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INNOVATIVE  
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42<sup>nd</sup> international convention on  
information and communication  
technology, electronics and  
microelectronics

**mipro**  
**2019**



# PROGRAM

May 20 - 24, 2019, Opatija, Croatia

Grand Hotel Adriatic &  
Remisens Hotel Admiral

*Lampadem tradere*



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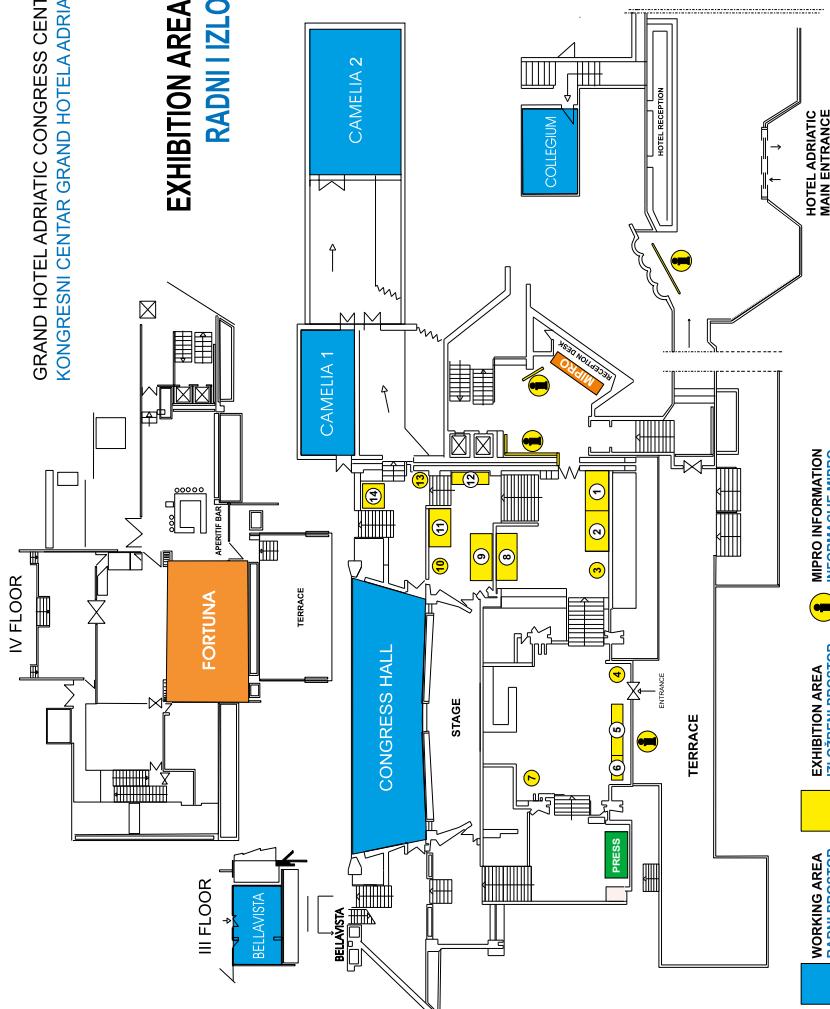
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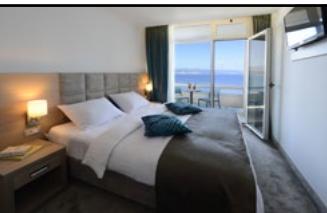
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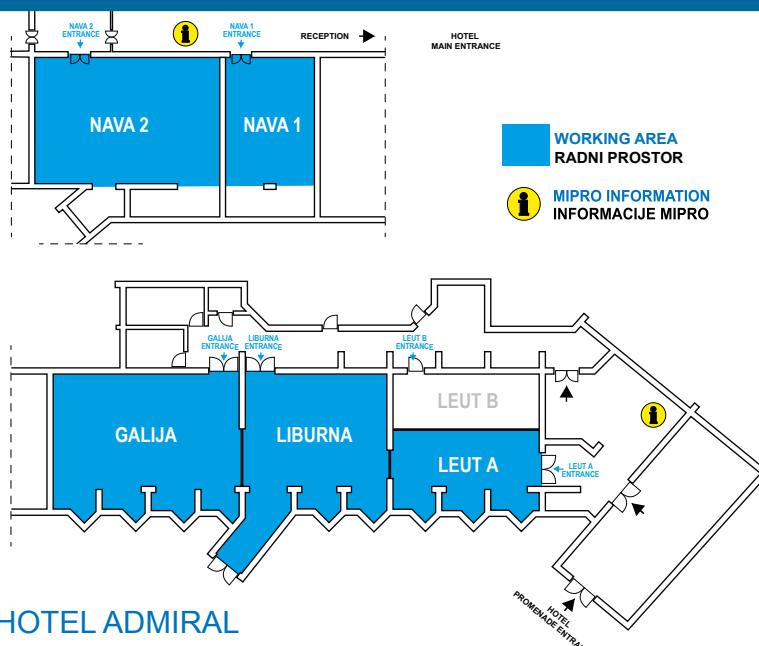
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HOTEL		20.05. MONDAY / PONEDJELJAK		21.05. TUESDAY / UTORAK		22.05. WEDNESDAY / SRUJEĐA		23.05. THURSDAY / ČETVRTAK		24.05. FRIDAY / PETAK	
HOTEL	HALL / DVORANA	A.M. / DOPONE	P.M. / DOPONE	A.M. / DOPONE	P.M. / DOPONE	A.M. / DOPONE	P.M. / DOPONE	A.M. / DOPONE	P.M. / DOPONE	A.M. / DOPONE	P.M. / DOPONE
CONGRESS HALL KONGRESNA DVORANA		15.00-18.30 <b>CE</b>	09.00-13.00 <b>CE</b>	15.00-16.30 Međunarodni gospodarstvenički forum o razvoju i inovacijama u ICT i IoT presečištu	10.00-13.00 OPENING CEREMONY	15.00-18.00 Plenary keynote lectures	09.00-10.00 Strateško planiranje u visokom području znanosti, inovacija i razvoja				
BELLAVISTA		10.00-13.00 <b>CCE</b>	10.00-13.00 <b>CCE</b>	14.00-17.00 <b>EE</b>		15.00-19.00 <b>MEET</b>	10.30-12.30 Dan tržišta	Last Minute Event			
CAMELLIA 1		09.30-13.00 <b>IRP</b>	15.00-17.00 <b>IRP</b>	09.00-13.00 <b>WS2</b>	14.00-19.00 <b>EE</b>	15.00-19.00 <b>WS6</b>	10.15-13.00 <b>DC</b>	15.30-19.00 <b>MEET</b>	09.00-13.00 <b>DC</b>	09.00-13.00 <b>MEET</b>	09.00-13.00 <b>MEET</b>
CAMELLIA 2		09.30-12.30 <b>HEP</b>	15.30-19.00 <b>HEP</b>	10.30-12.30 Digitarna platforma Grupe KONCAR	15.00-16.30 Prednosti uvođenja 5G mreže u RH	15.30-17.00 lot rješenja za pametne gradove 17.30-19.00 GDPR - gdje smo godinu dana kasnije	10.15-13.00 <b>SP</b>	13.00-17.30 <b>URBAN INNO</b>	09.00-13.00 <b>URBAN INNO</b>		
COLLEGIUM				09.00-12.00 <b>WS1</b>	09.00-12.00 Last Minute Event	17.00-19.00 <b>4COWS</b>	10.30-13.00 <b>SSRCI</b>	15.00-19.00 <b>SSRCI</b>			
FORTUNA OR POOL						19.30-21.30 Cocktail					
NAVA 1		09.00-13.00 <b>WS5</b>	15.00-19.00 <b>WS5</b>	09.00-13.00 <b>ISS</b>	15.00-19.00 <b>ISS</b>	14.00-19.00 <b>miproBIS</b>	10.30-12.30 <b>WS3</b>	15.00-19.00 <b>WS3</b>	09.00-12.30 <b>WS3</b>		
NAVA 2				09.00-13.00 <b>DE-DS</b>	15.00-19.00 <b>DE-DS</b>	15.00-19.00 <b>CE</b>	10.30-13.00 <b>CE</b>	15.00-19.00 <b>CE</b>	09.00-13.00 <b>CE</b>		
LEUT A				09.00-13.00 <b>WS4</b>	15.00-19.00 <b>WS4</b>	15.00-19.00 <b>CTS</b>					
LIBURNA				09.00-12.00 <b>SSE</b>	15.00-19.00 <b>SSE</b>	15.00-19.00 <b>CIS</b>	09.30-13.00 <b>CIS</b>	15.00-19.00 <b>CIS</b>			
GALIJA				12.00-13.00 <b>4COWS</b>		14.00-19.00 <b>CTI</b>	10.30-13.00 Intelligent Production CTS	15.00-19.00 <b>CTI</b>	15.00-19.00 <b>CTS</b>		

GENERAL EVENTS  
ZAJEDNIČKE AKTIVNOSTIPRESENTATIONS  
STRUČNE PREZENTACIJEPANELS  
ORKULJI STOLOVIWORKSHOPS  
RADIONICETUTORIALS  
SEMINARICONFERENCE  
SAJAM FOTOVRAPROJECT MEETINGS  
SAŠTANCI PROJEKT NIŠTVOVA

# Welcome to MIPRO 2019, the biggest non-commercial ICT convention in the region

We are living in an extremely challenging period of ICT-based technical development which results: personalization, regionalization and globalization. By following our mission in interaction with intense ICT development, we connect science, technology and economy this year again. We particularly emphasize the networking and strategy which follow EU's technological policies and development directions, with a focus on Artificial intelligence and Smart environments. The MIPRO 2019 Program is based primarily on its efforts to make the economy in the ICT domain contemporary and adaptable to world market demands and national interests at the time of these challenging digital transformations. It is implemented through a series of international conferences and program segments (workshops, thematic day, panels, tutorials, forums and exhibition) under the slogan:

*"MIPRO 2019 - Innovative Promotional Partnership".*

On behalf of the International Program Committee we express our sincere gratitude to our partners and sponsors.

Come to magical, ancient and sunny Opatija, participate in MIPRO 2019 and be part of the ICT events from May 20 – 24, 2019.



Professor Karolj Skala, PhD  
International Program Committee General Chair

## Dobrodošli na MIPRO 2019, najveći nekomercijalni ICT skup u regiji

Živimo u izrazito izazovnom periodu razvoja tehničke civilizacije koja se temelji na ICT-u i provodi personalizaciju, regionalizaciju i globalizaciju. Prateći našu misiju u interakciji s intenzivnim ICT razvojem i ove godine povezujemo znanost, tehnologiju i gospodarstvo. U programu posebno ističemo umrežavanje i strategiju u smjeru EU tehnoloških odrednica i razvojnih pravaca s istaknutim fokusom prema umjetnoj inteligenciji i pametnim okruženjima. Programska plan djelovanja MIPRO 2019 temelji se prvenstveno na njegovom nastojanju da se gospodarstvo u domeni ICT-a učini suvremenim i prilagodljivim zahtjevima svjetskog tržišta i nacionalnih interesa u trenutku odvijanja tih izazovnih digitalizacijskih promjena. To se ostvaruje nizom međunarodnih savjetovanja i strateških programskih segmenata (radionice, tematski dan, okrugli stolovi, seminari, forumi i izložba) pod sloganom:

*"MIPRO 2019 - inovativno promotivno partnerstvo".*

U ime Međunarodnog programskog odbora zahvaljujemo brojnim suradnicima u organizaciji i sponzorima na pomoći i podršci.

Dodite u čarobnu, drevnu i sunčanu Opatiju na MIPRO 2019 i budite od 20. do 24. svibnja 2019. dio ICT zbivanja i razvoja.



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For all further information concerning the tutorial and conference programs, please contact the International Program Committee General Chair, Professor **Karolj Skala**, Ruđer Bošković Institute, Bijenička 54, HR-10000 Zagreb, Croatia, phone: +385 1 457 1218, +385 98 209 816, e-mail: [skala@mipro.hr](mailto:skala@mipro.hr).

For organizational technical questions and general media inquiries, please contact **Office MIPRO**, Kružna 8/II, P.O. Box 303, HR-51001 Rijeka, Croatia, phone/fax: +385 51 423 984, e-mail: [mipro@mipro.hr](mailto:mipro@mipro.hr).

Za sve programske informacije kontaktirajte predsjednika Međunarodnog programskog odbora prof. dr. sc. **Karolja Skalu**, Institut Ruđer Bošković, Bijenička 54, HR-10000 Zagreb, tel.: +385 1 457 1218, +385 98 209 816, e-mail: [skala@mipro.hr](mailto:skala@mipro.hr).

Za organizacijska, tehnička pitanja i informacije koje se tiču medija kontaktirajte **Ured MIPRO**, Kružna 8/II, p.p. 303, HR-51001 Rijeka, tel/fax: +385 51 423 984, e-mail: [mipro@mipro.hr](mailto:mipro@mipro.hr).

## PRESS CENTER

Press center will be available from Tuesday, May 21 till Thursday, May 23, 2019 in Grand hotel Adriatic with all the benefits for accredited journalists. For detailed information please contact Office MIPRO , phone: +385 51 423 984; e-mail: [mipro@mipro.hr](mailto:mipro@mipro.hr).

## TIMETABLE

All events will be regularly updated on MIPRO website and mobile assistant. Detailed information and timetables can be checked at [www.mipro.hr](http://www.mipro.hr) and C4me application.

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## PRESS CENTAR

Od utorka 21.5. do četvrtka 23.5.2019. u Grand hotelu Adriatic radit će Press Centar sa svim pogodnostima za akreditirane novinare. Detaljnije informacije daje Ured MIPRO, tel.: +385 51 423 984; e-mail: [mipro@mipro.hr](mailto:mipro@mipro.hr).

