

## Stage 2 – Dissemination

1. C. Baciú, M. Lupoae, G. B. Nica and D. Constantin, "Experimental and Numerical Studies of the Progressive Collapse of a Reinforced Concrete-Framed Structure Using Capacity Curves", *Arabian Journal For Science And Engineering*, ISSN 8805–8818, 2019

<https://link.springer.com/article/10.1007/s13369-019-03964-x>

**Abstract** - In the present paper, the potential of the progressive collapse of a reinforced concrete frame of a seven-storey building was evaluated by comparing the capacity curve and the M–N diagram of the beams. The advantage of this approach is that it captures the exact resistance mechanisms occurring during the progressive collapse of the structure such as flexural action, compressive arch action and catenary action. Furthermore, the overlapping of the capacity curves and the M–N diagram were proved to be an efficient tool to optimize the design of the resistance of structures to collapse. The modeling technique based on the Applied Element Method was validated by an experimental test. Consequently, numerical studies were performed according to General Services Administration guidelines using different scenarios implying the removal of one or two adjacent columns from the ground level. Additionally, the slabs were considered in the structural analysis and flexural action was identified as the main mechanism of action against total structural failure.

2. C. Leca, I. Nicolaescu, and P. Ciotirnae, "Crowdsensing Influences and Error Sources in Urban Wi-Fi Fingerprinting Positioning", *Preprints Org*, 2019

<https://www.preprints.org/manuscript/201911.0186/v1>

**Abstract** - Wi-Fi fingerprinting positioning systems have been deployed for a long time in location-based services for indoor environments. Combining mobile crowdsensing and Wi-Fi fingerprinting systems could reduce the high cost for collecting the necessary data enabling the deployment of the resulting system for outdoor positioning in areas with dense Wi-Fi coverage. In this paper, we present the results attained in the designing and evaluation of an urban fingerprinting positioning system based on crowdsensed Wi-Fi measurements. We first assess the quality of the collected measurements, highlighting the influence of received signal strength on data collection. We then, evaluate the proposed system by comparing the influence of the crowdsensed fingerprints on the overall positioning accuracy for different scenarios. The evaluation helps gain valuable insight into the design and deployment of urban Wi-Fi positioning systems while also allowing the proposed system to match GPS-like accuracy in similar conditions.

3. C. Dumitrescu, M. Minea and P. Ciotirnae, "UAV Detection Employing Sensor Data Fusion and Artificial Intelligence", © Springer Nature Switzerland AG 2020, L. Borzemski et al. (Eds.): ISAT 2019, AISC 1050, pp. 129–139, 2020, International Conference on Information Systems Architecture and Technology, Poland, <http://www.isat.pwr.edu.pl/>, [https://doi.org/10.1007/978-3-030-30440-9\\_13](https://doi.org/10.1007/978-3-030-30440-9_13)

**Abstract** - The purpose of this paper is to present a multi-sensorial detection method for discovering and obtaining characteristics of flying Unmanned Aerial Vehicles (UAVs) in restricted areas. Different solutions may be applied for this purpose: radio signals analysis, acoustic patterns analysis, video processing, IR imaging, RADAR, LIDAR etc. The new Concurrent Neural Networks (CNN) classification has been introduced as a collection of low-volume neural networks that perform parallel classification. In the present paper the identification and classification of drones is analyzed employing two CNNs, a multilayer perceptron (MLP) for acoustic pattern recognition and a self – organizing map (SOM) to recognize an object from a video stream.

4. IDITA, L. TUȚĂ, G. ROȘU, P. Ciotirnae and O. BALTAG, "Indoor Assessment of Screening Efficiency through Absorption and Reflection", 11<sup>th</sup> International Symposium on Advanced Topics in Electrical Engineering (ATEE) 2019, IF=0.25 <https://ieeexplore.ieee.org/document/8725003>

5. M. I. Candrea-Bozga and P. Ciotirnae, "Integrated Management of Transport and Commutation Resources over the Network Layer", *Journal of Military Technology*, Vol. 2, No. 1, June 2019, pp. 27-31, DOI 10.32754/JMT.2019.1.05, <https://jmiltechnol.mta.ro/3/Integrated%20Management%20of%20Transport%20and%20Commutation%20Resources%20over%20the%20Network%20Layer-min.pdf>

**Abstract** - In the information and automation era, the activities of today's society are based on communications media with fast and secure transmission of information. Because of the information dependency, today's networking solutions must transport more data traffic and deliver it in a fast and efficient way. It is useless to assign an appropriate epithet to the degree of importance that efficient and accurate design and the use of a management mechanism appropriate to the necessity, have in the context of the current society. The usage of programming via Python for increasing management capabilities is required in order to do high performance management of a network. One of the most important aspects of managing a large scale network that uses various platforms bought from different vendors is how to manage all these systems using a unique management platform. The current paper is concerned with Python capabilities put to good use, to develop an Integrated Management platform that performs the management of the devices that form or are part of the telecommunications network. The topologies and the script programming were done in GNS3 using Ubuntu Docker Containers with Python installed, to remotely configure CISCO IOS MultyLayer Switches and Routers.

