
ABSTRACTS

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BASIC BIODEGRADATION METHODS OF MATERIALS

(pages 71-77)

Alena Findrik Balogová

Department of Biomedical Engineering and measurement, Faculty of Mechanical Engineering, Letná 1/9, 042 00, Košice, Slovak Republic, EU, alena.findrik.balogova@tuke.sk (corresponding author)

Marianna Trebuňová

Department of Biomedical Engineering and measurement, Faculty of Mechanical Engineering, Letná 1/9, 042 00, Košice, Slovak Republic, EU, marianna.trebunova@tuke.sk

Jozef Živčák

Department of Biomedical Engineering and measurement, Faculty of Mechanical Engineering, Letná 1/9, 042 00, Košice, Slovak Republic, EU, jozef.zivcak@tuke.sk

Radovan Hudák

Department of Biomedical Engineering and measurement, Faculty of Mechanical Engineering, Letná 1/9, 042 00, Košice, Slovak Republic, EU, radovan.hudak@tuke.sk

Keywords: biodegradation, methods, testing, properties of material.

Abstract: Biodegradable materials and their applications are now a widespread topic of scientific activities and publications, mainly due to their ever-expanding possibilities for use in biomedical fields. Advances in the study and evaluation of materials often require different methods to determine the properties and consequences of degradation, whether changes in structure, mass changes, morphological changes or differences in the mechanical properties of the material before and after degradation. The aim of this work is to summarize the available and used methods, as well as to compare the information obtained for the design of a suitable method. The procedures are described on the basis of studies that have addressed the issue of biodegradation of materials using in vitro methods.

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WORKERS FLOW AND ON-TIME COMPLETION OF CONSTRUCTION PROJECTS

(pages 79-85)

Aldo-Cesar Zarate-Zapata

Universidad Popular Autónoma del Estado de Puebla, A.C., 17 Sur 901, Barrio de Santiago, 72410, Puebla, Mexico, aldocesar.zarate@upaep.edu.mx (corresponding author)

Damian-Emilio Gibaja-Romero

Universidad Popular Autónoma del Estado de Puebla, A.C., 17 Sur 901, Barrio de Santiago, 72410, Puebla, Mexico, damianemilio.gibaja@upaep.mx

Keywords: workers-stages assignment, maximum flow problem, construction planning.

Abstract: The construction sector is one of the most important economic activities since it is responsible for planning, designing, and developing the infrastructure that social development requires, such as roads, schools, and hospitals. Thus, the late completion of construction projects may harm social welfare. Construction companies have problems coping with completion times since they simultaneously manage multiple infrastructure projects that differ in the number of workers they need and the possibility of having projects whose development overlaps. So, companies split their projects into development stages to simplify the management of construction projects, which require an efficient allocation of workers to cope with the stages' activities. This paper analyzes the distribution of workers among development stages to cope

with the projects' completion times. Noticing that not all workers should participate in the same development stage of a single project, the previous problem casts similarities with the maximum flow problem. We follow this modeling approach to determine the number of workers participating at each development stage when a company simultaneously manages more than one construction project. Later, we apply the previous model for a company that operates 11 projects and has 24 workers; the maximum workers' flow model sets the number of workers that each development stage needs for the on-time completion of the 11 projects by considering three different scenarios, concerning the overlapping of development stages.

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BRIDGE SCOUR AND ROAD POTHOLE HAZARDS ASSOCIATED WITH THE TRANSPORT SYSTEM AND THEIR DETECTION METHODS

(pages 87-94)

Muhanad Al-jubouri

Department of Structural and Geotechnical Engineering, Széchenyi István University, Egyetem tér, 9026 Győr, Hungary, EU, muhanad.kh.99.oo@gmail.com

Keywords: transportation infrastructure, national economies, Bridges and roads, scour, potholes.