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## MEDIA PARTNERS · MEDIJSKI POKROVITELJI

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## WORKING TIME · RADNO VRIJEME

DATE DATUM	RECEPTION PRIJEMNI URED	EXHIBITION IZLOŽBA
20.05.2019., Monday · ponedjeljak	08 <sup>00</sup> – 18 <sup>00</sup>	16 <sup>00</sup> – 19 <sup>00</sup>
22.05.2019., Tuesday · utorak	08 <sup>00</sup> – 18 <sup>00</sup>	08 <sup>00</sup> – 19 <sup>00</sup>
23.05.2019., Wednesday · srijeda	08 <sup>00</sup> – 18 <sup>00</sup>	08 <sup>00</sup> – 19 <sup>00</sup>
24.05.2019., Thursday · četvrtak	08 <sup>00</sup> – 18 <sup>00</sup>	08 <sup>00</sup> – 19 <sup>00</sup>
25.05.2019., Friday · petak	08 <sup>00</sup> – 14 <sup>00</sup>	08 <sup>00</sup> – 13 <sup>00</sup>

The detailed schedule for all MIPRO 2019 events will be placed on bulletin boards and at [www.mipro.hr](http://www.mipro.hr). All registered participants have free access to plenaries, panels, exhibition and program-professional presentations with obligatory badge carrying.

Mikrosatnica svih događanja na MIPRO 2019 bit će istaknuta na oglasnim pločama i na [www.mipro.hr](http://www.mipro.hr). Svim registriranim sudionicima slobodan je pristup plenarnom radu, okruglim stolovima, izložbi i programsko-stručnim prezentacijama uz obavezno nošenje bedževa.

## TERMS · ROKOVI

- until / do 6.05.2019. Hotel reservation · Rezervacija hotela  
until / do 6.05.2019. Registration and fee payment · Prijava i uplata kotizacije  
20.05.2019. Delivery of equipment/exhibits and booth setup  
Doprema izložbenih eksponata i postavljanje izložbi  
20.05.2019. Opening of the exhibition at 4<sup>00</sup> PM  
Početak rada u 16<sup>00</sup> sati  
24.05.2019. End of the exhibition at 1<sup>00</sup> PM  
Završetak rada u 13<sup>00</sup> sati i otprema eksponata

## HOTEL RESERVATION · REZERVACIJA HOTELA

Please arrange your accommodation in time, no later than May 6, 2019.  
*Molimo Vas da rezervirate hotel što prije, najkasnije do 6.5.2019.*



For all information please contact: **Reservation office in Grand Hotel Adriatic d.d. Opatija**, phone +385 (0)51 719 010, fax +385 (0)51 719 015 or e-mail: [info@hotel-adriatic.hr](mailto:info@hotel-adriatic.hr).

Note: Booking can be made over the following link:  
[https://secure.phobs.net/booking.php?company\\_id=3bd3ca05a2d927f251260c1acc91121b&partne\\_rs\\_access=MIP1234](https://secure.phobs.net/booking.php?company_id=3bd3ca05a2d927f251260c1acc91121b&partne_rs_access=MIP1234)

Za sve potrebne informacije obratite se na **Rezervacijski ured Grand hotela Adriatic d.d. Opatija**, tel. +385 (0)51 719 010, fax +385 (0)51 719 015 ili e-mail [info@hotel-adriatic.hr](mailto:info@hotel-adriatic.hr).

Link za rezervaciju smještaja: [https://secure.phobs.net/booking.php?company\\_id=3bd3ca05a2d927f251260c1acc91121b&partners\\_access=MIP1234](https://secure.phobs.net/booking.php?company_id=3bd3ca05a2d927f251260c1acc91121b&partners_access=MIP1234)

**LIBURNIA RIVIERA HOTELS**

For all accommodation inquires at Remisens Hotel Admiral and Remisens Hotel Kristal, please contact **Liburnia Riviera Hotel's Reservation centre**: phone +385 (0)51 710 444, fax +385 (0)51 710 399 or e-mail [reservations@liburnia.hr](mailto:reservations@liburnia.hr).

Note: Fill in the application form at [www.mipro.hr](http://www.mipro.hr) and send it to the Liburnia Riviera Hotel's Reservation centre to complete your booking.

Rezervacija smještaja u Remisens Hotelu Admiral i Remisens Hotelu Kristal vrši se putem **Rezervacijskog centra Liburnia Riviera hotela**: tel. +385 (0)51 710 444, fax +385 (0)51 710 399 ili e-mail [reservations@liburnia.hr](mailto:reservations@liburnia.hr).

Važno: Kompletna prijava uključuje popunjavanje prijavnice koja se nalazi na [www.mipro.hr](http://www.mipro.hr) i dostavu Rezervacijskom centru Liburnia Riviera hotela.

HOTELS HOTELI	BED & BREAKFAST NOĆENJE S DORUČKOM	
	1/1	1/2
ADRIATIC I ****	92	67
ADRIATIC II ***	84	55
ADMIRAL ****	81	53
KRISTAL ****	65	40

All prices are in EUR. The daily tax is EUR 1,35 per person per day and it isn't included in the above prices.

Sve cijene su izražene u EUR, a plaća se u kunama prema važećem tečaju HNB-a na dan plaćanja. Boravišna pristojba nije uključena u cijenu i iznosi 1,35 EUR po osobi dnevno.

## PROGRAM FOR ACCOMPANYING PERSONS

For accompanying persons we propose some of the many programmes offered by the tourist agencies of Opatija. For more information, please ask at Grand Hotel Adriatic Opatija ([www.hotel-adriatic.hr](http://www.hotel-adriatic.hr)) or send an e-mail to the address [info@hotel-adriatic.hr](mailto:info@hotel-adriatic.hr). Shorter and longer excursions are offered to the nearby City of Rijeka, the picturesque Istrian Peninsula with a string of charming medieval small towns, the world-renown Brioni islands, the mountainous region of Gorski Kotar, or a bit further Venice with its lagoons. In any case, see the sights of Opatija, visit her beautiful parks, one of the oldest seafront promenades on the Mediterranean which links the settlements of Volosko, Ičići, Ika and Lovran with Opatija, the Croatian Museum of Tourism, numerous restaurants and Viennese cafes with a first-class offer.

Last but not least, experience Kvarner Bay and Opatija by taking a pleasant boat trip from Opatija's harbour or visit Učka Nature Park with magnificent views from the peak Vojak (1400m).

## REGISTRATION FEES · KOTIZACIJE

EVENTS DOGAĐAJI	PRICES IN EUR · CIJENA U EUR (plaća se po srednjem tečaju Narodne banke Hrvatske na dan uplate)	
	FEES · KOTIZACIJE up to / do 6.05.2019.	from / od 7.05.2019.
MEET	220	250
DC	220	250
CTI	220	250
CE	220	250
CTS	220	250
CIS	220	250
ISS	220	250
miproBIS	220	250
DE-DS	220	250
EE	220	250
SSE	220	250
SSRCI	230	260
4COWS	220	250
SP - MIPRO Junior	120	140
HEP + JEDNO SAVJETOVANJE	240	270
IRP + JEDNO SAVJETOVANJE	220	250
CCE	130	150
WS1	220	250
WS2	50	60
WS3	Free of charge · Ulaz slobodan	
WS4	100	120
WS5	100	120
WS6	Free of charge · Ulaz slobodan	

All visitors have free access to the Formal Opening, panels, company presentations and visiting events. **Svim posjetiteljima sloboden je pristup svečanom otvaranju, okruglim stolovima, prezentacijama tvrtki i gostujućim događajima.**

Members of MIPRO or IEEE have a 20 EUR fee discount. The unique fee for students (undergraduate and graduate) and secondary school teachers is 120 EUR (without any additional discount).

**Discount doesn't apply to PhD students.** There will be a 10% discount for the registration fee to those participants who are attending more than one tutorial or conference.

**Članovi MIPRO i IEEE imaju popust od 20 eura. Preddiplomski i diplomski studenti te nastavnici osnovnih i srednjih škola plaćaju jedinstvenu kotizaciju od 120 eura bez prava na dodatni popust. Popust se ne odnosi na studente doktorskog studija.** Sudionicima koji sudjeluju na više seminara ili savjetovanja, ukupna kotizacija umanjuje se za 10%.

## REGISTRATION · PRIJAVA

Conference fee payment can be done after the registration is processed.

Registration can be made online at [www.mipro.hr](http://www.mipro.hr) or via e-mail [mipro@mipro.hr](mailto:mipro@mipro.hr).

The fee is payable in EUR to the following IBAN of **MIPRO Croatian Society** (MIPRO, Kružna 8/II, P.O. Box 303, HR-51001 Rijeka, Croatia):

**HR9824020061100139672**

at Erste & Steiermärkische Bank d.d., Jadranski trg 3a, HR-51000 Rijeka, Croatia (SWIFT: ESBCHR22), with the name of the person registered.

*Note that bank charges are at the expense of the debtor.*

### The fee includes:

- MIPRO 2019 Proceedings on digital medium
- Official opening program (plenary session) with a cocktail party on Wednesday, 22.5.19. from 7<sup>30</sup> PM until 9<sup>30</sup> PM. (Grand hotel Adriatic)

### VAŽNO!

Sudionici plenarnih tema, okruglih stolova i pratećih aktivnosti, koji nisu registrirani putem seminar ili savjetovanja, obavezni su se po dolasku registrirati na Prijemnom uredu MIPRO, gdje će dobiti bedževe i sve potrebne informacije. Nošenje bedževa je **obavezno** u svim prostorima održavanja aktivnosti MIPRO-a. Osobe bez bedževa nemaju pravo pristupa niti jednom događaju.

### ■ LAST MINUTE EVENT!

Even after receiving this booklet you have a possibility to organize an event in the agreement with Karolj Skala, Program Committee General Chair ([skala@mipro.hr](mailto:skala@mipro.hr)). Available time-slots can be found in a timetable with an overview of conferences, tutorials and other associated activities.

**U dogовору с Karoljem Skalom, ([skala@mipro.hr](mailto:skala@mipro.hr)), možete i nakon primitka tiskanog Programa organizirati svoj događaj u Last Minute Event terminima označenima u tablici Prikaz rada savjetovanja, seminara i stručnih pratećih sadržaja skupa MIPRO 2019.**

**MIPRO izdaje potvrde obveznicima stručnog usavršavanja na njihov zahtjev.**

Kotizacija se plaća na temelju Prijave za MIPRO

2019. Prijava se vrši on-line preko portala [www.mipro.hr](http://www.mipro.hr) ili putem e-maila [mipro@mipro.hr](mailto:mipro@mipro.hr).

OIB/porezni broj udruge je **67645105540**.

Sudionici iz Hrvatske plaćaju u kunama (HRK) po srednjem tečaju Hrvatske narodne banke na dan uplate na IBAN MIPRO-a **HR9824020061100139672**

kod Erste & Steiermärkische Bank d.d. Rijeka s naznakom "ime i prezime osobe za koju se uplaćuje + kratica odabranog događaja".

### Kotizacija uključuje:

- PDV 25% - porez na dodanu vrijednost
- Zbornik radova skupa MIPRO 2019 na digitalnom mediju
- svečani program (plenarni rad) s koktelom u srijedu 22.5.19. s početkom od 19<sup>30</sup> do 21<sup>30</sup> sati (Grand Hotel Adriatic)

Uplate se, kao i prijave, rade za svaku osobu pojedinačno. Budući da banka u izvodu dostavlja MIPRO-u samo uplaćeni iznos, molimo vas da nam e-mailom ili faksom pošaljete kopiju o obavljenoj uplati.

## 02. GENERAL EVENTS

# ZAJEDNIČKI DOGAĐAJI ZA SVE SUDIONIKE SKUPA

### FORMAL OPENING · SVEČANO OTVARANJE

(Formal Opening and Plenary session will be simultaneously translated)



22.05.19. 10<sup>00</sup>-13<sup>00</sup> Congress Hall · Kongresna dvorana, Grand hotel Adriatic

Event manager · Voditeljica: Iva Šulentić

Opening Addresses of Sponsors, Patrons and Guests

Pozdravne riječi sponzora, pokrovitelja i gostiju

### PLENARY ROUND TABLE · PLENARNI OKRUGLI STOL

- **Strategy of Artificial Intelligence and Smart Environments in Croatia**  
**Strategija razvoja umjetne inteligencije i pametnih okruženja**

Organizer · Organizator: Ministry of Economy, Entrepreneurship and Crafts of the Republic of Croatia supported by MIPRO · Ministarstvo gospodarstva, poduzetništva i obrta uz podršku MIPRO-a

Coordinator · Koordinator: Darko Horvat, minister ministar (Ministry of Economy, Entrepreneurship and Crafts of the Republic of Croatia)

Moderator · Moderator: Slavko Vidović (Infodom, Zagreb, Croatia)

Predicted panelists are prominent experts, businessmen and members of the professional community · Predviđeni panelisti su ugledni stručnjaci, gospodarstvenici i predstavnici strukovne zajednice.

### PLENARY KEYNOTE LECTURES · PLENARNA ISTAKNUTA PREDAVANJA

22.05.19. 15<sup>00</sup>-18<sup>00</sup> Congress Hall · Kongresna dvorana, Grand hotel Adriatic

- **The Present and Future of Open Science in Europe**  
Gergely Sipos (EGI Foundation, Amsterdam, Netherlands)
- **DataFlow SuperComputing for BigData DeepAnalytics**  
Veljko Milutinović (Department of Computer Science, University of Indiana, Bloomington, USA)
- **Artificial Intelligence in Cybersecurity: Technology and Policy Perspectives**  
Paul Timmers (University of Oxford, UK)
- **Artificial Intelligence in Marketing**  
Luiz Moutinho (University of Suffolk, Ipswich, UK)



23.05.19. 09<sup>00</sup>-10<sup>00</sup> Congress Hall · Kongresna dvorana, Grand hotel Adriatic

● **Strategic Planning in Higher Education and Science · Strateško planiranje u visokom obrazovanju i znanosti**

Blaženka Divjak (Ministry of Science and Education of the Republic of Croatia)

This plenary lecture is a part of the presentation of project HigherDecision's results. Project **Development of a Methodological Framework for Strategic Decision-making in Higher Education - a Case of Open Learning and Distance Learning (ODL) Implementation - HigherDecision** is financed by Croatian Science Foundation and lead by prof. B. Divjak, PhD. The project, whose implementation began at Faculty of organization and informatics, University of Zagreb in 2015 and ends in 2019, deals with the analysis of strategic decision-making in higher education (HE). Higher education's key mission is to develop human potential with beneficial effects for social and economic development. HE as a system, along with HE institutions, must be innovative and strategically managed to be able to fulfill their mission. Therefore, the decision-making accompanied by an evaluation of its implementation in higher education is an issue of the highest priority.

