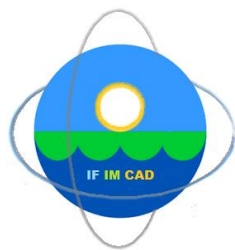




UNIVERSITATEA
DE ȘTIINȚE AGRONOMICE
ȘI MEDICINĂ VETERINARĂ
DIN BUCUREȘTI

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ani



University of Agronomic Sciences and Veterinary Medicine of Bucharest

Faculty of Land Reclamation and Environmental Engineering

INTERNATIONAL STUDENT SYMPOSIUM "IF IM CAD"

SYMPOSIUM PROGRAM & BOOK OF ABSTRACTS

**LAND RECLAMATION, EARTH OBSERVATION & SURVEYING,
ENVIRONMENTAL ENGINEERING**

April 19 -20, 2024

BUCHAREST



UNIVERSITY OF AGRONOMIC SCIENCES
AND VETERINARY MEDICINE OF BUCHAREST

FACULTY OF LAND RECLAMATION
AND ENVIRONMENTAL ENGINEERING

**SYMPOSIUM PROGRAM
&
BOOK OF ABSTRACTS**

LAND RECLAMATION, EARTH OBSERVATION &
SURVEYING, ENVIRONMENTAL ENGINEERING

April 19 – 20, 2024

BUCHAREST

The International Student Symposium, IF IM CAD

Organized by:



University of Agronomic Sciences and Veterinary Medicine of Bucharest
Faculty of Land Reclamation and Environmental Engineering

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SYMPOSIUM PROGRAM

Friday, 19th April

Time	Activity
08:30 – 9:00	Arrival and registration of participants
9:00 – 9:20	Opening ceremony
9:20 – 11:30	Paper presentations
11:30 – 11:50	Coffee break / Viewing posters and discussions
11:50 – 14:10	Paper presentations
14:10 – 15:30	Lunch
15:30 – 15:45	Participants Award Ceremony & Closing ceremony

Friday, 20th April

Time	Activity
09:00 – 17:30	Trip to Pietroasa Research and Development Station for Viticulture and Winemaking and to the Muddy Volcanoes .

DETAILED PROGRAM
LAND RECLAMATION, EARTH OBSERVATION & SURVEYING,
ENVIRONMENTAL ENGINEERING

FIFIM BUILDING, CESAR NICOLAU AMPHITHEATER, A II 1

Session chairpersons:
Assoc. Prof. PhD Irina GREBENIŞAN
Assoc. Prof. PhD Cornel Cristian TEREŞNEU

Time: 9:20 – 11:30, April 19

ORAL PRESENTATIONS

Paper ID	Authors	Institution	Paper Title
1.	Mert ALPAT, Meriç BEKTAŞ	Zonguldak Bulent Ecevit University	DEPARTMENT OF GEOMATICS ENGINEERING HISTORY, INFRASTRUCTURE AND RESEARCH AREAS AN OVERVIEW
2.	Cristian BACIU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	WHAT DO WE KNOW ABOUT MICROPLASTICS IN WATER: THREATS AND POSSIBLE SOLUTIONS?
3.	Ágoston LENGYEL	Óbuda University	ORTHORECTIFYING ARCHIVE AERIAL PHOTOS WITH OPEN SOURCE SOFTWARES
4.	Maximus CIOLAN, Iulian BACIU, Adrian TUDOR, Cristina NICOLAE	University of Agronomic Sciences and Veterinary Medicine of Bucharest	WHERE HAVE YOUR PAWS BEEN, MISS KITTY?

5.	Adela-Maria NEAG	University of Life Sciences and Veterinary Medicine of Cluj - Napoca	IMPLEMENTATION OF A WEB APPLICATION FOR SUSTAINABLE MANAGEMENT DEVELOPMENT IN RURAL AREAS – STUDY CASE IN THE COMMUNE OF BOTIZA, MARAMUREȘ COUNTY
6.	Mihail-Anton GHIGA	University of Agronomic Sciences and Veterinary Medicine of Bucharest	SLOPE STABILITY CALCULATIONS FOR A PETROLEUM WELL PERIMETER IN DÂMBOVIȚA COUNTY
7.	Raluca GHEORGHE, Elena MARIAN, Ioana ROBU(MACOVEI), Florina TUDOSĂ, Andra VIȘAN	University of Agronomic Sciences and Veterinary Medicine of Bucharest	GEO-CADASTRAL ANALYSIS OF EUROPE: ROMANIA IN COMPARATIVE CONTEXT
8.	Gina-Magdalena BUJOR, Nicolae-Costin CONSTANTIN	University of Agronomic Sciences and Veterinary Medicine of Bucharest	PHYTOREMEDIATION OF CONTAMINATED LAKE USING WATER LILIES
9.	Robert ALEXE	University of Agronomic Sciences and Veterinary Medicine of Bucharest	SUPREMEGLASS – MY JOURNEY AS A STUDENT AND ENTREPRENEUR
10.	Cristian Samuel TEREȘNEU	Transilvania University of Brașov	GIS STUDY FOR A SPORTS COMPLEX
11.	Lucian-Teodor PÂRLEA	University of Agronomic Sciences and Veterinary Medicine of Bucharest	MASTER OF THE WATER: DISCOVER HOW SPILLWAYS REDEFINE THE LIMITATIONS IN HYDRAULIC SYSTEMS

