



# ETAI 2018 TECHNICAL PROGRAMME SCHEDULE

THURSDAY, 20. IX. 2018

## **SESSION ETAI - 1: ARTIFICIAL INTELLIGENCE (1)**

14:15 – 15:45

Co-Chairs: Dejan Gjorgjevikj and Cvetko Andreeski

ETAI 1-1	DATA COLLECTION MODULE FOR HUMAN ACTIVITY RECOGNITION
	<b>Dejan Gjorgjevikj and Gjorgji Madjarov</b>
ETAI 1-2	DEEP REINFORCEMENT LEARNING FOR GOAL-DRIVEN ROBOT NAVIGATION
	<b>Matej Dobrevski and Danijel Skočaj</b>
ETAI 1-3	MULTI-SENSOR HUMAN ENERGY EXPENDITURE ESTIMATION USING ENSEMBLE LEARNING
	<b>Ivana Kiprijanovska, Simon Stankoski and Hristijan Gjoreski</b>
ETAI 1-4	MODELLING AND FORECASTING SEASONAL TIME SERIES IN TOURISM, CASE STUDY FOR REPUBLIC OF MACEDONIA
	<b>Cvetko Andreeski and Daniela Meckaroska</b>
ETAI 1-5	LARGE-SCALE SMARTPHONE-BASED TRANSPORTATION RECOGNITION USING MACHINE LEARNING
	<b>Elena Merdzanovska, Stefan Kalabakov, Ivona Milanova and Hristijan Gjoreski</b>
ETAI 1-6	FITTED RULE ENSEMBLES FOR MULTI-TARGET REGRESSION WITH RANDOM OUTPUT SELECTIONS
	<b>Martin Breskvar, Dragi Kocev and Sašo Džeroski</b>

## **SESSION ETAI - 2: ELECTRONICS (1)**

14:15 – 15:45

Co-Chairs: Zoran Ivanovski and Tomislav Kartalov

ETAI 2-1	ON THE CHOICE OF NUMBER OF TRAINING SIGNALS FOR OPTIMAL POWER QUALITY DISTURBANCES CLASSIFICATION
	<b>Marija Markovska and Dimitar Taskovski</b>
ETAI 2-2	AN ALGORITHM FOR QUALITY CONTROL OF AUTOMATED FIBER PLACEMENT
	<b>Ljupcho Milosheski and Zoran Ivanovski</b>
ETAI 2-3	IMPROVED TECHNIQUES OF COMPRESSED SENSING AND PARALLEL IMAGING FOR BRAIN MRI
	<b>Aleksandar Kamilovski and Zoran Ivanovski</b>
ETAI 2-4	FRONT VIEW VEHICLE RECOGNITION
	<b>Maria Bjelikj, Zoran Ivanovski and Tomislav Kartalov</b>
ETAI 2-5	SEGMENTATION OF BOXES FROM A 3D POINT CLOUD FOR AUTOMATIC UNLOADING
	<b>Elena Vasileva and Zoran Ivanovski</b>
ETAI 2-6	METHOD FOR OBJECT DETECTION USING ANALYSIS OF A SEQUENCE OF NEAR-INFRARED IMAGES PROCESSED BY BACKGROUND SUBTRACTION TECHNIQUES
	<b>Ivan Matveev, Ingo Chmielewski, Eduard Siemens and Aleksey Yurchenko</b>

