International Conference on Technics, Technologies and Education 2020 (ICTTE 2020)

IOP Conference Series: Materials Science and Engineering
Volume 1031

Online
4-6 November 2020

Part 1 of 2

ISBN: 978-1-7138-4556-0
ISSN: 1757-8981

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence.
Licence details: http://creativecommons.org/licenses/by/3.0/.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2022)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

PART 1

Preface

Peer review declaration ICTTE 2020

The modified drive of a metal-cutting machine with the V-belt transmission of increased resource 1
O Krol, V Sokolov, P Tsankov

Temperature Effect on Particulate Matter Concentrations PM 10 during the heating season in Burgas 10
F B Hasan, B N Midyurova, T M Mihalev

Analysis of the possibilities for growing hedgehog head (Dactylis glomerata, L.) variety "Dabrava" on cinnamon forest soil. Vegetative development 16
Violeta Vateva

Juniperus waste wood as a source for obtaining pellets by single-screw extrusion method 24
A T Simitchiev, L V Lazarov, H N Fidan, B V Bozadzhiev, A S Stoyanova

Theoretical determination and analysis of the length of the non-working move and the width of the headland when performing fishtail turn with a rectilinear reverse move, which is not parallel to the boundary of a field with an irregular shape 31
Krasimir Trendafilov

Theoretical determination and analysis of the length of the non-working move and of the width of the headland when performing a fishtail turn with a curvilinear reverse move by a machine-tractor unit with a mounted machine in an irregularly shaped field 46
Krasimir Trendafilov

Robust optimization of a deep drawing process 66
S M Paskaleva

Viscoelastic inhomogeneous beams under step loading: a longitudinal fracture analysis 75
V I Rizov

A multibody model of a wheel loader with pneumatic boom suspension and proving ground testing 86
N L Pavlov, D I Dacova

Solutions for increasing the comfort in road vehicles based on improving the construction of the seats 94
N L Pavlov, D I Dacova

A SI engine performance parameters determination for gasoline and methane operation 99
R D Dimitrov, Kr Ts Bogdanov, R S Wrobel, M Magdziak-Toklowicz, N A Andonov, R P Hristov, P Zlateva

An analysis of the potential use of waste materials for biogas plant development 106
P Zlateva, R Dimitrov

NDVI, chlorophyll and carotenoids content of leaves of Rosa damascena Mill under organic and conventional farming 112
M Todorova, N Petkova, N Grozeva, M Gerdzhikova, S Lazarova, L Lozanova, A Mladenov

Use of bio additives in diesel engine fuels 122
D P Rusev, P P Kazakov, A L Iliev, M S Dimitrov

Problems with the operation of automatic transmissions of AW 55-50 type 127
S Stefanov, R Hristov

Methodology for irrigation water uptake time estimation based on RGB colorimetric measurements of leaves (A visual-graphical observation) 134
S Atanasov

Experimental evaluation of the effectiveness of a diesel fuel additive 153
V Mihaylov, Z Ivanov, S Belchev, D Petkov

Influence of the control signal on parameters of low impedance injectors for SI engines 161
V Mihaylov, Z Ivanov, H Mersinkov, S Stoyanov, R Wrobel

3D printing on warp-knitted fabrics 170
M Ayvali, L Bussieweke, G Druzinin, M Korkmaz, A Ehrmann

Outdoor vertical farming on textile substrates 175
L Dirkes, J D Massanés, R Böttjer, J L Storck, A Ehrmann

Method of optimization of geometric transformations of design surfaces of a man's jacket 180
A L Slavinska, V V Mytsa, O P Syrotenko, O M Dombrovska

An investigation of pattern design of draped necklines 195
Zlatina Kazlacheva, Angelina Kosinkova-Stoeva

Adaptation of a system for pattern design of twist knot draperies for knitted fabrics 200
Tanya Peneva, Zlatina Kazlacheva, Julieta Ilieva