Plenarno predavanje dio je predstavljanja rezultata projekta Hrvatske zaklade za znanost **Razvoj metodološkog okvira za strateško odlučivanje u visokom obrazovanju - primjer implementacije otvorenog učenja i učenja na daljinu - HigherDecision** voditeljice prof. dr. sc. B. Divjak. Projekt HigherDecision, koji se na Fakultetu organizacije i informatike Sveučilišta u Zagrebu provodi od sredine 2015. godine te završava 2019. godine, bavi se analizom strateškog odlučivanja u visokom obrazovanju. Visoko obrazovanje (VO) ima ključnu ulogu u razvoju ljudskih potencijala te u gospodarskom i društvenom razvoju. Sustav i institucije visokog obrazovanja trebaju biti inovativni, strateški vođeni i upravljeni kako bi mogli kvalitetno ispunjavati svoju misiju. Stoga, donošenje odluka i praćenje njihove primjene u visokom obrazovanju postaje prvorazredno istraživačko i razvojno pitanje.



22.05.19. 7<sup>30</sup>-9<sup>30</sup> PM - Grand Hotel Adriatic

**COCKTAIL FOR PARTICIPANTS AND GUESTS**

22.05.19. 19<sup>30</sup>-21<sup>30</sup> sati - Grand hotel Adriatic

**KOKTEL ZA SUDIONIKE, GOSTE I UZVANIKE**

### 1

#### Mogu li gospodarstvenici utjecati na ishode učenja za ICT područje?

● 21.05.19., 15<sup>00</sup>-16<sup>30</sup> Kongresna dvorana, Grand Hotel Adriatic



**Organizator:** MIPRO

**Voditeljica, kontakt osoba i moderatorica:** Snježana Babić, sbabiv@gmail.com (Veleučilište u Rijeci)

**Uvodničari:** Snježana Babić (Veleučilište u Rijeci), Marko Čičin-Šain (PIK Rijeka), Hannu Jaakkola (Tampere University, Finland), Leo Petričić (INA), Gordana Nikolić (Visoka škola PAR)

**Tema okruglog stola:** Tijekom proteklih godina, prema zahtjevima Europskog i Hrvatskog kvalifikacijskog okvira (HKO), visokoškolske ustanove uložile su znatne napore u definiranju ishoda učenja za kvalifikacije i studijske programe u ICT području. Prema osnovnoj definiciji, ishodi učenja (engl. Learning Outcomes) "predstavljaju jasne i precizno definirane tvrdnje" koje ukazuju na to što bi student/ica trebao/la moći napraviti nakon procesa učenja i definiraju se na različitim razinama, od studijskog programa, kolegija, nastavne cjeline, do nastavnog sata. Važno je istaknuti da je jedna polazna točka HKO "uskladivanje potražnje na tržištu i obrazovne ponude", što se prakticira u pojedinim europskim zemljama (npr. Finskoj). Međutim, praksa u Hrvatskoj ukazuje na problem nedovoljnog povezivanja ishoda učenja s potrebama tržišta rada. Kao rezultat istoga je nedovoljna razina kompetencija studenata za direktno uključivanje na tržište rada u ICT području, koje se razvija velikom brzinom. Stoga dolazi do potrebe za razvojem novih te prilagodbe postojećih modela visokoškolskog obrazovnog sustava za kvalifikacije, studijske programe i kolegije u ICT području. U navedenom, jedna od glavnih komponenata odgovornih za postizanje uspješnosti u procesu kvalitetnog razvoja kompetencija budućih ICT stručnjaka, smatra se viša razina povezanosti visokoškolskih ustanova i gospodarstvenika u procesu definiranja i realizacije ishoda učenja. Navedeno bi omogućilo direktno uključivanje studenata na tržište rada, i u konačnici poticanje brzeg razvoja hrvatskog gospodarstva. Cilj ovog okruglog stola je pomoći hrvatskom gospodarstvu u fazi traženja modela povezivanja visokoškolskih ustanova i gospodarstvenika pri određivanju kompetencija kroz definirane ishode učenja potrebne za obavljanje određenih poslova u ICT području te sudjelovanja u razvoju istih kod studenata/budućih zaposlenika. Tijekom ovog događaja pokušat će se dati odgovori na sljedeća pitanja:

- Koliko su gospodarstvenici svjesni svoje uloge?
- Znaju li gospodarstvenici formulirati svoje zahtjeve?
- Koja razina menadžera je najbolji partner za razgovor?
- Jesu li visokoškolske ustanove spremne prihvati zahtjeve gospodarstvenika?
- Zašto jesu? Zašto nisu?

### 2

#### Prednosti uvođenja 5G mreža u RH

● 21.05.19., 15<sup>00</sup>-16<sup>30</sup> Dvorana Camelia 2, Grand Hotel Adriatic



**Organizatori:** MIPRO i HAKOM

**Kontakt osoba:** Julijana Jančula Bauer, julijana.jancula@hakom.hr (HAKOM)

**Voditelj:** Krešimir Mazor, kresimir.mazor@hakom.hr (HAKOM)

**Moderator:** Gordan Šimac, gordan.simac@hakom.hr (HAKOM)

**Uvodničari:** Ericsson Nikola Tesla d.d., Fakultet prometnih znanosti Sveučilišta u Zagrebu, HAKOM, Nokia, Silver monitor, Spectre

**Tema i cilj:** Na okruglom stolu predviđena je rasprava o prednostima uvođenja 5G mreža u RH. 5G tehnologija omogućit će nove usluge u različitim granama industrije kao što su automobiliška industrija (autonomna vožnja), poljoprivreda, zdravstvo, industrijska proizvodnja, mediji, a time i rast gospodarstva u cjelini. Cilj okruglog stola je istaknuti prednosti koje 5G donosi za različite skupine korisnika te potaknuti razvoj usluga i primjena temeljenih na 5G. Kao rezultat okruglog stola trebale bi se identificirati primjene koje su najpogodnije za RH i koje bi omogućile poticanje gospodarskog rasta i razvoja.

# 3. IoT rješenja za pametne gradove

HR

22.05.19., 15<sup>30</sup>-17<sup>00</sup> Dvorana Camelia 2, Grand Hotel Adriatic

**Organizatori:** MIPRO i OIV

**Kontakt osoba:** Slaven Božo, slaven.bozo@oiv.hr (OIV)

**Voditelj:** Davor Ilijas, davor.ilijas@oiv.hr (OIV)

**Moderator:** Tigran Vržina, tigran.vrzina@oiv.hr (OIV)

**Uvodničari:** Dina Šimunić (Fakultet elektrotehnike i računarstva), Bernard Gršić (Središnji državni ured za razvoj digitalnog društva), Ana Odak (Ministarstvo regionalnog razvoja i fondova EU), Branko Burazer (Hrvatski zavod za norme), Slaven Božo (Odašiljači i veze), Ministarstvo zaštite okoliša i energetike, Grad Zagreb

**Cilj okruglog stola** je ukazati na mogućnosti i važnost primjene IoT rješenja za razvoj pametnih gradova te prikazati i konkretne primjene. Kroz uvodne prezentacije i raspravu pokušat će se odgovoriti na pitanja koji su glavni akteri za razvoj i primjenu IoT rješenja na razvoj pametnih gradova u Hrvatskoj, tko su glavni korisnici i kako im približiti tehnološka rješenja i primjenu u njihovoj okolini, da li je potrebno doraditi strategije razvoja, tko je vlasnik, odnosno tko upravlja podacima koji se prikupljaju i gdje se oni nalaze, što čini IoT ekosustav učinkovitim, koje su mogućnosti razvoja senzora i aplikacija, te koja je vizija razvoja IoT-a u Hrvatskoj.

Okrugli stol je namijenjen svima koji su uključeni u razvoj pametnih gradova i primjenu IoT rješenja ili ih zanimaju trendovi u tom području. Pozivaju se svi zainteresirani da se uključe u raspravu pitanjima i sugestijama koje doprinose boljem razumijevanju mogućnosti i izazova u primjeni IoT rješenja za razvoj pametnih gradova.

# 4. GDPR i gdje smo godinu dana kasnije

HR

22.05.19., 17<sup>30</sup>-19<sup>00</sup> Dvorana Camelia 2, Grand Hotel Adriatic

**Organizatori:** MIPRO i Pragmatekh

**Voditelj, kontakt osoba i moderator:** Igor Barlek, igor.barlek@pragmatekh.hr (Pragmatekh)

**Uvodničari:** Ivana Žiljak, Marko Šiljan (AZOP), Tomislav Dujmović (A1 Hrvatska), Mislav Marović (Ericsson Nikola Tesla), Darja Lončar Dušanović (T-Hrvatski Telekom), Igor Pavleković (Microsoft Hrvatska), Danijela Perica (Tele2)

Kroz otvorenu diskusiju prikazat će se iskustva ICT industrije tijekom usklađivanja sa zahtjevima Opće uredbe o zaštiti podataka (GDPR), njihov utjecaj na razinu investicija u industriji, na poslovanje u cjelini te promjene koje su bile neophodne kako bi se iskoristili svi tržišni potencijali pravovremenog usklađivanja s GDPR obvezama, posebice u segmentu odnosa s korisnicima usluga, pojačane brige o njihovoj privatnosti i jačanju povjerenja korisnika.

# 5. Intelligent Production

EN

23.05.19., 10<sup>30</sup>-13<sup>00</sup> Hall Galija, Remisens Hotel Admiral

**Organizers:** MIPRO, Danieli Automation and Faculty of Electrical Engineering and Computing

**Contact:** Jadranko Novak, jadranko.novak@mipro.hr (MIPRO, Croatia)

**Moderator:** Zdenko Kovačić, zdenko.kovacic@fer.hr (Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia)

**Keynote Speakers:** Gianpiero Brunetti (Danieli Automation, Italy) and Zdenko Kovačić (Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia)

Intelligent Production merges various information, technologies, big data and computer controls to optimize the manufacturing process. Join us in this round table together with other professionals to learn and assess how intelligent production influences business. Share your experience on fast challenges in smart factories and systemic transformation the shift requires.

**The summaries of keynote lectures will be announced at [www.mipro.hr](http://www.mipro.hr).**

## Digitalna platforma Grupe KONČAR

HR

21.05.19., 10<sup>30</sup>-12<sup>30</sup> Dvorana Camelia 2, Grand Hotel Adriatic

„Digitalna platforma Grupe KONČAR obuhvaća sklopovska i programska rješenja za upravljanje kritičnom infrastrukturom. Platforma se koristi za nadzor i upravljanje postrojenjima u području elektroenergetike, plina i nafta, industrije, vodoprivrede i transporta. Osnovne odlike digitalne platforme Grupe KONČAR su dugoročna podrška (20+ godina) za sklopovske i programske dijelove platforme te postavljanje visokih kriterija za kibernetičku sigurnost platforme. Navedene odlike osiguravaju korisnicima platforme finansijsku sigurnost investicije te umanjuju rizike sigurnosnih ugroza.“

## Visit to the supercomputer BURA · Posjet superračunalu BURA

EN  
HR

21.05.19., 15<sup>00</sup>-17<sup>00</sup> University of Rijeka

23.05.19., 14<sup>00</sup>-16<sup>00</sup>

MIPRO2019 Convention and the WS5 Workshop on “GPU Programming and Applications”, organise visits with the expert guidance to the supercomputer BURA located at the University of Rijeka. During the visit, the visitors will get acquainted with the architecture of one of the fastest computers in this part of Europe, and its application in numerous fields of science, technology and pharmacology, and the ways and the possibilities of its use.

The transportation to the supercomputer will be organised for all interested parties, and there will be two scheduled visits. The bus will depart from the Grand Hotel Adriatic on 21st May 2019 at 15<sup>00</sup> and on 23<sup>rd</sup> May 2019 at 14<sup>00</sup>. The number of visitors is limited to 50 per visit.

The estimated time of the visit is 2 hours, including a bus ride to the University of Rijeka, where the computer is located, and the return to Opatija (in front of the Grand Hotel Adriatic). Register at <https://mipro2019-visit-bura.eventbrite.com>. **The visit to the supercomputer is free.**

U sklopu skupa MIPRO 2019 i radionice WS5 "GPU programiranje i aplikacije" predviđeni su organizirani posjeti uz stručno vodstvo superračunalu Bura smještenom na Sveučilištu u Rijeci. Tom će se prilikom posjetitelji upoznati sa arhitekturom jednog od najbržih računala u ovom dijelu Europe, njegovom primjenom u brojnim područjima znanosti, tehnologije i farmakologije, te s načinima i mogućnostima njegovog korištenja.

Prijevoz do superračunala će biti organiziran za sve zainteresirane, a predviđena su dva termina posjeta s polascima autobusa ispred Grand hotela Adriatic i to 21.05.2019. u 15<sup>00</sup> h i 23.5.2019. u 14<sup>00</sup> h. Broj posjetitelja je ograničen na 50 osoba po terminu.

Predviđeno trajanje posjeta je 2 sata uključujući i prijevoz autobusom do kampusa riječkog sveučilišta gdje je računalo smješteno te povratak do Opatije (Grand hotela Adriatic). Prijava: <https://mipro2019-visit-bura.eventbrite.com>. **Posjet superračunalu je besplatan.**

## 03. WORKSHOPS RADIONICE



(EN)

WS1

### FUTURE OF TECHNOLOGIES AND AI IN MANAGEMENT AND MARKETING

20.05.19., 15<sup>00</sup>-18<sup>00</sup>  
21.05.19., 09<sup>00</sup>-12<sup>00</sup>

Hall · Dvorana Collegium  
Grand Hotel Adriatic

**Organizer:** MIPRO Croatian Society

**Contact:** Vlasta Hudek, [vhudek@gmail.com](mailto:vhudek@gmail.com)

**Chair:** Luiz Moutinho (Suffolk BS, University of Suffolk, Ipswich, England)

**Moderator:** Mladen Sokele (Zagreb University of Applied Sciences, Croatia)

**About:** Nothing is permanent except change. Do you respond with acceptance - or with denial or resistance? This workshop is dealing with faster and faster advances in technologies - especially the developments in the field of AI - which are bringing numerous changes in global innovation economy and benefits for society, but sometimes may cause new risks and generate new ethical issues; it will explore futures of technologies and their impacts on the people lives and welfare of human and organisations, citizens and consumers; it will point out crucial paradigm changes in many industries, e.g. in marketing ...