### **SESSION ETAI – 3: TELECOMMUNICATIONS**

14:15 – 15:45

Co-Chairs: Aleksandar Risteski and Peco Nedelkovski

ETAI 3-1	RESOURCE ALLOCATION IN WIRELESS POWERED COMMUNICATION NETWORKS WITH IMPERFECT CSI
	<b>Slavche Pejovski and Zoran Hadzi-Velkov</b>
ETAI 3-2	SPECTRUM ASSIGNMENT IN ELASTIC OPTICAL NETWORKS
	<b>Teodora Kocevaska, Pero Latkoski, Marko Porjazoski and Borislav Popovski</b>
ETAI 3-3	DESIGN OF TWO LEVEL TRANSMIT SIGNAL WAVEFORM FOR WIRELESS POWERED COMMUNICATION NETWORKS
	<b>Slavche Pejovski, Zoran Hadzi-Velkov and Marija Poposka</b>
ETAI 3-4	IMPLEMENTATION OF A COMPRESSIVE SAMPLING STEPPED FREQUENCY RADAR ON A USRP
	<b>Venceslav Kafedziski</b>
ETAI 3-5	DRAFT CONCEPT FOR ENERGY EFFICIENCY IMPROVEMENT WITH SMART PHONES AND ARTIFICIAL NEURAL NETWORKS USAGE
	<b>Igor Bimbiloski and Aleksandar Risteski</b>
ETAI 3-6	PERFORMANCE OF ERROR CORRECTING CODES IN WAKE-UP-RADIO WIRELESS SENSOR NETWORKS
	<b>Robert Adamovski, Marko Poposki, Valentin Rakovic, Liljana Gavrilovska and Aleksandar Risteski</b>

### **SESSION ETAI – 4: AUTOMATICS (1)**

16:00 – 17:30

Co-Chairs: Mile Stankovski and Jovan Stefanovski

ETAI 4-1	FROM RECURRENT NEURAL NETWORKS TO HUMAN NEURONAL NETWORKS AND BACK: A COMPUTATIONAL BIO-CYBERNETICS (INVITED PAPER)
	<b>Georgi Dimirovski and Kevin Warwick</b>
ETAI 4-2	PERFORMANCE ANALYSIS OF DUPID CONTROL OVER CSTR SYSTEM WITH VARYING PARAMETERS
	<b>Dusko Stavrov, Goran Stojanovski, Gorjan Nadzinski and Stojce Deskovski</b>
ETAI 4-3	STABILITY OF NONLINEAR DESCRIPTOR SYSTEMS AND APPLICATION TO STABILIZATION OF QUADCOPTERS
	<b>Drilon Bunjaku, Jovan Stefanovski and Georgi M. Dimirovski</b>
ETAI 4-4	NOVEL CHARACTERIZATIONS FOR SWITCHED NONLINEAR SYSTEMS WITH AVERAGE DWELL TIME: FURTHER FINDINGS
	<b>Georgi Dimirovski, Jiqiang Wang, Hong Yue and Jovan Stefanovski</b>
ETAI 4-5	DYNAMIC MODELING AND CASCADE CONTROL DESIGN FOR QUADROTORS
	<b>Drilon Bunjaku, Gorjan Nadzinski, Mile Stankovski and Jovan Stefanovski</b>
ETAI 4-6	COMPARISON OF A STANDARD PID AND ENHANCED PID CONTROLLING STRUCTURES WHEN APPLIED TO A SISO WATER TANK SYSTEM
	<b>Georgi Vitanov, Dushko Stavrov, Goran Stojanovski and Vesna Andova</b>

## **SESSION ETAI – 5: INFORMATICS**

16:00 – 17:30

Co-Chairs: Vladimir Trajkovik and Hristijan Gjoreski

ETAI 5-1	COMPARISON OF SD NEAR- AND OFFSHORING PROJECTS REGARDING ASSETS AND DRAWBACKS RESULTING FROM CULTURAL AND GEOGRAPHIC DISTANCE
	<b>Oliver Sebelin</b>
ETAI 5-2	BLOCKCHAIN BASED TRANSFORMATION IN GOVERNMENT: REVIEW OF CASE STUDIES
	<b>Julija Basheska and Vladimir Trajkovik</b>
ETAI 5-3	MANAGE VARIABILITY IN OBJECT-ORIENTED APPLICATIONS WITH FEATURE MODELS
	<b>Ender Bulut and Cevat Şener</b>
ETAI 5-4	PERFORMANCE MEASUREMENTS OF IN-MEMORY AND HARD DISK DATABASES USING TPC-C SCHEMA WORKLOAD
	<b>Vigan Raca, Anastas Mishev and Goran Velinov</b>
ETAI 5-5	ANALYSIS OF THE DISTRIBUTED LEDGER TECHNOLOGIES: A SURVEY OF THE MOST POPULAR BLOCKCHAINS
	<b>Nasi Jofce, Riste Stojanov and Dimitar Trajanov</b>
ETAI 5-6	VARX LEARNING STYLES AND ONLINE EDUCATION: CASE STUDY
	<b>Ermira Idrizi, Sonja Filiposka and Vladimir Trajkovik</b>