12.	Cătălin MALEȘ, Oana-Cristina MIRON	„Gheorghe Asachi” Technical University of Iași	EVALUATING THE EFFECTIVENESS OF A HANDHELD LASER SCANNING SYSTEM FOR DIAMETER AT BREAST HEIGHT (DBH) ESTIMATION IN AN URBAN PARK
13.	Elena-Georgiana ZLOTEA	University of Agronomic Sciences and Veterinary Medicine of Bucharest	TRIBUTE TO THE PROFESSOR MIRCEA MOȚOC, MEMBER OF ROMANIAN ACADEMY

FIFIM BUILDING, FIFIM BUILDING, CESAR NICOLAU AMPHITHEATER, A II 1

Session chairpersons:
Lect. PhD Adriana PIENARU
Lect. PhD Cristian MĂLINAȘ

Time: 11:50 – 14:10, April 19

ORAL PRESENTATIONS

Paper ID	Authors	Institution	Paper Title
14.	Ioana MANTU, Valentina ENCIU, Mihail BUZNEA	University of Agronomic Sciences and Veterinary Medicine of Bucharest	MAKE “DO NOT WASTE FOOD” A PERSONAL RESOLUTION
15.	Balázs BÖRÖCZ	Óbuda University	DETECTION OF ROBINIA PSEUDOACACIA FORESTS IN HUNGARY WITH MAHALANOBIS DISTANCE CALCULATION OF SENTINEL-2 SATELLITE IMAGERY
16.	Ștefania-Alexandra EPURE, Mihai-Ștefan ILIE	University of Agronomic Sciences and Veterinary Medicine of Bucharest	- HYDROTECHNICAL SCHEMES AND THEIR EFFECTS ON THE ENVIRONMENT

17.	Alexandru MAN, Paula BORDEI, Mălina BÎRSAN, Julia DEBRECZENY	University of Life Sciences and Veterinary Medicine of Cluj - Napoca	APPLICATIONS OF MATHEMATICS IN FORESTRY
18.	Florentina-Diana POPA, Mihai- Valentin GANGU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	THE INFLUENCE OF SPORT COURTS ON THE ENVIRONMENT
19.	Ana-Maria PREDA, Liviu-Ionuț CERCEL	University of Agronomic Sciences and Veterinary Medicine of Bucharest	THE ENVIRONMENTAL MOVEMENT QUESTIONING SUSTAINABILITY
20.	Alexandru-Paul DOROBANȚU, Alexandru-Caius UNGUR	University of Agronomic Sciences and Veterinary Medicine of Bucharest	SERIES WITH COMPUTABLE SUM
21.	Meir-Eliahu AZARIA ¹ , Bogdan ANDRONIC ² , Alexandra-Ionela NISTOR ³	¹ Open University of Israel, ² Bucharest Academy of Economic Studies, ³ University of Agronomic Sciences and Veterinary Medicine of Bucharest	ADAPTING DUTCH TRAFFIC MANAGEMENT STRATEGIES AND AI INNOVATIONS TO ENHANCE URBAN MOBILITY IN BUCHAREST
22.	Adrian DAN, Vanessa DAN	Academy of Economic Studies	FINANCIAL LITERACY FOR YOUTH

23.	Petre PAIDIU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	MANAGEMENT OF MUNICIPALITIES, CLASIFICATION OF RESOURCES AND THEIR USE
24.	Andrei-Cristian GHINEA	University of Agronomic Sciences and Veterinary Medicine of Bucharest	MODERN TECHNIQUES FOR TRACING A BUILDINGS AND COMPLEX BRICK STRUCTURES
25.	Patrick-Andrei LEFTER	University of Agronomic Sciences and Veterinary Medicine of Bucharest	THE EFFECT OF THE EXPANSION OF THE WIND INDUSTRY ON THE ENVIRONMENT
26.	Cristina ANUȚOIU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	FOES OR FRIENDS? FUNGAL INTERACTIONS WITH PLANTS
	Special guests: Mario-Vlad Alexandru Claudia-Sînziana Bălăceanu Andrei-Laurențiu Iordache Vlad-Gabriel Barbu	"Ion Luca Caragiale" National College	CONCEPTS AND DESIGNS PHYSICS AND ENGINNERING SOCIAL SCIENCES AND HISTORY 3D MODELLING

FIFIM BUILDING, SECOND FLOOR

POSTER PRESENTATIONS

Paper ID	Authors	Institution	Paper Title
1.	Iulian Vasile STOICAN	University of Agronomic Sciences and Veterinary Medicine of Bucharest	REHABILITATION VERSUS MODERNISATION IN THE CASE OF INVESTMENT IN IRIGATION SYSTEMS
2.	Anca-Roxana STRUGARIU ¹ , Gabor-Giovani LUCA ² , Daniela- Ioana GUJU ²	¹ University of Agronomic Sciences and Veterinary Medicine of Bucharest, ² University of Bucharest	MAPPING THE LANDSCAPE: A GIS ANALYSIS OF BORGO SAN LORENZO, ITALY
3.	Octavian-Ciprian ZARZU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	ENVIRONMENTAL IMPACT OF THE CONSTRUCTION OF THE SPA DĂMIENEȘTI PUMPING STATION, BACĂU COUNTY