A study on pattern making of sleeves with curved shoulders 207
Zlatina Kazlacheva, Krasimira Radieva

An investigation of shaping in design of Christian Dior and Cristobal Balenciaga 214
Krasimira Radieva

A study on application of the golden and Fibonacci geometry in design of fashion accessories 221
Julieta Ilieva, Zlatina Kazlacheva, Petya Dineva, Liliana Indrie, Elena Florea-Burduja

Development of floral textile patterns on the base of the golden and Fibonacci geometry 229
Julieta Ilieva

Rationale for the development of the design of a microwave installation for cleaning wool yarn in the conditions of modern textile enterprises 236
Sergei Pryvala, Valeriy Pryvala

E-textile for non-invasive control of the body movement of bedridden patients 240
Radostina A Angelova, Daniela Sofronova

Consumption of Electric Energy in the Production of Cotton Textiles and Garments 245
Radostina A Angelova, Rositsa Velichkova, Daniela Sofronova, Ivaylo Ganev, Peter Stankov

"CloStyler" – mobile application to calculate the parameters of clothing blocks 252
Oksana Zakharkevich, Iryna Poluchovich, Svetlana Kuleshova, Juliya Koshevko, Galyna Shvets, Alexander Shvets

Analysis of the smart clothing technologies in dance costume designing 260
Iryna Poluchovich, Oksana Zakharkevich, Svetlana Kuleshova, Juliya Koshevko, Galina Shvets, Alexander Shvets

Research on the relation between the percentage of elastomeric threads in the yarn and the stretch of punto di roma jersey 268
Tania P Peneva, Diana R Balabanova, Galia G Dolapchieva, Krasimir Krastev

Determining the deformation properties of jacquard single jersey for pattern designing dresses, by the percentage of Elastane in the yarn 276
Tania P Peneva, Diana R Balabanova, Galia G Dolapchieva

Analysis of non-conventional (dry) sizing methods 286
E Blagova, D Balabanova, B Paleva-Kadiyska

Bacteriostatic properties of medical textiles treated with nanomaterials based on Fe_2O_3 292
Mykola Riabchykov, Yuriy Sychov, Olexandr Alekszndrov, Anastasiia Nikulina

Fit evaluation for virtual men's shirt 297
J Q Yan, V E Kuzmichev

Method of historical pattern analyzing 303
S C Zhang, V E Kuzmichev

Industry 4.0 for fashion products – Case studies using 3D technology 309
T Spahiu, A Manavis, Z Kazlacheva, H Almeida, P Kyratsis

Software for laser projection of CAD files for the clothing industry 318
S Ilchev, R Andreev, Z Ilcheva, E Otsetova-Dudin

Determination of limiting fibers blend irregularity 326
D B Ryklin, A M Navumenka

Research of influence of blended yarn structure including stainless steel fibers on its properties 333
S S Medvetski, D B Ryklin, V V Davidziuk

Feasibility analysis of autonomous hybrid solar-wind system for household consumption: a case study 340
T I Pehlivanova, A K Atanasov

On the reliability of technological innovation systems 346
N I Petrov, K Y Dimitrova, D D Baskanbayeva

Mathematical Simulation of Electrotechnology Characteristics of Mining Complexes 352
V L Petrov, A B Sadridinov, A V Pichuev

Sectioning of branches of distribution networks with connected wind power plants 359
J N Bakardjieva, M I Matsankov, Svatoslav Slavov

Embedded system environment self-awareness using LIDAR technologies for robotics applications 366
S G Bogdanov, D S Chikurtev, N R Spasova

Research on N-grams feature selection methods for text classification 375
Tsvetanka Georgieva-Trifonova, Mahmut Duraku

A Computer-Based Simulation Showing Balance of the Population of Predator and Prey and the Effects of Human Intervention 383
Ankit Kumar, Kunal Jani, Divyansh Khatri, Hrishitva Patel, Aditya Kumar Sharma, Nabin Kumar Sahu