## **SESSION ETAI – 6: ELECTRONICS (2)**

16:00 – 17:30

Co-Chairs: Mare Srbinovska and Andrijana Kuhar

ETAI 6-1	INFLUENCE OF SEGMENTATION ON THE PRECISION OF CIRCUIT BASED METHODS
	<b>Andrijana Kuhar, Vesna Arnautovski-Toseva, Lidija Ololoska-Gagoska, Leonid Grcev and Blagoja Markovski</b>
ETAI 6-2	COMPARISON OF APPROXIMATE MODELS FOR HIGH-FREQUENCY ANALYSIS OF GROUNDING SYSTEMS IN UNIFORM EARTH
	<b>Blagoja Markovski, Leonid Grcev, Vesna Arnautovski-Toseva and Andrijana Kuhar</b>
ETAI 6-3	DEVELOPMENT OF MODULAR INSTRUMENTATION CALIBRATION PROCEDURE AND UNCERTAINTY ESTIMATION
	<b>Bodan Velkovski, Marija Cundeva-Blajer and Mare Srbinovska</b>
ETAI 6-4	IMPROVEMENT OF THE FEIT LABORATORY OF ELECTRICAL MEASUREMENTS BEST CMC THROUGH INTERNATIONALLY TRACEABLE CALIBRATIONS AND INTER-LABORATORY COMPARISONS
	<b>Kiril Demerdziev, Marija Cundeva-Blajer, Vladimir Dimcev, Mare Srbinovska and Zivko Kokolanski</b>
ETAI 6-5	PROPOSAL OF SMALL WIND TURBINES APPLICATION IN A MICROGRID AT THE UNIVERSITY CAMPUS
	<b>Nemanja Savić, Vladimir Katić and Nenad Katić</b>
ETAI 6-6	CALCULATION MODEL CONFIGURATION FOR SMALL FIELDS IN RADIOTHERAPY
	<b>Sonja Petkovska, Yasin Acarbas, Margarita Ginovska, Hristina Spasevska and Dragana Manasova</b>

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**SESSION ETAI – 7: AUTOMATICS (2)**

11:30 – 13:00

Co-Chairs: Georgi Dimirovski and Stojce Deskovski

ETAI 7-1	COMPUTER-BASED SIMULATION AND VALIDATION OF ROBOT ACCURACY IMPROVEMENT METHOD AND ITS VERIFICATION IN ROBOT CALIBRATION PROCEDURE
	<b>Samoil Samak, Igor Dimovski, Mirjana Trompeska, Vladimir Dukovski, Martin Hristoski and Filip Kochoski</b>
ETAI 7-2	RELIABLE ROBUST TRACKING CONTROLLERS DESIGN REVISITED: AN IMPROVED LMI BASED SYNTHESIS
	<b>Yuan-Wei Jing, Fu-Zhong Wang, Jovan Stefanovski and Georgi Dimirovski</b>
ETAI 7-3	RELIABLE ROBUST ADAPTIVE CONTROL FOR UNCERTAIN SWITCHED FUZZY SYSTEMS: DESIGN SYNTHESIS REVISITED
	<b>Yuan-Wei Jing, Le Zhang, Imre Rudas and Georgi Dimirovski</b>
ETAI 7-4	DESIGN OF AUTONOMOUS MOBILE ROBOT FOR PRECISE AGRICULTURE APPLICATIONS
	<b>Vasko Sazdovski and Stojce Deskovski</b>
ETAI 7-5	DESIGN, MODELING AND PROTOTYPING OF BIO-INSPIRED MOBILE ROBOT ACTUATED BY PIEZOELECTRIC TRANSDUCERS
	<b>Maja Anachkova, Jovana Jovanova and Simona Domazetovska</b>
ETAI 7-6	MODELING OF MULTI LOCOMOTION OF SOFT ROBOT
	<b>Simona Domazetovska, Vasko Changoski, Jovana Jovanova and Maja Anachkova</b>