BOOK OF ABSTRACTS

SUPREMEGLASS – MY JOURNEY AS A STUDENT AND ENTREPRENEUR

Robert ALEXE

**Scientific Coordinators: Lect. PhD Eng. Roxana SĂLCIANU,
Assoc. Prof. Biotech. PhD Irina GREBENIȘAN**

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Abstract

Glass is a solid-like and transparent material that is used in numerous applications in our daily lives. Glass is made from natural and abundant raw materials (sand, soda ash and limestone) that are melted at high temperature to form a new material: glass. Glass manufacturing has an age-old tradition which dates to around 3500 BC. Since then, processes have constantly evolved from craftsmanship to today's high-tech industrial processes and the number of glass types and applications have multiplied. Glass has shaped Europe's cultural heritage, regions, industries, living conditions, technological deployments like no other substance. Glass creates the conditions for sustainable growth in Europe and contributes to Europe's Green Deal and to the United Nations' Sustainable Development Goals. Glass products are indispensable to the transition towards a climate-neutral circular economy: for renovating buildings, producing more renewable electricity, decarbonising means of transport and making sustainable packaging. In short, glass creates the conditions of prosperity, a symbiosis with society and the environment. For the first time in the history of the United Nations' International Years, a man-made material was recognised as essential and awarded as 2022 International Year of Glass. We are living in a 'Glass Age' and the United Nations (UN) aimed for the International Year of Glass to underline the scientific, economic and cultural roles of glass throughout the world in the context of the UN 2030 sustainability goals.

An idea is nothing without action, that's why the transition from student to engineering and environmental protection, and currently to engineering and management in constructions to entrepreneurship in the field of providing design and installation services for various works in which glass is involved was very well planned and thought out so as to harmoniously combine these activities. The purpose of this work is to present some of the interior design projects designed, realized and completed within my company, in which glass is used as a construction material due to the many advantages it presents.

Keywords: *glass, construction material, student, entrepreneur, interior design projects.*

**DEPARTMENT OF GEOMATICS ENGINEERING
HISTORY, INFRASTRUCTURE AND RESEARCH AREAS
AN OVERVIEW**

Mert ALPAT, Meriç BEKTAŞ

Scientific Coordinator: Prof. PhD Hüseyin TOPAN

Zonguldak Bulent Ecevit University, Department of Geomatics Engineering, Zonguldak, Turkey

Abstract

This paper aims to introduce Zonguldak Bülent Ecevit University Geomatics Engineering Department from past to present, to show how it has developed and to talk about its goals and objectives. Within the scope of these subjects, the studies of all our professors who have been to our department have been examined and analyzed and divided into graphics under certain headings. These graphics have been added to our presentation.

Keywords: Zonguldak, Geomatics Engineering, Zonguldak Bülent Ecevit University

FOES OR FRIENDS? FUNGAL INTERACTIONS WITH PLANTS

Cristina ANUȚOIU

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Abstract

Fungi play a major role in natural ecosystems and in modern agriculture based on their nutritional versatility and various interactions with plants. Fungi are important decomposers and recyclers of organic materials; they positively or negatively interact with plant roots in the rhizosphere or with above-ground plant components. The interactions between plants and their associated fungi are complex and the outcomes diverse.

The interactions between plants and their pathogens are subject to parallel or coevolution, wherein pathogens must find innovative strategies to successfully colonize their hosts, and plants must identify new detection methods and more robust defence mechanisms to ward off pathogen attacks. The particular morphological and biochemical toolkits evolved and used by fungi in developing their relationship with host plants have evolved convergently and divergently to include complex components that take advantage of and control host pathways.

Keywords: kingdom fungi, plant-fungal interactions, filamentous fungi.

ADAPTING DUTCH TRAFFIC MANAGEMENT STRATEGIES AND AI INNOVATIONS TO ENHANCE URBAN MOBILITY IN BUCHAREST

Meir-Eliahu AZARIA¹, Bogdan ANDRONIC², Alexandra-Ionela NISTOR³

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Abstract

This paper examines the innovative traffic management strategies implemented in the Netherlands and evaluates the potential application of Artificial Intelligence (AI) technologies to enhance urban mobility systems. The Netherlands has successfully addressed traffic management challenges through a comprehensive approach that emphasizes sustainability, efficiency, and quality of life, setting a benchmark for global urban centers. By leveraging these strategies alongside advanced AI technologies, which offer significant improvements in efficiency, safety, and adaptability to real-time conditions, this study aims to conceptualize feasible solutions for the traffic issues in Bucharest. Through observing Dutch methodologies and analyzing the transformative potential of AI, we propose targeted measures tailored to mitigate traffic congestion and enhance the urban transit experience in Romania's capital, thereby providing a framework that other cities might emulate to address similar urban mobility challenges.