6. V. D. Nicolae and P. Ciotîrnae, "QoS Prioritization Behavior in an Broadband Hybrid Network", Journal of Military Technology, Vol. 2, No. 1, June 2019, pp. 35-38, DOI 10.32754/JMT.2019.1.07, <https://jmiltechnol.mta.ro/3/QoS%20Prioritization%20Behavior%20in%20an%20Broadband%20Hybrid%20Network-min.pdf>

**Abstract** - A broadband network must have the ability to transport a large amount of information in an efficient way, regardless of the type of service (voice, data, and video). A very good solution for safe and lossless transmission of data from IP access networks was the use of ATM at the core level, packing IP into ATM cells. Nowadays, most ISPs use IP over MPLS, because it allows, through the use of traffic engineering, interconnection with other sections using different switching technologies, and easy application of QoS policies and prioritization.

7. O. Baltag, A. L. Apreutesei, G. Roşu and G. Mihai, "Experimental research on textile and non-textile materials with applications to ensure electromagnetic and bio-electromagnetic compatibility", The 25 th International Scientific Conference Knowledge Based Organisation , Sibiu, 2019

**Abstract:** The paper presents a synthesis of the research performed on the electromagnetic properties and characterization of textile and non-textile materials with applications in shielding and protection from the electromagnetic field. The composite structures of functional textiles intended for protective clothing or general applications for electromagnetic immunity are presented and characterized. There are analyzed composite textiles with amorphous, ferrous or non-ferromagnetic metallic threads manufactured by means of woven and knitting classical technologies as well as materials using non-metallic, electrically conductive powders. The properties of the plain jersey, rib jersey, full and half cardigan fabric, Milano rib, are presented, too. Besides textiles, there are also characterized some composite and non-composite structures using metallic yarns and carbon powder. Another direction of interest relates to the use of textile materials with amorphous metal structure with the scope of achieving a more efficient protection to the electromagnetic fields used in cellular systems and Wi-Fi networks. In addition, a comparative analysis of the methods of characterization of composite structures is made.

8. L. B. Dudu, F.G. Popescu and P. Ciotîrnae, "Command and Control System for Video Sensors Communications Based on Python Application for Mobile Smart Device ", Journal of Military Technology, Vol. 2, No. 2, December 2019, pp. 05-08, DOI 10.32754/JMT.2019.2.01, [https://jmiltechnol.mta.ro/4/1\\_Dudu,%20Popescu,%20Ciotirnae-min.pdf](https://jmiltechnol.mta.ro/4/1_Dudu,%20Popescu,%20Ciotirnae-min.pdf)

**Abstract** - In this paper it is proposed a command and control system for video communications based on Python application for mobile smart devices. There are presented the features for integration and development in a mobile communication device. Section I is concerned with the proposed objectives, Section II presents the most important concepts of the application used for development: Python programming language, Flask (Python-based microframework), HTML (Hypertext Markup Language), HTTP (Hypertext Transfer Protocol) and the modules used to ensure a good behavior for the application. In Section III three the command and control center design steps, hardware configurations along with the software applications and explanation of how to implement the code are presented. The command and control of technical resources will be done by using Python, JavaScript and HTML scripts along with the Flask microframework on a Windows operating system. Section IV presents the conclusions, the problems encountered, whether the objectives and ways of improving the project have been achieved.

9. P. Ciotîrnae and L.D. Murariu, "Performance Evaluation of the VoIP Networks Using Tunneling Techniques", 11<sup>th</sup> International Conference on Electronics, Computers and Artificial Intelligence ECAI 2019, June 27–29, 2019, IEEE Catalog Number CFP1727U-ART, Vol. 11 – No. 1/2019 ISSN 1843-2115, ISBN 978-1-7281-1624-2, (submitted to IEEE Xplore)

<http://ecai.ro/Arhiva/Book%20of%20Abstracts%202019.pdf>

**Abstract** - The solution of distributing data between multiple sites over public networks is a solution that most companies value more and more. This strategy is justified by its multiple advantages, particularly in terms of data availability. However, the intermediary network through which these operations are carried out is often the Internet. No one can deny that this network does not provide any mechanism of privacy, integrity, or authentication. The purpose of this paper is to analyze the key performance indicators (KPI) of a Voice over IP network that crosses a public network using VPN (Virtual Private Network) technology.