**SESSION ETAI – 8: STANDARDISATION AND REGULATION IN ELECTRONIC COMMUNICATIONS**

11:30 – 13:00

Co-Chairs: Venceslav Kafedziski and Slavica Nasteska

ETAI 8-1	NET NEUTRALITY: CONSUMER PROTECTION PRINCIPLE
	<b>Slavica Nasteska</b>
ETAI 8-2	THE NEED OF REGULATION FOR THE OTT SERVICES IN THE WORLD, EUROPE AND MACEDONIA
	<b>Jovan Miloshevski, Iskra Ivanovska, Valentina Angjelkoska and Aleksandar Risteski</b>
ETAI 8-3	5G STANDARDS (APPLICATION PAPER)
	<b>Venceslav Kafedziski</b>
ETAI 8-4	APPLIED INTERNET SPEED MEASUREMENT SYSTEM FOR FIXED NETWORKS
	<b>Zoran Aleksov and Boris Arsov</b>
ETAI 8-5	ISO STANDARDS AND THE CHALLENGE OF THEIR IMPLEMENTATION IN TELECOM SECTOR (APPLICATION PAPER)
	<b>Frosina Geceva Kocova</b>
ETAI 8-6	WEB GIS SYSTEM FOR ELECTRONIC DATA DELIVERY FOR NEWLY CONSTRUCTED ELECTRONIC COMMUNICATIONS NETWORKS
	<b>Boris Arsov and Zoran Aleksov</b>

**SESSION ETAI – 9: ELECTRONICS, TELECOMMUNICATIONS, AUTOMATICS AND INFORMATICS**  
11:30 – 13:00

Co-Chairs: Aleksandar Simevski and Dimitar Dimitrov

ETAI 9-1	PERFORMANCE EVALUATION OF MOBILE APPLICATIONS
	<b>Anita Andonoska and Kire Jakimoski</b>
ETAI 9-2	HARDWARE/SOFTWARE CO-VERIFICATION PLATFORM FOR EMBEDDED MULTIPROCESSORS
	<b>Aleksandar Simevski</b>
ETAI 9-3	SUPERVISOR AND GRAPHICAL USER INTERFACE AIMED FOR 3D PRINTERS AND CNC MACHINES
	<b>Nikola Jovanovski and Josif Kjosev</b>
ETAI 9-4	ON THE EFFECTIVENESS OF THREE BATTERY CONTROL STRATEGY FORMULATIONS FOR RESIDENTIAL PHOTOVOLTAIC SYSTEMS
	<b>Vladimir Gjorgievski, Dimitar Dimitrov and Marija Kacarska</b>
ETAI 9-5	TECHNIQUES AND TOOLS FOR RELIABILITY ASSESSMENT OF POWER SYSTEMS
	<b>Natalija Petrova, Nevenka Kiteva Rogleva and Vangel Fustic</b>
ETAI 9-6	THE FUSION BETWEEN BLOCKCHAIN AND IOT FOR HEALTHCARE SYSTEMS
	<b>Jovan Karamachoski, Liljana Gavrilovska and Anis Sefidanoski</b>