Keywords: traffic, Romania, AI.

WHAT DO WE KNOW ABOUT MICROPLASTICS IN WATER: THREATS AND POSSIBLE SOLUTIONS?

Cristian BACIU

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Abstract

Microplastics are tiny plastic particles that are less than five millimeters in diameter. Primary microplastics are tiny particles and microfibers that are shed from commercial products such as cosmetics, clothing and other textiles, and also fishing nets, and secondary microplastics are particles that result from the breakdown of larger plastic items, such as water bottles. This breakdown can be caused by exposure to environmental factors, such as sun's radiation and ocean waves, and secondary microplastics make up the majority of microplastics, as recent studies have demonstrated. Microplastics have been found in drinking water, both tap water and bottled water, but also in water sources, and even in commonly consumed beverages, such as beer. In fact, new studies estimate that the average adult consumes approximately 2,000 microplastics per year through salt.

The European Drinking Water Directive (DWD) has aimed to include microplastic on the watch list of emerging compounds by 2024, encouraging member states to take preventive measures to reduce microplastic in case too high numbers are reported.

The Romanian sector of the Danube transports an average of 48.5 tons of microplastics (MiPs) and 48 tons of macroplastics (MaPs) annually, as shown by the results of a study conducted by "Mai Mult Verde" Association and the Global Water Partnership Romania.

Around the world, plastics production is projected to continue to increase, rising the concern for the leakage of plastics and the potential amplification of macro- and micro- plastics pollution.

Plastic pollution of the planet's ocean is one of the most serious environmental problems globally, international bodies estimating that by 2050 it is possible to have in waters more plastic than fish.

Keywords: *Microplastics, macro plastics, pollution, water sources, biodegradation.*

DETECTION OF ROBINIA PSEUDOACACIA FORESTS IN HUNGARY WITH MAHALANOBIS DISTANCE CALCULATION OF SENTINEL-2 SATELLITE IMAGERY

Balázs BÖRÖCZ

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Abstract

The focus of the research is on detecting Robinia Pseudoacacia. Robinia Pseudoacacia is an extremely invasive species, yet it provides valuable timber and serves as the primary bee forage in Hungarian apiculture. Currently, 25% of Hungary's forested areas consist of Robinia Pseudoacacia, and this number is continually increasing, making its monitoring crucial from an environmental perspective. To identify Robinia Pseudoacacia from satellite imagery, I used the Mahalanobis distance calculation method. Mahalanobis distance is a statistical method used to measure the distance between multiple variables, taking into account the correlation between variables. The task was executed using Google Earth Engine, which is a cloud-computing geospatial information system. With the help of the results, new images were generated, enabling the delineation of Robinia Pseudoacacia forest areas; however, there is some misclassification to a minor extent. During the study, I compared the analysis conducted with bands in the visible range to the analysis conducted with all spectral bands of Sentinel-2.

Keywords: Robinia Pseudoacacia, Remote sensing, Sentinel-2, Flowering, Mahalanobis distance.

PHYTOREMEDIATION OF CONTAMINATED LAKE USING WATER LILIES

Gina-Magdalena BUJOR, Nicolae-Costin CONSTANTIN

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Abstract

The paper aimed to present the phytoremediation of the lake in the campus of the University of Agronomic Sciences and Veterinary Medicine Bucharest, using aquatic plants. Phytoremediation is a treatment method that uses plants to extract, accumulate and degrade the water pollutants. Water lilies play a crucial role in maintaining water quality by absorbing both organic and inorganic pollutants present in the water. Particularly noteworthy is their effectiveness in removing heavy metals from aquatic environments. Through this filtration process, they aid in creating cleaner and more wholesome habitats for aquatic life. Lake eutrophication is a significant environmental concern, impacting water quality in lakes worldwide. Also, the water lilies have the possibility to prevent eutrophication, halting the algae growth process. As a conclusion, water lilies are not just aesthetically pleasing, also offer remarkable advantages for environment.

Keywords: phytoremediation, pollutants, water lilies.

WHERE HAVE YOUR PAWS BEEN, MISS KITTY?

Maximus CIOLAN, Iulian BACIU, Adrian TUDOR, Cristina NICOLAE

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Abstract

The number of pets like dogs, cats, rabbits and parrots in European families has increased. Domestic animals provide social benefits to their owners, including reduced loneliness and anxiety, and are also used in Animal-Assisted Therapy (AAT). However, the interaction between humans and animals is also associated with health problems such as allergies, asthma and zoonotic diseases. This study aims to detect the presence of bacteria and filamentous fungi on paw cats. Results of the investigation showed that there was a difference in the bacteria isolated from cats and their living environment. The number and species isolated from the front paw samples of cats kept outdoors were greater and more varied than those samples from cats kept indoors. The results of this preliminary study highlight the importance of monitoring companion animals. Preventive measures are necessary to limit the spread of zoonotic pathogens from companion animals to people within the home environment.

Keywords: bacteria, cats, companion animals, paws.

