



# ACT 2018 - Ohrid

International Conference "Applied Computer Technologies"

## Proceedings of the 1st International Conference

"Applied Computer Technologies" ACT 2018

University of Information Science and Technology (UIST)  
"St. Paul the Apostle"



21-23 June 2018, Ohrid, Macedonia



**ACT 2018-Ohrid, Macedonia**

International Conference “Applied Computer Technologies”

The 1st International Conference

**“Applied Computer Technologies” ACT 2018**

University of Information Science and Technology “St. Paul the Apostle” – Ohrid, Macedonia  
Technical University of Varna, Bulgaria

**PROCEEDINGS OF THE 1st INTERNATIONAL  
CONFERENCE  
“APPLIED COMPUTER TECHNOLOGIES”  
ACT 2018**

21-23 June 2018, Ohrid, Macedonia  
© ACT 2018 - <http://act.uist.edu.mk>

© ACT 2018 - <http://act.uist.edu.mk>

International Conference Applied Computer Technologies 2018

Web-site: <http://act.uist.edu.mk/>

Email: [act@uist.edu.mk](mailto:act@uist.edu.mk)

**Publisher:**

University of Information Science and Technology “St. Paul the Apostle” – Ohrid, Macedonia

Address: Partizanska b.b., 6000 Ohrid, Macedonia

Web-site: <http://uist.edu.mk/>

Email: [contact@uist.edu.mk](mailto:contact@uist.edu.mk)

Printed in Ohrid, Macedonia, 2018

PROCEEDINGS of the 1st International Conference Applied Computer Technologies (1; 2018; Ohrid) Proceedings of the 1st International Conference Applied Computer Technologies: ACT 2018, June, 21-23 Ohrid, Macedonia /editors Aleksandar Karadimce, Dijana C. Bogatinoska and Amita Nandal – Ohrid : University of Information Science and Technology “St. Paul the Apostle” – Ohrid, 2018. -174 ctp.

## **Conference Chairs**

**Ninoslav Marina. Professor, Ph.D., Rector of UIST Ohrid**

**Rosen Vasilev. Professor, Ph.D., Rector of TU Varna**

## **International Program Committee**

(in alphabetical order)

Akhtar Kalam - Victoria University, Australia

Amita Nandal - UIST Ohrid, Macedonia

Aneta Velkoska - UIST Ohrid, Macedonia

Atanas Hristov - UIST Ohrid, Macedonia

Brijesh Yadav - UIST Ohrid, Macedonia

Carlo Ciulla - UIST Ohrid, Macedonia

Cesar Collazos - University of Cauca, Colombia

Darina Pavlova - Technical University of Varna, Bulgaria

Dijana Capeska Bogatinoska - UIST Ohrid, Macedonia

Dmytro Zubov - UIST Ohrid, Macedonia

Elena Brunova - Tyumen State University, Tyumen, Russia

Elena Hadzieva - UIST Ohrid, Macedonia

Farrah Wong Hock Tze - SKTM University of Malaysia Sabah, Malaysia

Geo Kunev - Technical University of Varna, Bulgaria

Hamurabi Gamboa-Rosales - Autonomous University of Zacatecas, Mexico

Harun Yücel, Assistant Professor, Bayburt University, Turkey

Huizilopoztli Luna-Garcia - Autonomous University of Zacatecas, Mexico

Ivan Buliev - Technical University of Varna, Bulgaria

Jane Bakreski - University of KwaZulu-Natal, South Africa

Joncho Kamenov - Technical University of Varna, Bulgaria

Jovanka Damoska Sekuloska- UIST Ohrid, Macedonia

Julka Petkova - Technical University of Varna, Bulgaria

Krasimira Dimitrova - Technical University of Varna, Bulgaria

Mandritsa Igor - North-Caucasus Federal University, Russia

Mariana Stoeva - Technical University of Varna, Bulgaria

Nikica Gilić - Faculty of Humanities and Social Sciences, University of Zagreb, Croatia