Digital transformation challenges of logistics in Bulgaria 393
N Dragomirov, L Boyanov

Quality assessment of image deburring algorithms 406
Magdalena Garvanova, Vladimir Ivanov

Graphical simulation of functions 411
G I Shivacheva, K B Yankov

Clustering of Red/White Wine and Allergen/Non-Allergen Data Sets by Using Descriptor Fingerprints 417
B P Stoyanov, I E Dimitrov, I A Doytchinova, I P Bangov

Applying text mining methods to extracting information from news articles 423
Tsvetanka Georgieva-Trifonova, Miroslav Dechev

Attributes selection using machine learning for analysing students' dropping out of university: a case study 432
T I Pehlivanova, V I Nedeva

Predicting the day of storage of dairy products by data combination 440
M D Vasilev, G I Shivacheva, K I Krastev

DataScience: Experience and Trends 449
Ivan Popchev, Daniela Orozova

An application of analytical data research in e-learning system 457
Daniela Orozova, Nely Hristova

Numerical calculation of multidimensional integrals depended on input information about the function in mathematical modelling of technical and economic processes 463
O P Nechuiviter, O V Iarmosh, K H Kovalchuk

Acquiring and storing Internet of Things data into Hadoop 470
N Kaskatiiski, L Boyanov

Students' Performance Analyses Using Machine Learning Algorithms in WEKA 477
Veselina Nedeva, Tanya Pehlivanova

Accelerometer-based human activity recognition using 1D convolutional neural network 490
S Tsokov, M Lazarova, A Aleksieva-Petrova

PART 2

E-assessment-beyond the traditional assessment in digital environment 497
Gabriela Kiryakova

Adapting a method for tracking the movement of the camera in the visualization of augmented reality 505
Miroslav Galabov, Yulian Pastarmov

Model of a personal guide for museum exhibitions 513
Miroslav Trankov, Emil Hadzhikolev, Stanka Hadzhikoleva

Models and Methodologies for Automated Creating of Webpage Mobile Versions 519
Todor Rachovski, Emil Hadzhikolev, Stanka Hadzhikoleva

Criteria for selection of statistical data processing software 527
Lina Yordanova, Gabriela Kiryakova, Petya Veleva, Nadezhda Angelova, Antoaneta Yordanova

Hybrid model for quality evaluation in secondary education 534
M Docheva, G Totkov, S Gaftandzhieva, R Doneva

Action model of Angiotensin II receptors on smooth muscle ileum preparations 545
M D Vasilev, K B Yankov

Explore the possibilities for objective assessment of some beer quality indicators 551
R Gabrova, A Danev, V Ganchovska, H Andreeva

Constructing a hyperoperation sequence-pisa hyperoperations 562
A P Andonov

Algorithms for optimizing packet propagation latency in software-defined networks 575
I G Ivanov, G V Hristov, V D Stoykova

An Experimental Model of the Collect/Report Paradigm 583
Krassimira Borislavova Ivanova

Storing Dynamical Data Using Natural Language Addressing 591
Krassimira Borislavova Ivanova

On Convolutional Neural Networks for Chest X-ray Classification 598
I Naskinova

Predicting soil moisture based on the color of the leaves using data mining and machine learning techniques 606
S S Atanasov

Fuzzy U-Net Neural Network Architecture Optimization for Image Segmentation 618
M M Kirichev, T S Slavov, G D Momcheva

Generation of phase trajectories of experimental data 624
K B Yankov

Analysis of the capabilities of software products to simulate the behavior of dynamic fluid flows 630
Georgieva Nely, Delcheva Sivelina, Tsankov Petko

Analysis of energy efficiency of an industrial system 638
Krasimir Ivanov, Nely Georgieva, Stanislava Tasheva, Vanya Gandova

Risk analysis in terms of implementation of large scale cogeneration power plant 644
A K Terziev, H I Beloev, I K Iliev