FINANCIAL LITERACY FOR YOUTH

Adrian DAN¹, Vanessa DAN¹

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Abstract

Why it matters financial literacy for youth? Because many young people will enter adulthood without the essential financial knowledge and skills they need to make informed choices about their money. Early-adulthood financial decisions can have lifelong consequences, that why equipping young people with the tools to manage their money effectively helps them avoid the cycle of debt and economic insecurity. Without a solid financial foundation, youth are more susceptible to predatory lending and costly errors in managing debts and expenses that can lead to lifelong financial inequity. Financial literacy is the combined knowledge and skills required to make responsible and informed financial decisions that contribute to a sense of financial security and well-being. Knowledge of financial concepts like saving, investing, spending and borrowing is the foundation of financial literacy. In addition, understanding credit management, asset building and how to reduce debt and avoid scams is critical to a healthy financial life. In order to see the level of information of young people regarding finances, we conducted a survey in which seventy-five young people participated. In this paper we want to present the results of the ongoing investigation.

Keywords: *financial literacy, survey, ongoing investigation.*

SERIES WITH COMPUTABLE SUM

Alexandru - Paul DOROBANȚU, Alexandru - Caius UNGUR

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Abstract

In mathematics, a series is a sum with an infinite number of terms. Its terms can be either numbers, or functions. A series is called convergent if the sequence of partial sums is convergent (i.e. it has a finite limit). It is easier to study de nature or convergence of a series, because there exist many criteria, but computing the sum of the series may be very difficult or impossible. From a practical perspective, this is not a problem most of the times, as the sum can be approximated if we can find its convergence "speed". In this article we study some series whose sum can be computed exactly.

Keywords: series, computable sum, convergence.

HYDROTECHNICAL SCHEMES AND THEIR EFFECTS ON THE ENVIRONMENT

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Abstract

The paper draws attention to the effect of hydrotechnical developments on the environment, taking as an example the construction of the Grand Coulee Dam in 1942. The construction of the dam had a huge effect on the flora of the area due to the floods that changed the steppes into wetlands, thus affecting species such as burrowing owls, pygmy rabbits, mule deer. The lack of a fish ladder affected the migration of fish, which led to the disappearance of an important breeding area. These effects also had social repercussions, Native Americans who lived on those lands for centuries, they had to be relocated together with the graves of their ancestors. In conclusion, the construction of the dam had devastating effects on the fauna and flora, which in turn affected the lifestyle of the Natives.

Keywords: *hydrotechnical developments, floods, fish ladder, Native Americans, migration.*

GEO-CADASTRAL ANALYSIS OF EUROPE: ROMANIA IN COMPARATIVE CONTEXT

**Raluca GHEORGHE, Elena MARIAN, Ioana ROBU(MACOVEI),
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Abstract

This scientific paper examines Romania's position among European Union countries concerning land cadastre, considering aspects such as property ownership, urbanization level, cadastre technology spectrum, land use categories, and the degree of cadastre completion. Through comparative analysis, it elucidates Romania's standing in these domains relative to other EU members. By exploring property ownership structures, urbanization trends, cadastre technologies, and land use classifications, the study provides insights into Romania's cadastre within the EU context.

Keywords: *Romanian cadastre, property ownership, land use, European cadastre.*

SLOPE STABILITY CALCULATIONS FOR A PETROLEUM WELL PERIMETER IN DÂMBOVIȚA COUNTY

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Abstract

Petroleum, discovered thousands of years ago, has a lower density than saltwater. It is found in sedimentary layers composed of limestone, clay or sand. When impermeable clay layers overlay the petroleum, preventing its surface emergence, it remains deep within the earth until extracted via oil wells. The petroleum extraction industry plays a crucial role in the global economy and meeting the growing energy demand. Oil extraction involves retrieving mineral fuel from underground reservoirs and processing it. An essential aspect of this project is represented by the environmental impact of the petroleum production. Fossil fuel extraction wells serve as local pollution sources, emphasizing the need for pollution reduction. In this research paper, there is analyzed slope stability for a petroleum well perimeter in Moreni, Dâmbovița county, calculating various slope stability scenarios, considering different types of soils and materials. The results obtained conclude that the retaining wall's slope is stable across all of the scenarios, with no risk of landslides.

Keywords: petroleum well, slope stability, slip surface, retaining wall landslides.

MODERN TECHNIQUES FOR TRACING A BUILDINGS AND COMPLEX BRICK STRUCTURES

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Abstract

The level of automation in the construction industry is currently low, and there is a growing need for new fabrication techniques that can bring more flexibility. This paper presents a modern method of tracing buildings with complex structure using an optical tool which can bring the digital fabrication data on the building site in a real-time procedure to facilitate construction of complex brick structures. This tool consists of three custom-made two-axis laser pointer devices, a micro-controller, and a processor that enable the user to identify the exact location of the objects in the real world. Additionally, a controlling sub-system is considered to reduce human errors. The efficacy of the proposed system was studied by four full-scale prototypes. The results showed that the average lateral error was 2.5 mm, the average orientation error was 1°, and the average construction time for each module was 27 s. This tool can provide more flexibility for constructing complex brick structures on the building site.