Ninoslav Marina - UIST Ohrid, Macedonia

Oliver Jokisch - Leipzig University of Telecommunications, Germany  
Petar Jandrić - Zagreb University of Applied Sciences, Croatia  
Rasim Salkoski - UIST Ohrid, Macedonia  
Sabareesh K P Velu - UIST Ohrid, Macedonia  
Tai-Hoon Kim - Computer Science and Engineering, Hannam University, Daejeon, Korea  
Todorka Georgieva - Technical University of Varna, Bulgaria  
Todor Ganchev - Technical University of Varna, Bulgaria  
Vencislav Valchev - Technical University of Varna, Bulgaria  
Vsevolod Ivanov - Technical University of Varna, Bulgaria  
Weiler Finnamore - Universidade Federal de Juiz de Fora, Telecommunications, Brazil  
Zhivko Zhekov - Technical University of Varna, Bulgaria

## **Organizing committee**

Assoc. Prof. Eng. Mariana Todorova, PhD  
Prof. Amita Nandal, PhD  
Prof. Dijana Capeska Bogatinoska, PhD  
Prof. Jane Barkeski, PhD  
Asst. Aleksandar Karadimche, PhD  
Asst. Goran Shibakovski, PhD  
Asst. Mersiha Ismajloska, PhD  
Asst. Eng. Dimitrichka Nikolaeva, PhD  
Eng. Vencislav Nikolov, PhD  
Eng. Reneta Parvanova  
Mr. Milan Mihajlov

## Table of Contents

### Applied computer science

|   |    |
|---|----|
| An Overview of Local Approach for Time Series Analysis and Prediction .....   | 1  |
| <i>Ventsislav Nikolov</i>   |    |
| Comparative Analysis of Algorithms for Classification of Text in the Bulgarian Language in Machine Learning.....                  | 6  |
| <i>Neli An. Arabadzieva – Kalcheva</i>  |    |
| Two-finger Touch on Wearable Device Bezel Method for User Pose Recognition.....   | 11 |
| <i>Yuri Dimitrov and Veneta Aleksieva</i>   |    |
| Lagrange Method Implemented in Modeling and Simulation, Fundamentals of Animation, Creating Models and Motion of a Character..... | 15 |
| <i>Andrijana Sharkska and Dijana Capeska Bogatinoska</i>  |    |
| Development of a PLC-based Hybrid PI controller .....   | 22 |
| <i>Vesko Uzunov, Technical University of Varna, Bulgaria</i>  |    |
| Selecting the Optimal IT Infrastructure of a Data Center .....  | 26 |
| <i>Rosen Radkov, Technical University of Varna, Bulgaria</i>  |    |

### Economy, Management and Sustainable Development

|  |    |
|--|----|
| Environmental Performance of High Risk Potential Enterprises in Devnya Municipality .....                                    | 30 |
| <i>Elena Mihaylova Kindzhakova and Daniela Simeonova Toneva</i>  |    |
| Integrated Environmental Management System in High Risk Potential Enterprises .....  | 39 |
| <i>Elena Mihaylova Kindzhakova and Daniela Simeonova Toneva</i>  |    |
| Employment of the Smart Contracts in the Practicing of the Franchising Business Model .....                                  | 47 |
| <i>Jovanka Damoska Sekuloska and Aleksandar Erceg</i>  |    |
| Information – Technological Decisions in the Process Engineering for Company Management.....                                 | 54 |
| <i>Tanya Panayotova and Tanya Angelova</i>   |    |
| Development of Wind Energy Projects in Bulgaria - Challenges and Opportunities .....   | 60 |
| <i>Toneva Daniela and Stankova Todorka</i>   |    |
| Innovative Information and Communication Technologies - a Precondition for a Higher Competitiveness of the Organization..... | 64 |
| <i>Krasimira Dimitrova</i>   |    |
| Smart Sustainable Development and Labor Migration in Europe, Eurasia and Balkan Region .....                                 | 72 |
| <i>Nikolai Siniak, Daniela Koteska Lozanoska, Sharif Nureddin, Habib Awada and Moroz Viktoriya</i>                           |    |
| Regression Analysis of Experimental Data for the Soil Electrical Characteristics Considering Humidity and Frequency .....    | 79 |
| <i>Marinela Y. Yordanova, Rositsa F. Dimitrova, Margreta P. Vasileva, Milena D. Ivanova</i>                                  |    |
| Determination of Dangerous Lightning Current Levels for Power Substations 220KV .....  | 83 |
| <i>Margreta Vasileva and Danail Stanchev</i>   |    |