**Expected outcomes:** The workshop will learn to anticipate, adapt and drive creative changes; to provide consumers the innovative relationship that's worth their attention; realise that profit has many different dimensions. Participants will acquire vivid perception of how AI influences the world, how the world will look like within several years and discover business opportunities. They will better understand global key trends in management and how relevant future research practices are already influencing marketing domain.

**Target audience:** Strategists, managers, consultants, researchers, governmental specialists, practitioners, analysts and students with interest in thinking futures, future developments and implementation of AI, especially in areas of AI technology, marketing and management.

#### Preliminary program:

- A Prognostication of the Future of AI
- Futuris and the Promise of AI To Management
- AI Storm - AI Futur in Marketing
- Future future Futuro
- Management Futurition
- Marketing in the Age of Acceleration

**The workshop will be held in English.**

21.05.19., 09<sup>00</sup>-13<sup>00</sup>

Hall · Dvorana Camelia 1, Grand Hotel Adriatic

**Organizer:** MIPRO Croatian Society**Contact:** Juraj Petrović, [juraj.petrovic@fer.hr](mailto:juraj.petrovic@fer.hr) (University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia)**Chair:** Rebecca Christianson (Olin College of Engineering, Needham, USA)**Moderator:** Predrag Pale (University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia)**About:** In this workshop, participants will explore the integration of mathematics learning into a hands-on, project-based engineering context. We will work through example activities from a few different contexts so you can experience how these activities work from a student perspective. We will discuss the pedagogical research and theories underpinning why these sorts of activities are so successful, and we will discuss the practicalities of implementing project based learning including project selections and framing, structure, teaming, mentoring and assessment.**Expected outcomes:** Participants will gain a practical understanding of how to teach mathematics fundamentals through project based learning in an engineering context. Participants will understand both the student experience in these activities as well as the faculty considerations in designing them.**Target audience:** Technical faculty who wish to learn more about practical implementations of project based learning for teaching fundamental concepts.**Preliminary program:**

- Basic overview of project based learning
- Participants work through simple examples to illustrate the student experience in project based learning
- Discussion of approaches and key elements to learning quantitative topics within a project based context
- Practical considerations in project based learning including group work, teaming, classroom practice and assessment

**The workshop will be held in English.**

23.05.19., 10<sup>30</sup>-12<sup>30</sup>  
(zatvoren i sastanak)  
23.05.19., 15<sup>00</sup>-19<sup>00</sup>  
24.05.19., 09<sup>00</sup>-12<sup>30</sup>

Hall · Dvorana Nava 1  
Remisens Hotel Admiral

**Organizator:** Fakultet organizacije i informatike Sveučilišta u Zagrebu

**Kontakt:** Ana Horvat, anhorvat@foi.hr (Fakultet organizacije i informatike Sveučilišta u Zagrebu)

**Voditeljica radionice:** Nina Begićević Ređep (Fakultet organizacije i informatike Sveučilišta u Zagrebu)

**Voditeljica projekta:** Blaženka Divjak (Fakultet organizacije i informatike Sveučilišta u Zagrebu)

**O radionicama:** Visoko obrazovanje (VO) ima ključnu ulogu u razvoju ljudskih potencijala te u gospodarskom i društvenom razvoju. Sustav i institucije visokog obrazovanja trebaju biti inovativni, strateški vođeni i upravljeni kako bi mogli kvalitetno ispunjavati svoju misiju. Stoga je donošenje odluka i praćenje njihove primjene u visokom obrazovanju prvorazredno istraživačko i razvojno pitanje te se njime bavi HRZZ projekt HigherDecision voditeljice prof. dr. sc. Blaženke Divjak. U okviru ove radionice predstaviti će se glavni rezultati projekta kroz predavanja te će sudionici imati priliku upoznati se s najpoznatijom metodom za višekriterijsko odlučivanje Analitički hijerarhijski proces (AHP) i novom metodom SNAP koja je nastala kao jedan od rezultata projekta kroz radio-nicu Metode za odlučivanje u visokom obrazovanju – primjeri dobre prakse.

**Predviđeni rezultati:** Sudionici će se upoznati s konkretnim strateškim problemima u visokom obrazovanju te načinima kako riješiti navedene probleme s ciljem unapređenja rada visokog učilišta primjenom metoda za višekriterijsko odlučivanje.

**Kome je radionica namijenjena:** Radionica je namijenjena predstavnicima visokih učilišta (VU), upravama VU-a kao donositeljima politika i strateških odluka, voditeljima Zavoda, Katedri, Odjela, nastavnicima i istraživačima, kao i administrativnom osoblju te studentima. Na radionici mogu sudjelovati svi dionici u sustavu visokog obrazovanja koji žele unaprijediti svoje strateško odlučivanje.

### Preliminarni program

#### Radionica:

1. Nina Begićević Ređep i Nikola Kadoić (Fakultet organizacije i informatike Sveučilišta u Zagrebu)  
**Metode za odlučivanje u visokom obrazovanju – primjeri dobre prakse**

#### Predavanja:

1. Sanjana Buć (PDM savjetovanje)

#### **Model difuzije inovacije u visokom obrazovanju**

2. Katarina Pažur Aničić (Fakultet organizacije i informatike Sveučilišta u Zagrebu)

#### **Strateški okvir i model zrelosti za pružanje podrške diplomantima u ranom razvoju karijera**

3. Valentina Đurek (Grad Zabok)

#### **Model digitalne zrelosti visokih učilišta**

4. Nikola Kadoić (Fakultet organizacije i informatike Sveučilišta u Zagrebu)

#### **Nova metoda za višekriterijsko odlučivanje u VO**

5. Valentina Kirinić (Fakultet organizacije i informatike Sveučilišta u Zagrebu)

#### **Metodologija praćenja provedbe strateške odluke**

6. Antonia Bralić (LinkedIn)

#### **Razvoj konceptualnog modela kurikuluma za program otvorenog učenja**

7. Sandra Kučina Softić (Sveučilišni računski centar Sveučilišta u Zagrebu)

#### **Praćenje realizacije Strategija e-učenja**

The workshop will be held in Croatian.

21.05.19., 09<sup>00</sup>-13<sup>00</sup> 15<sup>00</sup>-19<sup>00</sup>

Hall · Dvorana Leut A, Remisens Hotel Admiral

**Organizer:** MIPRO Croatian Society**Contact:** Miloš Kotlar, [kotlarmilos@gmail.com](mailto:kotlarmilos@gmail.com) (ABB, Zurich, Switzerland)**Chairs:** Veljko Milutinović (Department of Computer Science, University of Indiana, Bloomington, USA), Miloš Kotlar (ABB, Zurich, Switzerland), Zoran Babović (ICEF, University of Belgrade, Serbia)**About:** This workshop presents the DataFlow SuperComputing paradigm, defines its advantages and sheds light on the related programming model with hands-on coding experience. DataFlow computers, compared to ControlFlow computers, offer speedups of 20 to 200 (even 2000 for some applications), and power and size reductions of up to 1/20. However, the programming paradigm is different, and has to be studied. The workshop explains the paradigm of programming in space, using Maxeler (a provider of multiscale dataflow computing systems) as an example, and gives an overview of ongoing research in the field. Examples include Data Engineering, Image Processing, Deep Learning, Financial Analytics, GeoPhysics, Genomics, etc.**Expected outcomes:** Deep understanding of the dataflow paradigm, ability to use dataflow accelerators, mastering the dataflow programming model, and acquiring a strong hands-on experience.**Target audience:** The workshop is intended for students and researchers who want to learn how-needed for the mastering of the dataflow programming model and the related technology that Intel describes in the Intel patent (US20180189063A1) about the next generation Intel products, portrayed by Intel as: "Intel has dreamed up a new architecture that could in one fell swoop kill off the general purpose processor as a concept and the X86 instruction set as the foundation of modern computing.**Preliminary program:**

- Introduction to DataFlow computing
- Concepts of DataFlow computing
- Applications of DataFlow computing
- Details of programming in space with hands-on activities
- Detailed examples with hands-on: Math, Imaging, Machine Learning, TensorFlow, etc.
- Advanced issues, synergy with IoT and WSNs

**The workshop will be held in English.**

20.05.19., 09<sup>00</sup>-13<sup>00</sup> 15<sup>00</sup>-19<sup>00</sup>

Hall · Dvorana Nava 1, Remisens Hotel Admiral

**Organizer:** MIPRO Croatian Society**Coordinator:** Karolj Skala, [skala@irb.hr](mailto:skala@irb.hr) (Ruđer Bošković Institute, Zagreb, Croatia)**Chair:** Zoltán Juhász, [juhasz@virt.uni-pannon.hu](mailto:juhasz@virt.uni-pannon.hu) (University of Pannonia, Veszprem, Hungary)**Hands-on support:** Davor Davidović and Draško Tomić (Ruđer Bošković Institute, Zagreb, Croatia)

**About:** This workshop will provide an in-depth overview of GPU computing technology, provide hands-on programming opportunities, and highlight key application areas where GPUs excel and show great future potential. In the workshop, participants will overview GPU architecture generations, understand how each generation contributed to improved performance and programmability. The fundamentals of CUDA programming will be covered, as well as advanced topics such as performance optimization, fundamental algorithmic components, use of parallel libraries. Several application areas including numerical and scientific computing, signal and image processing and neural networks will be examined in order to understand the benefits of GPU computing.

**Expected outcomes:** Appreciation of GPU architecture fundamentals and developments, understanding of GPU operating principles and CUDA GPU programming methods. Ability to develop massively parallel CUDA programs and knowledge of potential application areas of GPUs.

**Target audience:** The workshop is intended for students and computing professionals who want to understand the architectural reasons behind the vast computational power of current GPUs, are interested in their capabilities and their programming, and want to see how this new hardware-software ecosystem can provide new opportunities in research and commercial applications.

**Preliminary program:**

- GPU architecture and programming models overview, fundamentals of CUDA programming
- Hands-on CUDA programming, advanced programming techniques, performance optimization, application case studies

**The workshop will be held in English.**

Participants of this workshop will have an opportunity to visit the fastest supercomputer in Croatia

**Additional benefits**

Workshop participants will receive a BURA supercomputer account for 30 days after MIPRO 2019 ends. In addition, there is a possibility of extending the account on the basis of project proposal.

They will also have an opportunity to visit the fastest supercomputer in Croatia called "Bura" at the University of Rijeka. Register at <https://mipro2019-visit-bura.eventbrite.com>.

Due to a limited number of attendees an urgent registration is recommended!

22.05.19., 15<sup>00</sup>-19<sup>00</sup>

Hall · Dvorana Camelia 1, Grand Hotel Adriatic

**Organizer:** MIPRO Croatian Society and IRIM**Contact:** Juraj Petrović, [juraj.petrovic@fer.hr](mailto:juraj.petrovic@fer.hr) (University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia)**Chair:** Ana Tolić (Institute for Youth Development and Innovativity)**Moderator:** Predrag Pale (University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia)

**About:** Research shows that children and teenagers, but also their teachers and parents worldwide have little knowledge about engineering-related professions, their activities and challenges. School systems alone can't solve this problem. An active engagement of parents and STEM professionals is also required. This workshop will show its participants how to stimulate children's and teenagers' interest for ICT. It will inspire participants to work with children and teenagers, encourage their interest in STEM fields, but also show them in what way they can help other STEM motivators. micro:bit will be used as an example technology for motivating and working with children and teenagers.

**Expected outcomes:** Workshop participants will learn what can they do with children and teenagers in ICT, they will learn about ways in which they can take part in STEM popularization processes, as well as how to help others who take part in STEM popularization.

**Target audience:** Parents, engineers, and all others who would like to share their interest and encourage others' interest in STEM fields.

**Preliminary program:**

- Workshop will focus on the following questions:
- Which children can I work with?
- How to motivate them?
- What kind of competitions are important for them?
- What is my role in preparing them for competitions?
- Which tools and materials do they need?
- Who can help in preparing them?
- How can we collaborate with a school or IRIM?
- What do I need to know to help?

**The workshop will be held in English.**

# 04. CONFERENCES SAVJETOVANJA



Accepted papers will be published in the ISBN registered conference proceedings. Presented papers in English will be submitted for inclusion in the IEEE Xplore Digital Library.

Prihvaćeni radovi bit će objavljeni u zborniku radova s ISBN brojem. Prezentirani radovi na engleskom jeziku bit će poslani za uključenje u digitalnu bazu IEEE Xplore.

Prema Ministarstvu znanosti i obrazovanja RH i Matičnom odboru za područje elektrotehnike i računarstva, radovi na konferencijama pisani na engleskom jeziku i razvrstani u kategoriju znanstvenih radova priznaju se u postupku izbora u znanstveno nastavna zvanja.