Keywords: *digital fabrication, human augmentation, complex brickwork, additive manufacturing, laser pointer.*

THE EFFECT OF THE EXPANSION OF THE WIND INDUSTRY ON THE ENVIRONMENT

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Abstract

This paper examines the environmental impact of the wind energy industry's expansion, focusing on construction. In recent decades, the wind industry has experienced significant growth driven by concerns about climate change and the need for renewable energy sources. The construction and operation of wind farms can have various environmental effects, including disrupting local ecosystems, affecting wildlife, and altering landscapes. However, it's important to note that these effects can vary depending on location and how projects are managed. In conclusion, careful assessment of environmental impact before, during, and after wind farm construction is necessary to minimize negative consequences and promote sustainable development in this industry.

Keywords: *environmental impact, wind energy industry, renewable energy sources, climate change, ecosystems, wildlife, sustainable development, landscapes.*

ORTHORECTIFYING ARCHIVE AERIAL PHOTOS WITH OPEN SOURCE SOFTWARES

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Abstract

The aim of our paper is to present a method that enables end-users to simply orthorectify archive aerial images using GDAL, an open-source function library. The used GDAL-command utilizes the Rational Polynomial Camera (RPC) model. It describes relation between ground coordinates and image coordinates as ratios of cubic polynomials.

Interior orientation parameters are calculated using fiducial points of the image and some GCPs were specified to determine exterior orientation parameters. As RPC camera model requires the use of ellipsoidal coordinates, the object space coordinates of our GCPs (that were measured in a projected coordinate system) should be transformed into ellipsoidal ones applying a local transformation. Using these computations, we calculated the RPC coefficients with closed form equations.

Precision of computation using collinearity equations or rational polynomial functions does not differ significantly. The orthophoto was created based on the computed RPC parameters. The accuracy of generated orthophoto meets the requirement of most GIS applications.

Keywords: *archive aerial photograph; camera model; GDAL; orthophoto; RPC model.*

EVALUATING THE EFFECTIVENESS OF A HANDHELD LASER SCANNING SYSTEM FOR DIAMETER AT BREAST HEIGHT (DBH) ESTIMATION IN AN URBAN PARK

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Abstract

Urban vegetation and the appearance of cities have become subjects of great interest in recent years, as the number of people living in urban environments continues to grow. Faced with this demographic explosion, there is a need to improve the sustainability in cities, ensuring that urban spaces attractive places for living and working. Urban vegetation, especially urban trees, serves several functions. For example, urban trees reduce temperature through shading and evapotranspiration and improve air quality by absorbing gaseous pollutants and intercepting particles on plant surfaces. Considering the links between vegetation and the biological and social processes of urban systems, there is a continuous demand for efficient techniques for mapping and classifying urban vegetation. Terrestrial laser scanning, both static and mobile, is widely and efficiently used technique for monitoring urban vegetation. This study evaluates the effectiveness of a handheld mobil laser scanner (HMLS) for Diameter at Breast Height (DBH) estimation in an urban park spanning approximately 1.6 ha. The park was scanned using the GOSLAM handheld laser scanner, following two different scanning paths, resulting in a registered point cloud in a local coordinate system. To georeference the point cloud, 20 points were measured using a Geomax Zenith60 GNSS receiver and were marked on the field using plexiglass plates. Additionally, 52 reference trees were measured with a caliper to obtain the reference DBH and to assess omission and commission error rates. The study area, including paved paths and tree locations, was surveyed using GNSS technology under non-leaf conditions. The findings indicate that HMLS is highly effective in detecting tree locations and estimating DBH.

APPLICATIONS OF MATHEMATICS IN FORESTRY

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Abstract

This research introduces a method for managing forestry operations by implementing an automated system to calculate the volume of logs using Maple software. This approach integrates data collection with modern software tools to enhance accuracy and efficiency in estimating timber volume. Despite challenges like training needs and initial setup costs this strategy represents an advancement, in leveraging technology and mathematical applications within forestry, environmental management and conservation efforts.

Keywords: *felled log volume, symbolic algebra software, rules.*

MAKE “DO NOT WASTE FOOD” A PERSONAL RESOLUTION

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Abstract

At the end of a year, people make their wishes, and at the beginning of a new year or season, people set their mind on achieving new resolutions, such as living more healthily, exercising regularly as part of a new lifestyle, reconnecting with nature, traveling and discovering new places and people to befriend, understanding the way they can contribute to the reduction of the carbon footprint or the use of natural resources and moving to a circular bioeconomy. Making a personal resolution with the slogan “Do not waste food” can be a good idea for everyone, as food loss and waste at all stages of the food supply system need to be put an end to. FAO estimated that 14 percent of all food produced globally is lost, from post-harvest all the way up to but not including retail.

“Food waste” refers to all the food wasted unnecessarily, for instance when something goes off in one’s fridge because it has not been consumed in time, or a person puts too much on their plate and throws away the leftovers instead of saving them for later.