On-site research with a thermal camera on industrial heating 652
Veneta Yosifova, Nikolay Stoimenov, Milena Haralampieva

Vegetation in Bulgaria according to data from satellite observations and NASA models 660
Mima Todorova, Neli Grozeva, Nikolay P Takuchev, Dafinka Ivanova, Kalinka Kuzmova, Valentin Kazandjiev, Veska Georgieva, Radomira Velichkova, Vanya Boneva

Influence of the price of electricity for the industry on the consumption in the economic sector in Bulgaria 669
Kostadin Yotov, Emil Hadzhikolev, Stanka Hadzhikoleva

Technology of butter fortified with phytosterols 676
M G Ivanova, G T Dobrev

Characteristics and rheological properties of ammonium oxalate extracted rosehip pectin 683
I Taneva, N Petkova, M Krystyjan

Volatile compounds in flowers, samaras, leaves and stem bark of Ailanthus altissima (Mill.) Swingle, growing in Bulgaria 691
Ts G Andonova, I Zh Dimitrova-Dyulgerova, Zh Slavov, I N Dincheva, A S Stoyanova

Influence of conventional and organic agriculture practices on the total phenols and antioxidant potential of Florina apple fruits 698
N Tr Petkova, S Kuzmanova, T Bileva, Ek Valcheva, G Dobrevska, N Grozeva, V Popov

Investigation and characterization of O/W emulsions on stability with different methods 704
V D Gandova, S Tz Tasheva, I G Petrova, K Z Dobreva

Determination of viscosity in O/W emulsions and correlation with prime oil phase 709
S Tz Tasheva, V D Gandova, I G Petrova, K Z Dobreva

Phytochemical composition of leaves and stems of Solanum nigrum L. and Solanum dulcamara L. (Solanaceae) from Bulgaria 715
V T Popova, M A Stoyanova, T A Ivanova, A S Stoyanova, I Z Dimitrova-Dyulgerova

Technological aspects of obtaining ethanol extracts from Physalis alkekengi L. leaves 722
T A Ivanova, V T Popova, S T Tasheva, N N Mazova, A S Stoyanova

Coefficient of diffusion of tannins in ethanol extracts from Physalis alkekengi L. leaves 728
V T Popova, S T Tasheva, T A Ivanova, A S Stoyanova

The leaves and stems of Cape gooseberry (Physalis peruviana L.) as an alternative source of bioactive substances 733
V T Popova, T A Ivanova, M A Stoyanova, N N Mazova, N D Panayotov, A S Stoyanova

Complex technological profiling of market dominating Oriental tobaccos from Krumovgrad region (Bulgaria) 742
V V Nikolova, N P Nikolov, V T Popova, S T Peeva, D T Drachev

Application of biomass from Greek juniper needles (Juniperus excelsa M. Bieb) for removal of Cr (VI) from aqueous solution 750
M I Nikolova, T V Prokopov, S S Stankov, B V Bozadzhiev, A S Stoyanova

Effect of hop extracts on rheological properties of wheat dough 759
N Sokolova

Mid-season peach varieties – physicochemical and sensory profile 765
D Sp Mihaylova, A T Popova, Tz T Dessev, N T Petkova

Correlation between phenotypic characteristics of chemical composition and rennet coagulation of sheep milk 772
G I Kalaydzhiev, T B Balabanova, M G Ivanova, G Y Ivanov

Growth and activity of probiotic bacteria in fermented milks fortified with polyphenol extract from strawberry by-product 779
M R Dimitrova, I V Ivanova, A K Slavchev, G Y Ivanov

Green approach to obtain extracts of seven edible flowers 785
D T Petkova, D Sp Mihaylova, I.N. Deseva, P N Denev, A I Krastanov

Comparative characteristics of instant creams with sugar and isomaltulose 796
R D Hadjikinova

Biologically active compounds from Tussilago farfara L 801
M A Stoyanova, M N Perifanova-Nemska