**Note:** The exact schedule of paper presentations will be published on MIPRO web pages.

**Važno:** Točan raspored predavanja bit će objavljen na portalu MIPRO.

## MEET

## MICROELECTRONICS, ELECTRONICS AND ELECTRONIC TECHNOLOGY

MIKROELEKTRONIKA, ELEKTRONIKA I ELEKTRONIČKA TEHNOLOGIJA

(EN)

22.05.19. 15<sup>00</sup>-19<sup>00</sup>

23.05.19. 10<sup>15</sup>-13<sup>00</sup> 15<sup>30</sup>-19<sup>00</sup>

24.05.19. 09<sup>00</sup>-13<sup>00</sup>

Hall · Dvorana Bellavista

Grand Hotel Adriatic

## CHAIRS · VODITELJI

**Marko Koričić**, [marko.korici@fer.hr](mailto:marko.korici@fer.hr) (University of Zagreb, Croatia), **Željko Butković** (University of Zagreb, Croatia), **Petar Biljanović** (University of Zagreb, Croatia)

## STEERING COMMITTEE · VODITELJSTVO

**S. Amon** (University of Ljubljana, Slovenia), **D. Babić** (SEMICRO, Croatia), **M. Ferrari** (CNR-IFN, Povo-Trento, Italy), **M. Ivanda** (Ruđer Bošković Institute, Zagreb, Croatia), **B. Pejčinović** (Portland State University, USA), **J. Schulze** (University of Stuttgart, Germany), **T. Suligoj** (University of Zagreb, Croatia), **A. Szabo** (IEEE Croatia Section), **D. Vinko** (University of Osijek, Croatia)

## INVITED LECTURE · POZVANO PREDAVANJE

1. M. Myronov (University of Warwick, Coventry, United Kingdom)

### Overcoming Limitations of Silicon Carbide Heteroepitaxy on Silicon Wafers

## PAPERS · RADOVI

1. M.C. Weiser, D. Schwarz, H.S. Funk, D. Weißhaupt (University of Stuttgart, Germany), C. Serra (University of Vigo, Spain), J. Schulze (University of Stuttgart, Germany), S. Chiussi (University of Vigo, Spain)

### Fabrication of GePb-Alloys by Means of Pulsed Laser Induced Epitaxy

2. J.F. Dick, A. Elsayed, D. Schwarz, J. Schulze (University of Stuttgart, Germany)  
**Electrical Characterization of Low-Temperature Boron on Silicon Deposition Utilizing Molecular Beam Epitaxy**

3. P. Povolni, D. Schwarz, C.J. Clausen, Y. Elogail, H. S. Funk, M. Oehme, D. Weißhaupt, J. Schulze (University of Stuttgart, Germany)

### Electrical Characterization of Fabricated Pin Diodes Made from $Si_xGe_{1-x}Sn_y$ with an Embedded $Ge_{1-x}Sn_x$ Quantum Well

4. L. Gebert, D. Schwarz, A. Elsayed, J. Schulze (University of Stuttgart, Germany)  
**Electrical Characterization of Pure Boron-on-Germanium Pin Diodes**

5. T. Knežević, T. Suligoj (Faculty of Electrical Engineering and Computing, Zagreb, Croatia), L.K. Nanver (Faculty of Electrical Engineering Mathematics and Computer Science, Enschede, Netherlands)
- Impact of Ultra-Thin-Layer Material Parameters on the Suppression of Carrier Injection in Rectifying Junctions Formed by Interfacial Charge Layer**
6. M. Krakers, T. Knežević, L. Nanver (University of Twente, Enschede, Netherlands)
- Reverse Breakdown and Light-Emission Patterns Studied in Si PureB SPADs**
7. M. Vlaskovic (ams AG, Unterpremstätten, Austria), H. Zimmermann (Technische Universität Wien, Austria), G. Meinhardt, J. Kraft, M. Sagmeister, J. Schoegler (ams AG, Unterpremstätten, Austria)
- PIN-photodiode Based Active Pixel in 0.35 µm High-Voltage CMOS for Optical Coherence Tomography**
8. D. Resnik, B. Pečar, M. Možek, N. Lokar, D. Vrtačnik (Faculty of Electrical Engineering, Ljubljana, Slovenia)
- Formation of Thin Film Ag/AgCl Reference Electrode by Electrochemical and Chemical Method**
9. M. Poljak, M. Glavan, S. Kuzmić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)
- Accelerating Simulation of Nanodevices Based on 2D Materials by Hybrid CPU-GPU Parallel Computing**
10. Ž. Osrečki, J. Žilak, M. Koričić, T. Suligoj (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)
- Balanced RF Power Amplifier Design in Horizontal Current Bipolar Transistor (HCBT) Technology**
11. A. Brizić, D. Babić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)
- Constant Resistance Filters with Diplexer Architecture for S-Band Applications**
12. V. Major, J. Bačmaga, A. Barić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)
- Design and Characterization of Bias Tee Used for S-parameter Characterization of Power Inductors**
13. T. Mandić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia), S. Op't Landy (Groupe ESEO Angers, France), A. Barić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)
- Time-Domain Response Simulation of Incident Field Coupling to Transmission Lines**
14. M. Ibel, H. Hackl, B. Auinger (Silicon Austria Labs, Graz, Austria), C. Stockreiter (ams AG, Premstätten, Austria), B. Deutschmann (Graz University of Technology, Austria)
- Generation of Equivalent Circuit Models of Complex Harnesses for Transient Simulation**
15. M. Matijašić, G. Molnar (Ericsson Nikola Tesla Inc., Zagreb, Croatia)
- Design of Linear Arrays Forming Pencil Beams Based on Derivatives of Chebyshev Polynomials**
16. A. Cortiula, M. Dazzi, M. Marcon, D. Menin, M. Scapol (DPIA, University of Udine, Italy), A. Bandiziol, A. Cristofoli, W. Grollitsch, R. Nonis (Infineon Technologies Austria AG, Villach, Austria), P. Palestri (DPIA, University of Udine, Italy)
- A Simple and Fast Tool for the Modelling of Inter-Symbol Interference and Equalization in High-Speed Chip-To-Chip Interfaces**
17. J. Bratulić, J. Rendulić, J. Tutavac, M. Meštrović, D. Stipić, L.-M. Golušin, D. Babić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia), T. Grubeša (Geolux LLC, Zagreb, Croatia)
- A Proposal for Characterizing Global Light Pollution Using a LEO Nanosatellite**
18. J. Kundrata, F. Merzel, S. Arkoski (Centre for Space Technology, Sisak, Croatia)
- Design of Magnetic Shielding from Space Radiation Using Numerical Methods**
19. D. Arbet, M. Kováč, V. Stopjaková, M. Potočný (Slovak University of Technology, Bratislava, Slovakia)
- Voltage-to-Frequency Converter for Ultra-Low-Voltage Applications**
20. T. Vincenzi, A. Michalowska-Forsyth (Graz University of Technology, Austria), G. Schatzberger (ams AG, Graz, Austria)

## **Preliminary Results on Total Ionizing Dose Effects on Sidewall Spacer Memory Bit Cells**

21. I.P. Tolić, J. Mikulić, G. Schatzberger (ams AG, Premstätten, Austria), A. Barić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)

### **Design of Sense Amplifiers for Non-Volatile Memory**

22. I. Brezovec, J. Mikulić, G. Schatzberger (ams AG, Premstätten, Austria), A. Barić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)

### **Design Methodology of an On-Chip Inductor in 180 nm CMOS Technology**

23. O. Cuate, O. Schuetze (CINVESTAV, Department of Computer Science, Mexico City, Mexico), F. Grasso (DINFO, University of Florence, Italy), E. Tlelo-Cuautle (Instituto Nacional de Astrofísica, Optica y Electronica (INAOE), Puebla, Mexico)

### **Sizing CMOS Operational Transconductance Amplifiers Applying NSGA-II and MOEAD**

24. D. Vinko, I. Biondić, D. Bilandžija (Faculty of Electrical Engineering, Computer Science and Information Technology Osijek, Croatia)

### **Soft-Start Circuit in Wireless Power Transmission System**

25. D. Bilandžija, I. Biondić, D. Vinko (Faculty of Electrical Engineering, Computer Science and Information Technology Osijek, Croatia)

### **Impact of Choke Selection on Performance of Current-Mode Class-D Amplifier in WPT System**

26. M. Brkić (Faculty of Technical Sciences, Novi Sad, Serbia), T. Keser (Faculty of Electrical Engineering, Computer Science and Information Technology Osijek, Croatia), M. Vasiljević Toskić, J. Radić, M. Arbanas (Faculty of Technical Sciences, Novi Sad, Serbia)

### **Quality Assessment of System for Automated Multi-Node Environmental Water Parameter Monitoring**

27. Z. Limani Fazliu, H. Maloku, A. Mekuli, M. Ibrani (Faculty of Electrical and Computer Engineering, Prishtina, Kosovo)

### **Detection Threshold for TVWS Spectrum Occupancy Determination in Urban Environments in Kosovo**

28. Y. Smirnov, V. Subotskaya, M. Tulupov, E. Bodano (Infineon Technologies Austria AG, Villach, Austria)

### **High Speed DPWM for Digital Power Converter Controller**

29. A. Perić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia), H. Pauković (Končar - Electronics and Informatics Inc., Zagreb, Croatia), M. Miletić, V. Šunde (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)

### **Development of Voltage Source Converter Using HiL Simulation System**

30. I. Župan, A. Lasić, V. Šunde, Ž. Ban (Faculty of Electrical Engineering and Computing, Zagreb, Croatia), D. Krušelj (Končar – Electronics and Informatics Inc., Zagreb, Croatia)

### **Power Converter Circuits for Recuperation of the Regenerative Braking Energy in Rail Vehicles**

31. N. Pilat, A. Perić, Ž. Ban, V. Šunde (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)

### **Analysis of the Uninterruptible Power Supply Influences to the Power Grid**

32. Z. Šverko, N. Stojković, S. Vlahinić, I. Markovinović (Faculty of Engineering, Rijeka, Croatia)

### **Noise Improvement for Different BP Filter Designs**

33. A. Čoza, D. Jurišić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)

### **Low-Noise and Low-Sensitivity Coupled Fourth-Order Low-Pass Filters**

34. A.N. Serov, N.A. Serov, V.D. Glushnev (National Research University "Moscow Power Engineering Institute", Russia)

### **Application of the Combined Method for the Estimation of the RMS Measurement Error Caused by ADC Nonlinearity**

35. S. Vaidyanathan (Research and Development Centre, Vel Tech University, Chennai, India), E. Tlelo-Cuautle (Instituto Nacional de Astrofísica, Optica y Electronica (INAOE), Puebla, Mexico), A. Sambas (Muhammadiyah University Tasikmalaya, Indonesia), F. Grasso (DINFO, University of Florence, Italy)

### **A New Nonlinear Dynamical Model with Three Quadratic Nonlinear Terms and Hidden Chaos**

23.05.19. 10<sup>15</sup>-13<sup>00</sup>, 15<sup>00</sup>-19<sup>00</sup>  
 24.05.19. 09<sup>00</sup>-13<sup>00</sup>

Hall • Dvorana Camelia 1,  
 Grand Hotel Adriatic

#### CHAIRS • VODITELJI

**Karolj Skala**, [skala@irb.hr](mailto:skala@irb.hr) (Ruđer Bošković Institute, Zagreb, Croatia), **Roman Trobec** (Jožef Stefan Institute, Ljubljana, Slovenia), **Davor Davidović** (Ruđer Bošković Institute, Zagreb, Croatia)

#### STEERING COMMITTEE • VODITELJSTVO

**E. Afgan** (Ruđer Bošković Institute, Zagreb, Croatia), **L. Krøl Andersen** (Danish e-infrastructure Cooperation Denmark, Kgs. Lyngby, Denmark), **M. Bubak** (ACC Cyfronet AGH University of Science and Technology, Krakow, Poland), **D. Davidović** (Ruđer Bošković Institute, Zagreb, Croatia), **M. Depolli** (Jožef Stefan Institute, Ljubljana, Slovenia), **T. Ferrari** (EGI Foundation, Amsterdam, The Netherlands), **M. Gonzalez** (England), **S. Gracio** (School of Medicine, University of Zagreb, Croatia), **M. Gusev** (Ss. Cyril and Methodius University, Skopje, Macedonia), **V. Jazbinšek** (University of Ljubljana, Slovenia), **A. Karaivanova** (Bulgarian Academy of Science, Sofia, Bulgaria), **Z. Klemenc-Ketiš** (Angela Boškin Faculty of Health Care, Jesenice, Slovenia), **G. Kosec** (Jožef Stefan Institute, Ljubljana, Slovenia), **D. Kranzlmüller** (Ludwig-Maximilians-University, München Germany), **M. Lindén** (Mälardalen University, Västerås, Sweden), **T. Lipić** (Ruđer Bošković Institute, Zagreb, Croatia), **L. Matyska** (Masaryk University, Brno, Czech Republic), **Ž. Mihajlović** (University of Zagreb, Croatia), **J. Carretero Pérez** (University Carlos III, Madrid, Spain), **D. Petcu** (West University of Timisoara, Romania), **T. Poplas Susič** (Health Centre Ljubljana, Slovenia), **A. Rashkovska Koceva** (Jožef Stefan Institute, Ljubljana, Slovenia), **K. Skala** (Ruđer Bošković Institute, Zagreb, Croatia), **U. Stanic** (Biomedical Research Institute-BRIS, Ljubljana, Slovenia), **I. Tomašić** (Mälardalen University, Västerås, Sweden), **R. Trobec** (Jožef Stefan Institute, Ljubljana, Slovenia), **T. Vámos** (Hungarian Academy of Science, Budapest, Hungary), **M. Veselko** (University Medical Centre Ljubljana, Slovenia), **Y. Wang** (University of Prince Edward Island, Charlottetown, Canada), **R. Wyrzykowski** (Institute of Computer and Information Science, Częstochowa, Poland)

#### INVITED LECTURE • POZVANO PREDAVANJE

M. Lindén (School of Innovation, Design and Engineering, Västerås, Sweden)

**Embedded Sensor Systems for Health Plus - Enabling Health Trend Monitoring Anytime, Anywhere**

#### PAPERS • RADOVI

#### DISTRIBUTED COMPUTING IN DATA SCIENCE

1. S. Petrushevski, M. Gusev, V. Zdraveski (Ss. Cyril and Methodius University, Skopje, Macedonia) **Calculating Average Shortest Path Length Using Compute Unified Design Architecture (CUDA)**
2. G.A. Oparin, V.G. Bogdanova, A.A. Pashinin, S.A. Gorsky (Matrosov Institute for System Dynamics and Control Theory of SB RAS, Irkutsk, Russia) **Microservice-oriented Approach to Automation of Distributed Scientific Computations**
3. O. Bilalović, Z. Avdagić, M. Kafadar (Faculty of Electrical Engineering, Sarajevo, Bosnia and Herzegovina) **Improved Nucleus Segmentation Process Based on Knowledge Based Parameter Optimization in Two Levels of Voting Structures**
4. A. Šerifović Trbalić (Faculty of Electrical Engineering, Tuzla, Bosnia and Herzegovina), A. Trbalić (Drvodom Ltd, Tuzla, Bosnia and Herzegovina), D. Demirović, E. Skejić (Faculty of Electrical Engineering, Tuzla, Bosnia and Herzegovina), D. Gleich (University of Maribor, Slovenia) **CT Metal Artifacts Reduction Using Convolutional Neural Networks**
5. T. Široki (Faculty of Electrical Engineering and Computing, Zagreb, Croatia) S. Koska, N. Čorak, M. Futo, T. Domazet-Lošo (Ruđer Bošković Institute, Zagreb, Croatia), M. Domazet-Lošo (Faculty of Electrical Engineering and Computing, Zagreb, Croatia) **Correspondence Analysis Applied to Large Scale Evo-Devo Data**

