Cui, D.; Cao, L. Arrhythmia Classification Based on Multi-Domain Feature Extraction for an ECG Recognition System. Sensors 2016, 16, 1744. 3. Li, H. et al. Genetic algorithm for the optimization of features and neural networks in ECG signals classification. Sci. Rep. 7, 41011; doi: 10.1038/srep41011 (2017).

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Department	Information Technologies
Master thesis title:	Heart disease detection model based on the phonocardiogram (PCG) and machine learning methods
Mentor/professor - contact:	Assist. Prof. Dr. Zerina Mašetić zerina.masetic@ibu.edu.ba

Thesis background:	A phonocardiogram (or PCG) is a plot of the sound recording and murmurs made by the heart with the help of the phonocardiograph. The accurate detection mechanism can help in detecting the possible heart problems of fetuses, based on their PCG data.
Thesis objective:	The aim of the thesis is to develop a detection mechanism with the help of machine learning methods of heart problems based on the PCG data, which could be especially helpful for detecting heart problems of fetuses.
Literature:	<ol style="list-style-type: none"> 1. M. Samieinasab and R. Sameni, Fetal phonocardiogram extraction using single channel blind source separation, 2015 23rd Iranian Conference on Electrical Engineering, Tehran, 2015, pp. 78-83. doi: 10.1109/IranianCEE.2015.7146186 2. Liu et al., An open access database for the evaluation of heart sound algorithms, <i>Physiological Measurement</i>. 2016 Dec;37(12):2181-2213. 3. Goldberger et al., PhysioBank, PhysioToolkit, and PhysioNet: Components of a New Research Resource for Complex Physiologic Signals. <i>Circulation</i> 101(23):e215-e220 [Circulation Electronic Pages; http://circ.ahajournals.org/content/101/23/e215]; 2000 (June 13).