In this work, we want to present the activity that we have carried out to raise awareness among young people about the unnecessary production of food waste. We have come up with some ideas and solutions to reduce food waste and made a contest entitled “How do your plates look before and after you eat”. We also presented a simple method by means of which food waste can be utilized through composting. Composting is a process that implies food waste becoming a valuable resource, as well as a fertile soil, which can be used in gardening, in urban agriculture projects or just in the flower pots that everyone has at home. The decomposition of organic matter is carried out by the class of decomposers, microorganisms such as bacteria and filamentous fungi, but also organisms from the mesofauna and macrofauna of the soil.

Keywords: waste food, composting, filamentous fungi, earthworms.

IMPLEMENTATION OF A WEB APPLICATION FOR SUSTAINABLE MANAGEMENT DEVELOPMENT IN RURAL AREAS – STUDY CASE IN THE COMMUNE OF BOTIZA, MARAMUREȘ COUNTY

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Abstract

The paper aimed to consist in the implementation of an updated design and a new geographic information system allowing to monitor the fragmentation of lands from two perspectives of analyses. Firstly, the main used topographical methods which allows the collection of a complex data set allowing the application of the second perspective of ArcGIS Online permitting the owners of lands to visualize the real situation regarding the status of the owned lands and also the neighbor properties, using a individual code of identification respecting the General Data Protection Regulation. ArcGIS Online according to the application will consistently contribute to the monitoring of the current situations of the lands, as well as to the future development of the management of land, awarding statistics of development and infrastructure, to develop their biodiversity.

Keywords: land fragmentation, web application, GIS, ArcGIS Online, sustainable development.

MANAGEMENT OF MUNICIPALITIES, CLASIFICATION OF RESOURCES AND THEIR USE

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Abstract

The initial form of urban planning legislation in Romania after 1990 is provided by the Urban Planning Guide from 1991, which has an incomplete form that does not meet the administration needs of localities. This guide is followed by Law 350/2001, which constantly evolves due to the needs for recording and using urban planning data. From 1990 to 2020, urban planning law undergoes constant modifications and improvements that lead to a broader understanding of the existing situation and the needs of localities. This evolution ranges from plans based on topographic bases to plans based on cadastral bases and GIS plans. With the evolution of urban planning law, sectoral laws regarding environment, water, transportation, and utility networks have also evolved, as well as laws regarding hazards, primarily covering landslide and flood-prone areas. These laws have been accompanied by the establishment of administrative units responsible for their implementation.

For example, the Urban General Plans (PUG) of Bragadiru and Magurele did not include studies of flood-prone areas, leading to local administration issuing permits in these zones. In the Dragomiresti commune, no protection zones were designated for Bucharest's water supply equipment, resulting in construction permits being issued in the protective floodplains of Bucharest's surface intakes.

Such examples continue to exist today, especially for areas like Brasov, and can only be addressed by having a thorough understanding of both natural and anthropogenic framework data. For instance, in the Harman commune, construction of a residential neighborhood was authorized in a flood-prone area with the water table at a relatively high level, which does not allow for construction without short- and long-term repercussions and with very high costs for remediation and the existence of the neighborhood.

Keywords: *management studies hazards GIS plans sectoral laws utility networks.*

MASTER OF THE WATER: DISCOVER HOW SPILLWAYS REDEFINE THE LIMITATIONS IN HYDRAULIC SYSTEMS

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Abstract

This paper will explore each topic in detail, highlighting the importance and role of hydraulic spillways in the effective management of hydrological resources and the protection of aquatic ecosystems. Hydraulic spillways are indispensable components of dam infrastructure, ensuring efficient water management and mitigating flood risks. By incorporating various types of spillways and considering environmental factors such as fish passages, dams can effectively balance water resources utilization with ecosystem preservation.

Keywords: *hydraulic schemes, spillways, maximum flow, mitigating flood.*

THE INFLUENCE OF SPORT COURTS ON THE ENVIRONMENT

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Abstract

In recent years, increased awareness of environmental sustainability has permeated various aspects of human activity, including sports. Amid this shift, the influence of sports courts upon the environment has attracted more and more attention. From the materials used in their construction to the ongoing maintenance practices, sport courts have the potential to leave a significant ecological footprint. Understanding this influence is essential to both stakeholders in the sports industry and environmental advocates alike. This paper explores the multifaceted relationship between sport courts and the environment, focusing on the construction, maintenance, and long-term implications of these structures on our planet. By examining various types of sport courts and their environmental impact, we can identify opportunities for sustainable practices that minimize harm and promote harmony between sports and the natural world.

Keywords: tennis, pollution, courts, Romania, sports.

THE ENVIRONMENTAL MOVEMENT QUESTIONING SUSTAINABILITY

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Abstract

The concept of sustainability, rooted in the Latin "sustentāre," emphasizes the imperative of preserving resources for future generations. Economically, it denotes activities that can be sustained over time, while ecologically, it focuses on resource use without environmental depletion. Historically, sustainability gained attention in the late 1970s through works by Wes Jackson and Lester Brown, culminating in the 1987 Brundtland Report's definition of sustainable development. This definition stresses meeting present needs without compromising future generations' ability to meet their own. However, debates persist regarding the evaluative criteria for future generations prospects, highlighting the complexity of the concept. Despite its seemingly clear definition, practical implementation often reveals conflicts between commercial interests and ecological, social, and cultural considerations. This tension underscores sustainability's subtle irony as a term. The intricate nature of sustainability leads to societal skepticism, particularly evident in doubts surrounding phenomena like climate change.