6. B. Stojanovič (Faculty of Mathematics and Physics, Ljubljana, Slovenia), J. Slak, G. Kosec (Jožef Stefan Institute, Ljubljana, Slovenia)  
**RBF-FD Solution of Electromagnetic Scattering Problem**
7. A. Mujezinović, V. Ljubović (Faculty of Electrical Engineering, Sarajevo, Bosnia and Herzegovina)  
**Serverless Architecture for Workflow Scheduling with Unconstrained Execution Environment**
8. J. Močnik-Berljavac (Faculty of Mathematics and Physics, Ljubljana, Slovenia), J. Slak, G. Kosec (Jožef Stefan Institute, Ljubljana, Slovenia)  
**Parallel Simulation of Time-Domain Acoustic Wave Propagation**
9. G. Benko, Z. Juhasz (University of Pannonia, Veszprem, Hungary)  
**GPU Implementation of the FastICA Algorithm**
10. Z. Šojač, K. Skala (Ruđer Bošković Institute, Zagreb, Croatia)  
**The Rainbow: Integrating Computing into the Global Ecosystem**
11. S. Camarasu-Pop, C. Lartizien, T. Grenier, A. Bonnet, P. Wassong (CNRS - Creatis, Villeurbanne, France), V. Hamar, F. Hernandez (CC-IN2P3, Villeurbanne, France), L. Arrabito, J. Bregeon (University of Montpellier, France), P. Gay (University of Bordeaux, France), A. Tsaregorodtsev (CPPM, Marseille, France)  
**Exploiting GPUs on Distributed Infrastructures for Medical Imaging Applications with VIP and DIRAC**
12. Ž. Jeričević (KMS Technologies, Houston, United States)  
**Fitting Sum of Exponentials to Experimental Data: Linearization by Numerical Integration Approximation**
13. V. Stanislavljević (University North, Department of Multimedia, Design and Application, Varaždin, Croatia)  
**Comparison of Data Aggregation from a Wireless Network of Sensors Using Database Sharding and Foreign Data Wrappers**
14. J. Matković (JP Elektroprivreda HZ-HB Inc. Mostar, Bosnia and Herzegovina), K. Fertalj (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)  
**Visual Modelling of WS-BPEL Processes Using BPMN Standard**
15. H. Nuić, Ž. Mihajlović (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)  
**Algorithms for Procedural Generation and Display of Trees**
16. M. Depolli, R. Trobec (Jožef Stefan Institute, Ljubljana, Slovenia)  
**Computational Efficiency of Linear System Construction for MLPG Method on a Multicore Computer**
17. M. Kozlovszky (Biotech Research Center, Obuda University, Budapest, Hungary), O. Németh (Faculty of Medicine, Budapest, Hungary), A. Benhamida, W. Othmani (Biotech Research Center, Obuda University, Budapest, Hungary)  
**Support of Dental Data Recording during National Scale Dental Screening Event**
18. V. Bojović, B. Lučić (Ruđer Bošković Institute, Zagreb, Croatia), D. Bešlo (Faculty of Agrobiotechnical Sciences Osijek, Croatia), K. Skala (Ruđer Bošković Institute, Zagreb, Croatia), N. Trinajstić (Croatian Academy of Sciences and Arts, Zagreb, Croatia)  
**Calculation of Topological Molecular Descriptors Based on Degrees of Vertices**

#### **BIOMEDICAL COMPUTING, TECHNOLOGY, ENGINEERING AND APPLICATIONS**

1. I. Tomašić, N. Petrović, M. Lindén (School of Innovation, Design and Engineering, Mälardalen University Västerås, Sweden), A. Rashkovska Koceva (Jožef Stefan Institute, Ljubljana, Slovenia)  
**Comparison of Publicly Available Beat Detection Algorithms Performances on the ECGs Obtained by a Patch ECG Device**
2. N. Petrović, I. Tomašić, M. Lindén, P.O. Risman (School of Innovation, Design and Engineering, Mälardalen University Västerås, Sweden)  
**Detection of Human Bodypart Abnormalities by Microwaves – A New Approach**
3. M. Brložnik, A. Domanjko Petrič (Small Animal Clinic, University of Ljubljana, Slovenia), V. Kadunc Kos (Clinic for Reproduction and Large Animals, University of Ljubljana, Slovenia), A. Rashkovska Koceva, V. Avbelj (Jožef Stefan Institute, Ljubljana, Slovenia)  
**Wireless Body Sensor for Electrocardiographic Monitoring in Equine Medicine**

4. D. Dojchinovski, A. Ilievski, M. Gusev (Ss. Cyril and Methodius University, Skopje, Macedonia)  
**Interactive Home Healthcare System with Integrated Voice Assistant**
  5. V. Zvoncak, J. Mekyska (Brno University of Technology, Czech Republic), K. Safarova (Faculty of Arts, Brno, Czech Republic), Z. Smekal (Brno University of Technology, Czech Republic), P. Brezany (Faculty of Computer Science, Vienna, Austria)
- New Approach of Dysgraphic Handwriting Analysis Based on the Tunable Q-Factor Wavelet Transform**
6. E. Ajdaraga, M. Gusev (Ss. Cyril and Methodius University, Skopje, Macedonia)  
**Analysis of a Differential Noise Detection Filter in ECG Signals**
  7. R. Trobec (Jožef Stefan Institute, Ljubljana, Slovenia), M. Jan (University Medical Centre, Ljubljana, Slovenia), M. Lindén, I. Tomašić (School of Innovation, Design and Engineering, Västerås, Sweden)  
**Detection and Treatment of Atrial Irregular Rhythm with Body Gadgets and 35-Channel ECG**
  8. I. Grubišić, D. Davidović, K. Skala (Ruđer Bošković Institute, Zagreb, Croatia), M. Depolli, M. Mohorčič, R. Trobec (Jožef Stefan Institute, Ljubljana, Slovenia)  
**Enriching Heart Monitoring with Accelerometer Data**
  9. P. Pereira, R. Fonseca-Pinto (Institute of Telecommunications, Leiria, Portugal), R. Paiva (DEI - FCTUC, University of Coimbra, Portugal), L. Távora (Polytechnic Institute of Leiria, Portugal), P. Assunção, S. Faria (Institute of Telecommunications, Leiria, Portugal)  
**Accurate Segmentation of Dermoscopic Images Based on Local Binary Pattern Clusterings**
  10. J. Bogatinovski, D. Kocev, A. Rashkovska Koceva (Jožef Stefan Institute, Ljubljana, Slovenia)  
**Feature Extraction for Heartbeat Classification in Single-Lead ECG**
  11. L. Bento, F. Cunha, (Institute of Telecommunications, Leiria, Portugal), L. Távora (Polytechnic Institute of Leiria, Portugal), P. Assunção, S. Faria, R. Fonseca-Pinto (Institute of Telecommunications, Leiria, Portugal)  
**A Methodology for Laser Speckle Simulation in Controlled Dynamic Processes**
  12. L. Borozan, D. Matijević (J.J. Strossmayer University of Osijek, Department of Mathematics, Croatia), S. Canzar (Gene Center Munich - LMU Munich, Germany)  
**Properties of the Generalized Robinson-Foulds Metric**
  13. E. Ajdaraga, M. Gusev, L. Poposka (Ss. Cyril and Methodius University, Skopje, Macedonia)  
**Evaluation of User Satisfaction with the ECGalert System**
  14. M. Gusev, M. Boshkovska (Ss. Cyril and Methodius University, Skopje, Macedonia)  
**Performance Evaluation of AFib Detection**
  15. J. Marić, M. Šikić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)  
**Approaches to Metagenomic Classification and Assembly**
  16. U. Marlí (Institute of Mathematics, Physics and Mechanics, Ljubljana, Slovenia), A. Jodko-Władzinska, R. Brühl, T.H. Sander (Physikalisch-Technische Bundesanstalt, Berlin, Germany), V. Jazbinšek (Institute of Mathematics, Physics and Mechanics, Ljubljana, Slovenia)  
**Source Localization in Magnetoencephalography and a New Generation of Magnetometers**
  17. L. Šajn (Faculty of Computer and Information Science, Ljubljana, Slovenia)  
**Detecting White Spot Lesions Caused by Teeth Alignment Treatment**
  18. Z. Juhasz, M.F. Issa (University of Pannonia, Veszprem, Hungary)  
**EEG Based Imaging of Stroke Location, Extent and Progress of Recovery Using a GPU Architecture**
  19. D. Tomić (Ruđer Bošković Institute, Zagreb, Croatia), B. Pirkić (Faculty of Veterinary Medicine, Zagreb, Croatia), K. Skala (Ruđer Bošković Institute, Zagreb, Croatia), L. Kranjčević (Faculty of Engineering, Rijeka, Croatia)  
**Predicting the Effectiveness of Multi-drug Cancer Therapies**
  20. P. Brezany (Faculty of Computer Science, Vienna, Austria), M. Janatova (Charles University, Prague, Czech Republic), O. Stepankova (Czech Institute of Informatics, Robotics and Cybernetics, Prague, Czech Republic), M. Lenart, M. Edward (Faculty of Computer Science, Vienna, Austria), M. Uller (Czech Institute of Informatics, Robotics and Cybernetics, Prague, Czech Republic), R. Burget (Brno University of Technology, Czech Republic)  
**Management of Physiological Data Streams within Brain Disorder Rehabilitation**

**21.05.19. 14<sup>00</sup>-19<sup>00</sup>**  
**22.05.19. 15<sup>00</sup>-19<sup>00</sup>**

Hall · Dvorana Galija, Remisens Hotel Admiral

#### CHAIRS · VODITELJI

**Željka Car**, zeljka.car@fer.hr (University of Zagreb, Croatia), **Tihana Galinac Grbac** (Juraj Dobrila University of Pula, Croatia), **Stjepan Golubić** (Zagreb, Croatia), **Dragan Jevtić** (University of Zagreb, Croatia), **Branko Mikac** (University of Zagreb, Croatia)

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#### PRESENTATION · PREZENTACIJA

1. P. Novakova (IBM, Valbonne, France)

#### IBM ASPERA, Accelerating Data Transfer over Commodity Internet

#### INVITED LECTURE · POZVANO PREDAVANJE

1. Ž. Car (Faculty of Electrical Engineering and Computing, Zagreb, Croatia), I. Majerski (Croatian Regulatory Authority for Network Industries, Zagreb, Croatia)

#### The Challenges of Digital Accessibility

#### PAPERS · RADOVI

1. Y.-H. Chen (National Taipei University of Nursing and Health Sciences, Taipei, Taiwan), Y.-C. Lai, C.-K. Yang (National Taiwan University of Science and Technology, Taipei, Taiwan)

#### Estimate Telecommunication Spectrum Demand Considering Population Structure

2. M. Márton, L. Ovseník, J. Turán, M. Špes, J. Urbanský (Faculty of Electrical Engineering and Informatics, Košice, Slovakia)

#### Analysis of Helix Turns Impact on Design of Helix Antenna Operated on 2.46GHz Proposed for FSO/RF Hybrid System

3. I. Šeremet, S. Čaušević (Faculty of Traffic and Communications, Sarajevo, Bosnia and Herzegovina)

#### An Analysis of Reconvergence Delay when Using BGP-LS/PCEP as Southbound Protocols

4. M. Kocan (SilverEngine GmbH, Munich, Germany)

#### Self-learning Prioritization of End-User Services to Eliminate Overload Situations

5. H. Maloku, Z. Limani Fazliu, E. Sela, M. Ibrani (Faculty of Electrical and Computer Engineering, Prishtina, Kosovo)

#### Path Loss Model Fitting for TV Bands Based on Experimental Measurements for Urban Environments in Kosovo

6. D. Budić, K. Skračić, I. Bodrušić (Ericsson Nikola Tesla Inc., Zagreb, Croatia)

#### Optimizing Mobile Radio Access Network Spectrum Refarming Using Community Detection Algorithms

7. S. Čaušević, M. Begović (Faculty of Traffic and Communications, Sarajevo, Bosnia and Herzegovina)

#### Optimizing Traffic Routing in Different Network Environments Using the Concept of Software-Defined Networks

8. M. Ibrani, A. Mekuli (Faculty of Electrical and Computer Engineering, Prishtina, Kosovo)  
**Experimental Assessment of Electric Field Levels Emitted by UHF TV Broadcasters**
9. B. Ivšić, F. Friščić, M. Dadić, D. Muha (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)  
**Design and Analysis of Vivaldi Antenna for Measuring Electromagnetic Compatibility**
10. A. Prašljivić, A. Ramić (BH Telecom Inc., Sarajevo, Bosnia and Herzegovina)  
**Targeted Multichannel Marketing Campaign in Telecommunications**
11. L. Incipini, A. Belli, L. Palma, R. Concetti, P. Pierleoni (Università Politecnica delle Marche, Ancona, Italy)  
**MIMIC: A Cybersecurity Threat Turns into a Fog Computing Agent for IoT Systems**
12. N. Banović-Curguz, D. Ilišević (Telekomunikacije RS A.D., Banja Luka, Bosnia and Herzegovina)  
**Mapping of QoS/QoE in 5G Networks**
13. N. Bjelčić (Croatian Telecom Inc., Zagreb, Croatia), D. Švelec (Croatian Telecom Inc., Osijek, Croatia)  
**New Perspectives for People with Special Needs According the Development of New Generation ICT Technologies**
14. T.D. Bikov, T.B. Iliev ("Angel Kanchev" University of Ruse, Telecommunications Department, Bulgaria), G.Y. Mihaylov (University of Telecommunications and Posts, Sofia, Bulgaria), I.S. Stoyanov ("Angel Kanchev" University of Ruse, Electric Power Engineering Department, Bulgaria)  
**Phishing in Depth – Modern Methods of Detection and Risk Mitigation**
15. S.A. Sokolov (University of Telecommunications and Posts, Sofia, Bulgaria), T.B. Iliev ("Angel Kanchev" University of Ruse, Telecommunications Department, Bulgaria), I.S. Stoyanov ("Angel Kanchev" University of Ruse, Electric Power Engineering Department, Bulgaria)  
**Analysis of Cybersecurity Threats in Cloud Applications Using Deep Learning Techniques**
16. D. Valenčić (University of Applied Sciences Velika Gorica, Croatia), V. Mateljan (Faculty of Humanities and Social Sciences, Zagreb, Croatia)  
**Implementation of NETCONF Protocol**
17. L. Incipini, A. Belli, L. Palma, R. Concetti, P. Pierleoni (Università Politecnica delle Marche, Ancona, Italy)  
**Databases Performance Evaluation for IoT Systems: The Scrovegni Chapel Use Case**
18. A. Jakovčić, V. Barać, B. Blažević (Vertiv Croatia LLC, Zagreb, Croatia)  
**Critical Infrastructure Solutions for Upcoming Developments in Telecom and Data Industries**
19. C.V. Phung, J. Dizdarević, F. Carpio, A. Jukan (Technische Universität Braunschweig, Germany)  
**Enhancing REST HTTP with Random Linear Network Coding in Dynamic Edge Computing Environments**
20. D. Markulin, K. Musa, A. Mršić (Croatian Telecom Inc., Zagreb, Croatia)  
**Primjena agilnog pristupa u implementaciji promjena u provisioning procesima telekomunikacijskih usluga**
21. O. Jukić, I. Heđi, A. Šarabok (Virovitica College, Croatia)  
**Fault Management API for SNMP Agents**
22. M. Žilak (Faculty of Electrical Engineering and Computing, Zagreb, Croatia), A. Keselj, T. Besjedica (University of Dubrovnik, Croatia)  
**Accessible Web Prototype Features from Technological Point of View**
23. M. Nižetić (Omiš, Croatia)  
**Sklopovska i programska provjera primitivnosti binarnih polinoma**