Microbiological and sensory quality of Farmers cheese produced from milk with different somatic cells count 808
G Y Ivanov, E Bilgucu, M R Dimitrova, I V Ivanova

The usage of the whole grain spelt flour in the cracker's technology 817
Iorgachova, O Makarova, K Khvostenko

Structural effects of selected hydrocolloids on Ca (II)-alginate beads containing hydrosol from Rosa damascena Mill 822
I Petrova, N Petkova, Al Slavchev, T Petrova

Chemical composition of Bulgarian white oregano (Origanum heracleoticum L.) essential oils 830
S K Baycheva, K Z Dobreva

Study of the changes in the chemical composition of Bulgarian dill essential oils 838
K Z Dobreva, M D Dimov

Microbiological screening of tobacco raw materials for rolling of cigarettes 845
T H Hristeva, N P Nikolov, V V Nikolova, S T Peeva

Influence of sucrose and barley flour on some physical, texture and sensory characteristics of cookies 854
Gjore Nakov, Ivan Dimov, Ira Taneva, Viktorija Stamatovska

Synthesis, characterization, and activity of 6-(10H-phenothiazine-10-yl)-1H,3H-benzo[de]-isochromen-1,3-dione derivative of 4-aminophenylacetic acid 862
T Haralanova, M Marinov, I Kostova, I Nikolova, S Damyanova, N Stoyanov

Synthesis, complexation properties, antimicrobial and anticoagulant activity of 2-{3-[4-(dimethylamino)phenyl]-1-hydroxyprop-2-en-1-ylidene}-4-nitro-1H-indene-1,3(2H)-dione 867
I Nikolova, I Kostova, M Staneva, M Marinov

Edible coatings enriched with Malva sylvestris L. extract 874
I N Alexieva, M R Baeva, A T Popova, I V Petrova, H N Fidan, I V Milkova-Tomova, R B Mihov

Cut surface of Bulgarian white brined cheese evaluation by image analysis in HSI color space 886
A Bosakova-Ardenska, H Andreeva, A Danev, P Panayotov, P Boyanova

Physical and sensory characteristics of edible foams obtained with nitrous oxide 895
S S Stankov, H N Fidan, T G Hristov, K N Nikovska

New ready-made mixture for biscuits enriched with subtropical fruit powder lucuma 902
A G Durakova, A L Vasileva, A M Slavov, K B Choroleeva

Application of information and communication technologies and simulators to train future specialists in navigation and ship handling 911
O B Danylenko, O M Soroka, D F Dukov, S G Soshnikov, V V Kramarenko

Online education and monitoring of quality indicators of e-learning use 921
O E Kovalenko, L M Cardoso, O Kupriyanov, T S Bondarenko

Dual-Component Ontograph Visualization 929
A G Guraliuk, M L Rostoka, G S Cherevychnyi, D O Zakatnov, T H Pavlysh

A Concept of Visual Programming Tool for Learning VHDL 937
Aneliya Ivanova

Laboratory complex for training and research of PV-technologies 944
Eldar Zaerov, Radoslav Simionov, Kamen Seymenliyski, Silviya Letskovska

Information technologies for development of educational resources in robotics 949
D S Chikurtev, A A Chikurteva, N R Spasova

Developing an augmented reality textbook for Bachelor and Master programmes “Design, technology and management of the fashion industry” 959
Tanya Borisova, Vanya Stoykova, Zlatina Kazlacheva, Krum Videnov

Training in Programming using Innovative Means 969
G I Shivacheva, N R Ruseva

Adaptive technologies for training of specialists 975
H Yelnykova, Z Ryabova

Prototype of Smart Monument with IoT-based System of Early Warning 981
V G Spasova, B G Georgiev, P D Stefanov, B P Stoyanov

Organization of the interface of games and applications, developed for children with intellectual disability 989
Gergana V Markova, Petya Y Byalmarkova

Application of a method for calculating the sizes of perspective objects 996
A I Bankova

Author Index