Keywords: *sustainable, question mark, people, climate.*

REHABILITATION VERSUS MODERNISATION IN THE CASE OF INVESTMENT IN IRIGATION SYSTEMS

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Abstract

Irrigation systems are important objectives, being the basis of production that ensures an entire economic and social chain. In Romania, they were designed in a different economic and social context compared to the present. The design of these systems was carried out for large areas due to the type of land properties, by financing, equipping and operating in a centralized system managed by the state. The modification of the economic system led to the moral and, finally, the technical degradation of these systems, their rehabilitation and modernization being necessary, thus ensuring economic efficiency. The paper considers both aspects related to rehabilitation and modernization in the context of the technological development of watering systems, pumping aggregates, materials for pipes, waterproofing channels and process automation. In practice, through the studies carried out, it becomes necessary to rehabilitate some water components and modernize in the context of climate changes and the pressure generated on water and energy resources

Keywords: *irrigation systems, rehabilitation, modernization, economic efficiency.*

MAPPING THE LANDSCAPE: A GIS ANALYSIS OF BORGO SAN LORENZO, ITALY

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Abstract

This paper aims to present a comprehensive Geographic Information System (GIS) analysis of Borgo San Lorenzo, Italy, utilizing mapping techniques to uncover spatial patterns and environmental characteristics of the area. Through meticulous examination (hydrographical, slope, exposures, radiation levels, geomorphology, land use, vegetation typology maps), we identify critical landscape features and evaluate natural resource allocation within the region. The analysis highlights the integration of historical layouts with modern urban expansion, revealing how these elements collectively influence the town's development and environmental sustainability. Our findings demonstrate the utility of GIS in preserving natural landscapes and supporting sustainable growth. This study not only maps the physical landscape of Borgo San Lorenzo but also lays a foundation for future research into its socio-economic and environmental dynamics. The maps, along with detailed visual data, serve as a pivotal tool in our analysis, offering insights into the complex interplay between natural and built environments. This article highlights the role of GIS in enhancing agricultural practices in Borgo San Lorenzo, where detailed cartographic analysis reveals an ideal setting for agricultural activities, driven by its unique terrain, climate, and historical land management.

Keywords: *spatial analysis, agronomic potential, environmental conservation, Geographic Information System.*

GIS STUDY FOR A SPORTS COMPLEX

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Abstract

In the framework of this work, the topographical measurements were made and the data resulting from them were processed for the purpose of developing the Zănoaga area of the place Bran, as a multifunctional sports complex. For the existing ski slope, all the data from the field were taken and a large database was built. For the rest of the area, a complex survey was made to establish the route for a summer sled, the route for a tubing installation and the route for a bicycle path. A ComNav T300 GNSS equipment was used. The terrain data were initially processed in AutoCAD Civil 3D after which they were imported into ArcGIS. In this last program, the initial profile and the possible profiles were created in order to ensure the optimal functioning of the mentioned installations. The opportunity and superiority of such a program has been demonstrated, which is capable of providing, with average programming knowledge, the most valuable information.

Keywords: sports complex, programming, ArcGIS, AutoCAD.

ENVIRONMENTAL IMPACT OF THE CONSTRUCTION OF DĂMIENEȘTI PUMPING STATION, BACĂU COUNTY

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Abstract

The article aims to analyze the impact of Dămieniști pumping station, Bacău county, together with the rehabilitation of the CR1 and CR2 discharge pipelines, on the environment, through environmental factors and biodiversity, the site being part of the Natura 2000 ROSPA0072 site. The analysis of the effects is carried out both during the execution phase of the works of the investment and during the exploitation phase of the SPA station, through the quantitative and qualitative assessment of these impacts, together with the measures to limit/eliminate the negative effects, according to the legislation in force, in order to obtain the environmental permits, these being limited in the project area.

Keywords: *pumping station, environmental impact, rehabilitation.*

**TRIBUTE TO THE PROFESSOR MIRCEA MOȚOC,
MEMBER OF ROMANIAN ACADEMY**

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Abstract

Born on June 3rd 1916 in the village of Daesti, Vâlcea county, Professor Mircea Moțoc is the founder of the Romanian school of soil erosion control.

Main research areas were:

- the study of land degradation processes hilly-hills, especially through the erosion of surface and deep erosion;*
- improvement of organization methods, land development and anti-erosion exploitation eroded;*
- expansion of anti-erosion works and, implicitly, the differentiation on extended surfaces a of the rational system of contour agriculture (on the general direction of contour lines).*

The distinguished academic Mircea Moțoc constituted a model of conduct, an essential landmark and a delightful scientist. It was noted that Professor Mircea Moțoc was very modest in relation to his impressive business card. His Lordship always commanded respect and admiration, was cherished, appreciated and loved by many generations of students and collaborators.

Keywords: *soil erosion, degradation processes on hilly surfaces, anti-erosional structures.*