**20.05.19. 15<sup>00</sup>-18<sup>30</sup>**  
**21.05.19. 09<sup>00</sup>-13<sup>00</sup> 16<sup>30</sup>-19<sup>00</sup>**

**Congress Hall · Kongresna dvorana, Grand Hotel Adriatic**

**22.05.19. 15<sup>00</sup>-19<sup>00</sup>**  
**23.05.19. 10<sup>30</sup>-13<sup>00</sup> 15<sup>00</sup>-19<sup>00</sup>**  
**24.05.19. 09<sup>00</sup>-13<sup>00</sup>**

**Hall · Dvorana Nava 2, Remisens Hotel Admiral**

#### CHAIRS · VODITELJI

**Marina Čičin-Šain**, [marinacs@efri.hr](mailto:marinacs@efri.hr) (University of Rijeka, Croatia), **Ivanka Sluganović** (I. Tehnička škola Tesla, Zagreb, Croatia), **Jaak Henno** (Tallinn University of Technology, Estonia), **Hannu Jaakkola** (Tampere University of Technology, Finland), **Snežana Babić** (Polytechnic of Rijeka, Croatia)

#### STEERING COMMITTEE · VODITELJSTVO

**M.E. Auer** (Carinthia Tech Institute, Villach, Austria), **M. Krašna** (University of Maribor, Slovenia), **D. Lukač** (Siegburg, Germany), **R. Repnik** (University of Maribor, Slovenia), **S. Vukmirović** (University of Rijeka, Croatia)

#### PANEL · OKRUGLI STOL

Mogu li gospodarstvenici utjecati na ishode učenja za ICT područje?

#### PAPERS · RADOVI

1. E. Ciriković, I. Heđi, D. Ivačić (Virovitica College, Croatia)  
**Proširenje mrežnih usluga emulacijom hardvera u GNS3**
2. I. Grabar (Primary School Hrvatski Leskovac, Zagreb, Croatia), M. Dumančić (Faculty of Teacher Education, Zagreb, Croatia)  
**Stavovi roditelja i učenika o korištenju sustava e-Dnevnik u osnovnom obrazovanju**
3. M. Šprem (Privredna banka Zagreb Inc., Croatia), G. Hajdin, M. Konecki (Faculty of Organization and Informatics, Varaždin, Croatia)  
**Suradnja roditelja i nastavnika u srednjoj školi i informacijsko-komunikacijska tehnologija koja se koristi u ovoj suradnji**
4. B. Musović, B. Raičković (IV. Primary School Bjelovar, Croatia)  
**Drvokod**
5. M. Hajba, M. Špoljarić (Virovitica College, Croatia)  
**Programski paket GNU Octave u nastavi**
6. J. Bistrović (Primary School "Braća Radić", Koprivnica, Croatia), T. Pavičić Zajec (Primary School Varaždin, Croatia)  
**Ispitivanje preferencija prema različitim grupama multimedijiskih obrazovnih sadržaja i spola u razrednoj nastavi**
7. P. Tomljanović (I. Technical School Tesla, Zagreb, Croatia)  
**Položaj učenika i nastavnika pri odvijanju nastave na daljinu**
8. N. Boj, A. Tonković (III. Primary School Čakovec, Croatia)  
**Izrada virtualnog modela školskoga atrija: Rezultat projektnе nastave u III. OŠ Čakovec**
9. M. Mirković (School of Technical Sciences, Požega, Croatia)  
**Upoznavanje Europske unije kroz nastavu informatike**
10. N. Hoić-Božić, M. Holenko Dlab, M. Ivašić-Kos, I. Franković (University of Rijeka, Department of Informatics, Croatia)  
**Projekt Coding4Girls**
11. M. Matetić, J. Čanić, M. Brkić Bakarić (University of Rijeka, Department of Informatics, Croatia)  
**Istraživačka analiza i model logističke regresije aktivnosti u LMS sustavu**
12. K. Blažeka (School of Technical Sciences, Čakovec, Croatia)  
**Razvoj kreativnosti i suradnje upotrebom GitHub platforme u srednjoškolskom strukovnom obrazovanju**

13. M. Duić (University of Zadar, Department of Information Sciences, Croatia)  
**How Faculty from Pula, Dubrovnik, Varaždin, Koprivnica and Osijek Use Web-Based Scientific Literature: Analysis Based on their Age, Gender, Field of Science and Literature Exchange Practices**
14. A. Papić, M. Buhin (Faculty of Humanities and Social Sciences, Osijek, Croatia)  
**Mapping the Hot Topics in Library and Information Science Field in Period 2015-2018 Year**
15. M. Sertić (Industrial Craft School, Slavonski Brod, Croatia)  
**Implementation of Blended Learning in Computer Science**
16. V. Juričić, M. Radošević, E. Fuzul (Faculty of Humanities and Social Sciences, Zagreb, Croatia)  
**Creating Student's Profile Using Blockchain Technology**
17. R. Vrana (Faculty of Humanities and Social Sciences, Zagreb, Croatia)  
**Education in Science Literacy outside the Classroom: Case of Libraries**
18. T. Alajbeg, M. Sokele (Zagreb University of Applied Sciences, Croatia)  
**Implementation of Electronic Design Automation Software Tool in the Learning Process**
19. T. Ivanjko (Faculty of Humanities and Social Sciences, Zagreb, Croatia)  
**Crowdsourcing Image Descriptions Using Gamification: A Comparison between Game-Generated Labels and Professional Descriptors**
20. V. Juričić, M. Radošević (Faculty of Humanities and Social Sciences, Zagreb, Croatia)  
**Puzzle-like Programming Languages in Teaching Programming**
21. M. Filipović Tretinjak (School of Electrical Engineering, Zagreb, Croatia)  
**Methodology for Using Games as an Educational Tool**
22. P. Pürcher (University of Graz, Austria), M. Höfler (Faculty of Health and Medicine, Krems, Austria)  
**Measuring Eye Movements in Learning Research: A Useful Window to Cognition**
23. T. Hynninen (South-Eastern Finland University of Applied Sciences, Mikkeli, Finland), A. Knutas (LUT School of Engineering Science, Lappeenranta, Finland), M. Hujala, H. Arminen (LUT School of Business and Management, Lappeenranta, Finland)  
**Distinguishing the Themes Emerging from Masses of Open Student Feedback 5124**
24. M. Vejačka (Faculty of Economics, Košice, Slovakia)  
**Electronic Commerce Entrepreneurship Education Using Virtual Laboratory**
25. F. Urem (Polytechnic of Šibenik, Croatia), E. Ban (Education and Teacher Training Agency, Rijeka, Croatia), D. Jureković (Oracle Croatia Ltd., Zagreb)  
**Engaging Students in Computer Science with Extracurricular Projects - Oracle Academy Workshops in a Box Use Case**
26. E. Pajić, V. Ljubović (University of Sarajevo, Bosnia and Herzegovina)  
**Improving Plagiarism Detection Using Genetic Algorithm**
27. I. Dundić, M. Pavlovska (Faculty of Humanities and Social Sciences, Zagreb, Croatia)  
**Behind the Dystopian Sentiment: A Sentiment Analysis of George Orwell's 1984**
28. I. Dundić, M. Pavlovska (Faculty of Humanities and Social Sciences, Zagreb, Croatia)  
**Through the Limits of Newspeak: An Analysis of the Vector Representation of Words in George Orwell's 1984**
29. A. Lović, A. Sović Kržić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)  
**Using Robots to Master Simple Mathematical Assignments**
30. S. Ivanova, G. Georgiev ("Angel Kanchev" University of Ruse, Computer Systems and Technologies Department, Bulgaria)  
**Towards a Justified Choice of Gamification Framework when Building an Educational Application**
31. D. Bjelobrk Knežević, V. Tadić, Ž. Širanović (Zagreb University of Applied Sciences, Croatia)  
**Flipped Classroom Model for Advanced Networking Courses**
32. A. Čolak, M. Aglić Čuvić (Faculty of Science, Split, Croatia)  
**An Educational Tool for Visualising Actor Programs**
33. T.S. Georgiev ("Angel Kanchev" University of Ruse, Computer Systems and Technologies Department, Bulgaria)  
**Students' Viewpoint about Using MIT App Inventor in Education**
34. T. Ivanjko (Faculty of Humanities and Social Sciences, Zagreb, Croatia), I. Grubješić (University North, Department of Civil Engineering, Varaždin, Croatia)  
**Implementation of LMS Activities in the Adoption of ESP in Higher Education**

35. B. Musil, S. Gartner (Faculty of Arts, Maribor, Slovenia), I. Pesek (Faculty of Natural Science and Mathematics, Maribor, Slovenia), M. Krašna (Faculty of Arts, Maribor, Slovenia)
- ICT Competences Assessment through ICT Escape Room**
36. M.-V. Apiola (University of Turku, Department of Future Technologies, Finland), T. Karunaratne (Stockholm University, Department of Computer and Systems Sciences, Sweden), E. Kaila, M.-J. Laakso (University of Turku, Department of Future Technologies, Finland)
- Experiences from Digital Learning Analytics in Finland and Sweden: A Collaborative Approach**
37. V. Zuppa Bakša (Zagreb University of Applied Sciences, Croatia), A. Bednjanec (School of Electrical Engineering, Zagreb, Croatia)
- Project Teaching in Computer Subjects**
38. D. Radošević (Faculty of Organization and Informatics, Varaždin, Croatia), A. Bernik (University North, University Centre Varaždin, Croatia), M. Kaniški (Faculty of Organization and Informatics, Varaždin, Croatia), N. Mrvac (Faculty of Graphic Arts, Zagreb, Croatia)
- Dynamic Machine Translation of Croatian Academic Web Sites**
39. E. Kaila, M.-J. Laakso (University of Turku, Department of Future Technologies, Finland)
- Teachers' Perceptions of Digital Learning Path in Mathematics, Languages and Programming**
40. V.T. Atanasov ("Vasil Levski" National Military University, Veliko Tarnovo, Bulgaria), A.S. Ivanova ("Angel Kanchev" University of Ruse, Bulgaria)
- A Framework for Measurement of Interactivity of Digital Learning Resources**
41. B. Rodič (Faculty of Information Studies, Novo mesto, Slovenia)
- Decision Support in a Telecommunications Engineering e-Learning Platform**
42. L. Kakalejčík (GrowthPro, Košice, Slovakia), D. Paľová (Faculty of Economics, Košice, Slovakia)
- Enhancement of Students' Skills via Project-Based Learning**
43. I. Kaštelan, Bogdan Pavković (Faculty of Technical Sciences, Novi Sad, Serbia), M. Vranješ (Faculty of Electrical Engineering, Computer Science and Information Technology, Osijek, Croatia), M. Popović (Faculty of Technical Sciences, Novi Sad, Serbia), G. Velikić (RT-RK Institute for Computer Based Systems, Novi Sad, Serbia)
- Modernizing Laboratories for New Courses in Automotive Software Engineering**
44. B. Balon (College for Information Technologies, Zagreb, Croatia), M. Simić (I. Technical School Tesla, Zagreb, Croatia)
- Using Raspberry Pi Computers in Education**
45. G. Đurović (University of Rijeka, Croatia), M. Holenko Dlab, N. Hoić-Božić (University of Rijeka, Department of Informatics, Croatia)
- A Model of an Online Evaluation System for STEM Education**
46. L. Révészová (Faculty of Economics, Košice, Slovakia)
- Development of Human Capital via Modern Informatics Education**
47. P. Larsson, M.-V. Apiola, M.-J. Laakso (University of Turku, Department of Future Technologies, Finland)
- The Uniqueness of Computational Thinking**
48. I. Prazina, V. Okanović (Faculty of Electrical Engineering, Sarajevo, Bosnia and Herzegovina)
- Methods for Double-Blind Peer Review and Grade Prediction of Student Software Projects**
49. J. Mezak, P. Pejić Papak (Faculty of Teacher Education, Rijeka, Croatia)
- Problem Based Learning for Primary School Junior Grade Students Using Digital Tools**
50. I. Almeida, J. Ribeiro, A. Moreira (University of Aveiro, Portugal)
- Assistive Technologies for Children with Cognitive and/or Motor Disabilities: a Diagnosis of the Training Needs of Informal Caregivers**
51. M. Homen Pavlin (Faculty of Teacher Education, Zagreb, Croatia), M. Sužnjević (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)
- The Opinions and Attitudes of Students - Future IT Teachers - on the Use of VR and AR in Teaching**
52. P. Bernad, N. Vaupotič, R. Repnik (Faculty on Natural Sciences and Mathematics, Maribor, Slovenia)
- Teaching the Physics behind a 3D Cinema through Experiments Supported by ICT**