**SESSION ETAI – 10: ARTIFICIAL INTELLIGENCE (2)**  
14:30 – 16:00

Co-Chairs: Vesna Ojleska Latkoska and Elena Hadzieva

ETAI 10-1	COMPARATIVE ANALYSIS FOR THE INFLUENCE OF THE TUNING PARAMETERS IN THE ALGORITHM FOR DETECTION OF EPILEPSY BASED ON FUZZY NEURAL NETWORKS
	<b>Marjan Stoimchev and Vesna Ojleska Latkoska</b>
ETAI 10-2	FINANCIAL MODELING BY STOCHASTIC DIFFERENTIAL EQUATIONS
	<b>Nikola Veljanovski and Katerina Hadzi-Velkova Saneva</b>
ETAI 10-3	COMBINING LEXICON-BASED AND MACHINE LEARNING APPROACH FOR TWITTER SENTIMENT ANALYSIS
	<b>Anastaisija Nikolovska, Natasha Mladenovska and Hristijan Gjoreski</b>
ETAI 10-4	COMPUTER-AIDED DETECTION OF MELANOMA, A CASE STUDY
	<b>Petre Lameski, Eftim Zdravevski, Slobodan Kalajdziski, Vesna Trajkova and Elena Hadzieva</b>
ETAI 10-5	FEATURE RANKING FOR HIERARCHICAL MULTI-LABEL CLASSIFICATION WITH TREE ENSEMBLE METHODS
	<b>Matej Petković, Sašo Džeroski and Dragi Kocev</b>
ETAI 10-6	OPTION PREDICTIVE CLUSTERING TREES FOR MULTI-LABEL CLASSIFICATION
	<b>Tomaž Stepišnik Perdih, Dragi Kocev and Sašo Džeroski</b>

### **SESSION ETAI – 11: NETWORKS, IoT AND REGULATION**

**14:30 – 16:00**

Co-Chairs: Miroslav Kotevski and Marija Kalendar

ETAI 11-1	LOW-COST, HIGH-AVAILABLE AND SECURE LMS CLUSTER PLATFORM – LOAD AND STRESS TESTING
	<b>Dejan Cabukovski and Toni Janevski</b>
ETAI 11-2	CLOUD-BASED ORCHESTRATED SERVICES WITH QOS SUPPORT FOR MOBILE BROADBAND TERMINALS AND NETWORKS
	<b>Tomislav Shuminoski, Stojan Kitanov and Toni Janevski</b>
ETAI 11-3	LEGAL ASPECTS OF INTERNET OF THINGS AND THE REGULATION OF DATA PROTECTION IN EU
	<b>Iskra Ivanovska, Jovan Miloshevski, Valentina Angjelkoska and Aleksandar Risteski</b>
ETAI 11-4	MANAGING REAL TIME IOT DATA WITH CLOUD COMPUTING SERVICES
	<b>Dejan Vasilevski, Ana Cholakoska, Marija Kalendar and Danijela Efnusheva</b>
ETAI 11-5	EVOLUTION TO 5G AND COMPLIANCE TO EMF EXPOSURE STANDARDS
	<b>Konstantin Martinov, Miroslav Kotevski and Jovan Karamacoski</b>
ETAI 11-6	CRITICAL DATA COMMUNICATIONS IN HETEROGENEOUS NETWORKS
	<b>Simon Bojadjevski, Natasha Anastasova Bojadjevaska, Marija Kalendar and Aristotel Tentov</b>