Abstract: The Transport is among the most significant human activities on the planet. Better transportation allows for more trading and a wider distribution of people. Transportation infrastructure like bridges and roads significantly influences the environment and is the primary energy drainer, making transportation sustainability a key concern. This paper also analyses current bridge scour and road potholes detection equipment and methodologies and their effect on the transport system. In scouring regards, a particular emphasis on those uses the structure's complex reaction to suggest the presence and severity of the scouring phenomena affecting the structure. A Sensitivity Analysis of a newly introduced monitoring system is also assumed. This report examines the similarities and differentials between the bridges scour detection methods and potholes methods. Our key aim is to minimize human effort in identifying road potholes and bridge scouring by using a quick, easy-to-use, cost-effective process, resulting in fewer injuries and economic savings. On the other hand, many initiatives have been taken to create a technology that can instantly identify and detect potholes, leading to improved survey reliability and pavement quality through prior inspection and prompt intervention.

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INFLUENCE OF COMPUTER GAMES ON HUMAN PHYSIOLOGICAL FUNCTIONS

(pages 95-103)

Bibiána Ondrejová

Department of Biomedical Engineering and measurement, Faculty of Mechanical Engineering, Technical University of Kosice, Letná 1/9, 042 00, Košice, Slovakia, bibiana.ondrejova@tuke.sk (corresponding author)

Teodor Tóth

Department of Biomedical Engineering and measurement, Faculty of Mechanical Engineering, Technical University of Kosice, Letná 1/9, 042 00, Košice, Slovakia, teodor.toth@tuke.sk

Monika Michalíková

Department of Biomedical Engineering and measurement, Faculty of Mechanical Engineering, Technical University of Kosice, Letná 1/9, 042 00, Košice, Slovakia, monika.michalikova@tuke.sk

Marianna Trebuňová

Department of Biomedical Engineering and measurement, Faculty of Mechanical Engineering, Technical University of Kosice, Letná 1/9, 042 00, Košice, Slovakia, marianna.trebunova@tuke.sk

Jozef Živčák

Department of Biomedical Engineering and measurement, Faculty of Mechanical Engineering, Technical University of Kosice, Letná 1/9, 042 00, Košice, Slovakia, jozef.zivcak@tuke.sk

Keywords: video games, physiological functions, blood pressure, heart rate.

Abstract: Video games are popular leisure activity for all ages and therefore it is needed to examine their psychological and physiological effects. The aim of the presented paper is to point out possible changes in physiological functions due to playing computer games and to present them in a pilot study. Part of the work is the categorization of video games and a systematic overview of studies aimed at examining and confirming or refute their connection. The purpose of this pilot study is to measure blood pressure and human heart rate while playing different video games and to evaluate possible changes in the game. The methodology of the experiment includes demographic data, measured values during the monitoring of individual subjects and the measuring means used.

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TEMPLATE DESIGN FOR TRANSFEMORAL PROSTHETIC SOCKET DEVELOPMENT

(pages 105-108)

Branko Štefanovič

Department of biomedical engineering and measurement, Faculty of mechanical engineering, Technical University of Košice, Letná 1/9, 04200, Košice, Slovakia, EU, branko.stefanovic@tuke.sk

Lucia Bednarčíková

Department of biomedical engineering and measurement, Faculty of mechanical engineering, Technical University of Košice, Letná 1/9, 04200, Košice, Slovakia, EU, lucia.bednarcikova@tuke.sk (corresponding author)

Keywords: prosthetic socket, template design, CAD/CAM, 3D scanning, additive manufacturing.

Abstract: The presented paper aims to design 3D templates of the sciatic muscle and thigh to simplify and speed up the process of modelling TF (transfemoral) sockets using the CAD/CAM method. A proposal for a general procedure for modelling the proximal part of the TF socket and a thorough description of the proximal part and the types of sockets that are used is presented. Ten individual scans of positives of TF amputated limbs were obtained from which ten mounting ring templates were designed via CAD modelling in the Autodesk Meshmixer software. In the last step a production simulation was generated in PrusaSlicer software for the overall price evaluation.