## **Signal and Image Processing**

|  |    |
|--|----|
| Application of Wavelet Functions in Signal Approximation .....   | 86 |
| <i>Mariyana Todorova and Reneta Parvanova</i>  |    |
| Compression of Images Using Wavelet Functions .....  | 90 |
| <i>Reneta Parvanova and Mariyana Todorova</i>  |    |
| The Use of the Intensity-Curvature Functional as K-Space Filter: Applications in Magnetic Resonance Imaging of the Human Brain ..... | 94 |
| <i>Carlo Ciulla, Ustijana Rechkoska Shikoska, Filip A. Risteski and Dimitar Veljanovski</i>  |    |

## **Power Systems and Electronics**

|   |     |
|---|-----|
| Transient and Numerical Models of Three-Phase Induction Motor .....   | 101 |
| <i>Vasilija Sarac, Goce Stefanov and Neven Trajchevski</i>  |     |
| Integrated Machining Process Modelling and Research System.....   | 110 |
| <i>Neven Trajchevski, Vasilija Sarac, Goce Stefanov, Mikolaj Kuzinovski and Mite Tomov</i>                      |     |
| Application of Recursive Methods for Parameter Estimation in Adaptive Minimum Variance Control of DC Motor..... | 118 |
| <i>Ivan V. Grigorov and Nasko R. Atanasov</i>   |     |

## **Telecommunications**

|   |     |
|---|-----|
| Simulation Framework for Realization of Handover in LTE Network in Urban Area ..... | 122 |
| <i>Aydan Haka</i>   |     |
| Routing and Traffic Load Balancing in SDN-NFV Networks .....                        | 127 |
| <i>Dimitar Todorov and Hristo Valchanov</i>   |     |
| Model for Research of Li-Fi Communication .....                                     | 131 |
| <i>Diyan Dinev</i>  |     |

## **Information Society and Social Development & New Media Art, Science and Technology**

|   |     |
|---|-----|
| Social Media Changing the World .....                           | 135 |
| <i>Nola Ismajloska Starova</i>                                  |     |
| Modelling the Quality of User-Perceived Travel Experience.....  | 142 |
| <i>Aleksandar Karadimce, Giuseppe Lugano and Yannick Cornet</i> |     |

## **Biomedical Engineering**

|  |     |
|--|-----|
| An Approach of Modelling of Breast Lesions.....  | 149 |
| <i>Galya Gospodinova and Kristina Bliznakova</i>   |     |
| Three Dimensional Breast Cancer Models for X-Ray Imaging Research.....                         | 154 |
| <i>Kristina Bliznakova</i>   |     |
| Bioinformatics approach in finding similarity of Haemophilus influenzae and Escherichia coli.. | 161 |
| <i>Ljubinka Sandjakoska</i>  |     |

## **Applied Mathematics**

|  |     |
|--|-----|
| (2,3)-Generation of the Special Linear Groups of Dimension 9 ..... | 167 |
| <i>Tsanko Genchev and Konstantin Tabakov</i>                       |     |
| (2;3)-Generation of the Groups SL10(q).....                        | 170 |
| <i>Elenka Gencheva, Tsanko Genchev and Konstantin Tabakov</i>      |     |