### **SESSION ETAI – 12: PRESENTATION OF SELECTED PAPERS PUBLISHED IN SELECTED JOURNALS**

**14:30 – 16:00**

Co-Chairs: Tomislav Shuminoski and Gorjan Nadzinski

ETAI 12-1	THE UNIVERSITY OF SUSSEX-HUAWEI LOCOMOTION AND TRANSPORTATION DATASET FOR MULTIMODAL ANALYTICS WITH MOBILE DEVICES
	<b>Hristijan Gjoreski, Mathias Ciliberto, Lin Wang, Francisco J. O. Morales, Sami Mekki, Stefan Valentin and Daniel Roggen</b>
ETAI 12-2	5G TERMINALS WITH MULTI-STREAMING FEATURES FOR REAL-TIME MOBILE BROADBAND APPLICATIONS
	<b>Tomislav Shuminoski and Toni Janevski</b>
ETAI 12-3	GENERATION OF LONG-TIME COMPLEX SIGNALS FOR TESTING THE INSTRUMENTS FOR DETECTION OF VOLTAGE QUALITY DISTURBANCES
	<b>Dragan Živanović, Milan Simić, Zivko Kokolanski, Dragan Denić and Vladimir Dimcev</b>
ETAI 12-4	EXPERIMENTAL REALIZATION OF THE COUPLING FUNCTION SECURE COMMUNICATIONS PROTOCOL AND ANALYSIS OF ITS NOISE ROBUSTNESS
	<b>Gorjan Nadzinski, Matej Dobrevski, Christopher Anderson, Peter V. E. McClintock, Aneta Stefanovska, Mile Stankovski, and Tomislav Stankovski</b>
ETAI 12-5	DESIGN AND EVALUATION OF COMPUTER-BASED ELECTRICAL POWER QUALITY SIGNAL GENERATOR
	<b>Milan Simić, Zivko Kokolanski, Dragan Denić, Vladimir Dimcev, Dragan Živanović and Dimitar Taskovski</b>



# PROGRAM

Day	Time	Congress Hall	Hall 1	Hall 2	Hall3
THURSDAY, 20. IX 2018	11:00-11:30	Conference Opening			
	11:30-12:15	Plenary Lecture 1: Prof. Dr. Jae Hong Lee (Cognitive Radio for Wireless Communications: Concepts and Applications)			
	12:15-13:00	Plenary Lecture 2: Prof. Dr. Đani Juričić (Prognostics and Health Management of Modern Systems and Components: Recent Developments and Perspectives)			
	13:00-14:00	Lunch break			
	14:15-15:45		ARTIFICIAL INTELLIGENCE (1)	ELECTRONICS (1)	TELECOMMUNICATIONS
	15:45-16:00	Coffee break			
	16:00-17:30		AUTOMATICS (1)	INFORMATICS	ELECTRONICS (2)
	17:30-18:30	Round Table 1: Innovative Strategies for Promoting Positive Youth Development Among High School Students (moderator Mrs. Nancy Schiff)			
	19:00-20:00	Welcome drink			
FRIDAY, 21. IX 2018	09:30-10:15	Plenary Lecture 3: Prof. Dr. Sašo Džeroski (Mining Big and Complex Data)			
	10:15-11:00	Plenary Lecture 4: Prof. Dr. Brian A. Barsky (From Vision-Realistic Rendering to Vision Correcting Displays)			
	11:00-11:30	Coffee break			
	11:30-13:00		AUTOMATICS (2)	STANDARDISATION AND REGULATION IN ELECTRONIC COMMUNICATIONS	ELECTRONICS, TELECOMMUNICATIONS, AUTOMATIC AND INFORMATICS
	13:00-14:00	Lunch break			
	14:30-16:00		ARTIFICIAL INTELLIGENCE (2)	NETWORKS, IoT AND REGULATION	PRESENTATION OF SELECTED PAPERS PUBLISHED IN SELECTED JOURNALS
	16:00-16:30	Young researcher presentation: M. Sc. Neda Petreska (Performance Analysis of Wireless Industrial Networks - Challenges and Trends)			
	16:30-17:00	Coffee break			
	17:00-17:15	Address by the Director of the Fund for Innovations and Technology Development, Jovan Despotovski			
	17:15-19:00	Round Table 2: Smart ECO Technology			
20:00	Gala dinner				
SATURDAY, 22. IX 2018	10:00-10:30	Closing Ceremony			
	11:00-15:00	Trip to Vevcani (TBA)			