53. P. Matković, M. Sakal, P. Tumbas, V. Pavličević (Faculty of Economics, Subotica, Serbia)
- Competence-based Curriculum Development for Business Informatics**
54. D. Tuparova (South-West University "Neofit Rilski", Department of Informatics, Blagoevgrad, Bulgaria)
- Teaching of Computer Programming in Bulgarian Primary School – Challenges and Solutions**
55. D. Tuparova (South-West University "Neofit Rilski", Department of Informatics, Blagoevgrad, Bulgaria), V. Veleva (South-West University "Neofit Rilski", Department of Sociology, Blagoevgrad, Bulgaria), G. Tuparov (New Bulgarian University, Department of Informatics, Sofia, Bulgaria)
- About Some Barriers in Usage of Educational Computer Games by Teachers in STEM**
56. T. Babić, S. Papić (Algebra University College, Zagreb, Croatia), M. Babić (Zagreb City Libraries, Croatia)
- Intuitive Communication versus Rational Communication among Students of Computing at the Algebra University College**
57. A. Milenković (Faculty of Science, Kragujevac, Serbia), Đ. Takači (Faculty of Science, Novi Sad, Serbia)
- The Effects of Integrating Mobile Technology for Determining the Boundaries of Multiple Integrals**
58. L. Abazi-Bexheti, A. Kadriu, M. Apostolova-Trpkovska (Faculty of Contemporary Sciences and Technologies, Tetovo, Macedonia)
- Investigating Gender Gap in Computer Science Research Community**
59. A. Čižmešija, Z. Stapić (Faculty of Organization and Informatics, Varaždin, Croatia)
- GitHub as Backbone in Software Engineering Course: Technology Acceptance Analysis**
60. M. Fetaji (Faculty of Contemporary Sciences and Technologies, Tetovo, Macedonia), B. Fetaji, M. Ebibi (Mother Teresa University, Skopje, Macedonia)
- Analyses of Possibilities of Flipped Classroom in Teaching Computer Science Courses**
61. V. Slavuj, B. Kovačić, I. Jugo (University of Rijeka, Department of Informatics, Croatia)
- User Evaluation of an Adaptive Language Learning System Prototype**
62. D. Bunić, I. Jugo, B. Kovačić (University of Rijeka, Department of Informatics, Croatia)
- Analysis of Clustering Algorithms for Group Discovery in a Web-based Intelligent Tutoring System**
63. P. Vranešić, K. Aleksić-Maslać, B. Sinković (Zagreb School of Economics and Management, Croatia)
- Student Motivation Depending on Reward System in Gamification**
64. P. Zlatarov, G.I. Ivanova ("Angel Kanchev" University of Ruse, Computer Systems and Technologies Department, Bulgaria), D. Baeva ("Angel Kanchev" University of Ruse, Computer Science Department, Bulgaria)
- A Web-Based System for Personalized Learning Path Tracking of Doctoral Students**
65. O.V. Semenikhina, M.G. Drushlyak, Y.A. Bondarenko, S.M. Kondratuk, I.M. Ionova (Makarenko Sumy State Pedagogical University, Ukraine)
- Open Educational Resources as a Trend of Modern Education**
66. M. Wagner, C. Ungermanns, W. Werth (Carinthia University of Applied Sciences, Villach, Austria)
- Benefits of Experimental Supported Teaching**
67. A.O. Yurchenko, O.M. Udovychenko (Makarenko Sumy State Pedagogical University, Ukraine), A.M. Rozumenko (Sumy National Agrarian University, Ukraine), Y.O. Chkana, M.M. Ostroha (Makarenko Sumy State Pedagogical University, Ukraine)
- Regional Computer Graphics Competition as a Tool of Influence on the Profession Choice: Experience of Sumy Region of Ukraine**
68. Y.I. Petrenko (Kharkiv State Academy of Physical Culture, Ukraine), V.M. Zigunov, D.I. Balashov, D.V. Bermudes, I.V. Shishenko (Makarenko Sumy State Pedagogical University, Ukraine)
- Use of the Software BIOMECHANICS in Physical Culture and Sports Specialists' Preparation**
69. V. Bušelić (Zagreb University of Applied Sciences, Croatia)
- Information Literacy and Critical Thinking Freshman Course Experience**

70. J. Zoroja, M. Pejić Bach (Faculty of Economics and Business, Zagreb, Croatia) I. Miloloža (Faculty of Economics, Osijek, Croatia)
- Developing Leadership in a Simulation-Games Environment**
71. D. Vrkić (School of Medicine, Zagreb, Croatia)
- Learning Analytics and Academic Libraries in Croatia - Are We Ready for It?**
72. J. Henno (Tallinn University of Technology, Estonia), H. Jaakkola (Tampere University, Pori, Finland), J. Mäkelä (University of Lapland, Rovaniemi, Finland)
- Teaching for Virtual Work**
73. A. Špernjak, T. Bastić (Faculty of Natural Sciences and Mathematics, Maribor, Slovenia), J. Dolenšek (Faculty of Medicine, Maribor, Slovenia)
- A "Fingerbeeper" School Monitoring Device as Entrepreneurship**
74. V. Kalajžić, M. Ražnjević Zdrilić, (University of Zadar, Department of Tourism and Communication Sciences, Croatia)
- Attitudes of Students on the Use of the System for Authenticity Verification of Academic Papers Turnitin**
75. F. Škopljanc-Maćina, B. Blašković (Faculty of Electrical Engineering and Computing, Zagreb, Croatia), I. Zakarija (University of Dubrovnik, Department of Electrical Engineering and Computing, Croatia)
- Automated Analysis of e-Learning Web Applications**
76. T. Babić, A. Lacković, M. Matejić (Algebra University College, Zagreb, Croatia)
- Critical Thinking and Creative Thinking - the Self-Assessment of Algebra University College Students**
77. M. Džeko, N. Kadoić (Faculty of Organization and Informatics, Varaždin, Croatia), Ž. Dobrović (University of Applied Sciences Velika Gorica, Croatia)
- Metamodelling SNAP, a Multi-Criteria Method for Effective Strategic Decision Making on e-Learning Issues**
78. M. Odak, A. Miljko, L. Mandić (Faculty of Humanities and Social Sciences, Mostar, Bosnia and Herzegovina)
- Information Technology as a Support to Education**
79. K. Šorić (Zagreb School of Economics and Management, Croatia)
- Teaching Business Mathematics Using Computers**
80. H. Jaakkola (Tampere University, Pori, Finland), J. Henno (Tallinn University of Technology, Estonia), J. Mäkelä (University of Lapland, Rovaniemi, Finland), B. Thalheim (Christian Albrechts University, Kiel, Germany)
- Artificial Intelligence Yesterday, Today and Tomorrow**
81. D. Radolović (Italian High School Dante Alighieri Pula, Croatia)
- How Much Has Technology Dehumanized Us in School**
82. M. Brkić Bakarić (University of Rijeka, Department of Informatics, Croatia)
- Teaching Computer-Assisted Translation: A Proposal for Course Content**
83. I. Ružić (I. Primary School Čakovec, Croatia), L. Zima Krnelić (Primary School Vežica, Rijeka, Croatia), N. Mota (Agrupamento de Escolas do Vale de Ovil, Baiao, Portugal), M.D. Forte (Istituto Comprensivo "Carducci Paolillo", Cerignola, Italy), F. Diramali Dildar (Akçansa Fatih Sultan Mehmet Ortaokulu, İstanbul, Turkey)
- Young Entrepreneurs in Action**
84. S. Babić (Polytechnic of Rijeka, Croatia), T. Orehovački (Faculty of Informatics, Pula, Croatia)
- Perceived Hedonic and Content Quality of Social Networking Sites**
85. S. Vukmirović, Z. Čapko, A. Babić (Faculty of Economics and Business, Rijeka, Croatia)
- The Exhaustive Search Algorithm in the Transport Network Optimization on the Example of Urban Agglomeration Rijeka**
86. Z. Prohaska (Education and Teacher Training Agency, Rijeka, Croatia), Z. Prohaska, I. Uroda (Faculty of Economics and Business, Rijeka, Croatia)
- Learning of Color in Croatian Primary Schools**

22.05.19. 15<sup>00</sup>-19<sup>00</sup>

Hall · Dvorana Leut A, Remisens Hotel Admiral

23.05.19. 10<sup>30</sup>-13<sup>00</sup>, 15<sup>00</sup>-19<sup>00</sup>

Hall · Dvorana Galija, Remisens Hotel Admiral

## CHAIRS · VODITELJI

**Vlado Sruk**, [vlado.sruk@fer.hr](mailto:vlado.sruk@fer.hr) (University of Zagreb, Croatia), **Dejan Škvorc** (University of Zagreb, Croatia), **Jadranko F. Novak** (Nomen, Croatia)

## STEERING COMMITTEE · VODITELJSTVO

**M. Colnarič** (University of Maribor, Slovenia), **Ž. Hocenski** (University of Osijek, Croatia), **N. Guid** (University of Maribor, Slovenia)

## PANEL · OKRUGLI STOL

Intelligent Production

## INVITED LECTURES · POZVANA PREDAVANJA

1. G. Brunetti (Danieli Automation S.p.A., Buttrio, Italy)  
**Danieli Automation Approach to Intelligent Plant**
2. G. Brunetti (Danieli Automation S.p.A., Buttrio, Italy)  
**Q3OPT: Automatic Scheduling in Meltshop**
3. Z. Kovačić (Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia)  
**Industry 4.0: Experience of Technology Transfer from an Academic Laboratory to Manufacturing Sites of Industrial Partners**

## PAPERS · RADOVI

## INTERNET OF THINGS

1. M. Ullah, K. Smolander (LUT School of Engineering Science, Lappeenranta, Finland)  
**Highlighting the Key Factors of an IoT Platform**
2. J. Raychev, G. Hristov, D. Kinaneva, P. Zahariev ("Angel Kanchev" University of Ruse, Telecommunications Department, Bulgaria)  
**Cloud Connected Smart Birdhouse for Environmental Parameter Monitoring**
3. E. Guberović, F. Krišto, P. Krivić, I. Čavrak (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)  
**Assessing Compression Algorithms on IoT Sensor Nodes**
4. J. Knežović, B. Pervan (Faculty of Electrical Engineering and Computing, Zagreb, Croatia), Z. Relja (Brain Information Technologies LLC, Zagreb, Croatia), J. Knežović (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)  
**Project Houseleek - A Case Study of Applied Object Recognition Models in Internet of Things**

## DATA ANALYTICS

1. L. Tadić, P. Afrić, L. Šikić, A.S. Kurđija, V. Klemo, G. Delač, M. Šilić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)  
**Analysis and Comparison of Exact and Approximate Bin Packing Algorithms**
2. E. Musa, G. Delač, M. Šilić, K. Vladimir (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)  
**Comparison of Relational and Time-Series Databases for Real-Time Massive Datasets**
3. M. Požek, L. Šikić, P. Afrić, A.S. Kurđija, K. Vladimir, G. Delač, M. Silić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)  
**Performance of Common Classifiers on Node2vec Network Representations**
4. D. Miljković (HEP Croatian Electricity Company, Zagreb, Croatia)  
**Analysis and Synthesis of Fountain Sound**

5. D. Miljković (HEP Croatian Electricity Company, Zagreb, Croatia)

## Detecting Aircraft Piston Engine Problems by Analysis of Engine Parameters

### ROBOTICS AND AUTOMATION

1. D. Kostylev, A. Tolstikhin, S. Ul'yanov (Matrosov Institute for System Dynamics and Control Theory of SB RAS, Irkutsk, Russia)

#### Development of the Complex Modelling System for Intelligent Control Algorithms Testing

2. K. Bedenko (Matrosov Institute for System Dynamics and Control Theory of SB RAS, Irkutsk, Russia)

#### Algorithmic and Programming Approaches to the Underwater Terrain Generation

3. M. Vukić, B. Grgić, D. Dinčir, L. Kostelac, I. Marković (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)

#### Unity Based Urban Environment Simulation for Autonomous Vehicle Stereo Vision Evaluation

4. K. Blašković, D. Milovan (TEMA LLC, Pula, Croatia)

#### Remote Control System Concept in Electric and Hybrid Marine Propulsion Objects

5. M. Švec (Faculty of Electrical Engineering and Computing, Zagreb, Croatia), K. Hrvatinčić (Rimac Automobili LLC, Sveta Nedelja, Croatia), Š. Ileš, J. Matuško (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)

#### Predictive Torque Vectoring Vehicle Control Based on a Linear Time Varying Model

### EMBEDDED SYSTEMS AND APPLICATIONS

1. A. Susuri (Faculty of Computer Science, Prizren, Kosovo), M. Hamiti, M. Apostolova Trpkovska (Faculty of Contemporary Sciences and Technologies, Tetovo, Macedonia), E. Mollakuqe (Faculty of Computer Science, Prizren, Kosovo)

#### LTP-Based Validation of a Modified Linux Real-Time Environment

2. I. Piljić, L. Dragić, A. Duspara, M. Čobrnić, H. Mlinarić, M. Kovač (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)

#### Bolt65 – Performance-optimized HEVC HW/SW Suite for Just-in-Time Video Processing

3. L. Strižić (Google Zürich, Switzerland), B. Pervan, J. Knezović (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)

#### Deep Learning Accelerator on Programmable Heterogeneous System with RISC-V Processor

4. S. Mulhem, M. Mohammad, W. Adi (Technische Universität Braunschweig, Germany)

#### A New Low-Complexity Cipher Class for Clone-Resistant Identities

### PROFESSIONAL PAPERS IN CROATIAN

1. M. Mokrovčak (Elektron Erma-Strmec LLC, Stubičke Toplice, Croatia), M. Lučan, G. Malčić (Zagreb University of Applied Sciences, Croatia)

#### Regulator sustava centralnog grijanja s kompenzacijom po vanjskoj temperaturi

2. M. Kos (PIK Vrbovec - Meat Industry Inc., Zagreb, Croatia), M. Lučan, G. Malčić (Zagreb University of Applied Sciences, Croatia)

#### Automatizacija proizvodne linije u mesnoj industriji

3. M. Horvatić (University North, Department of Electrical Engineering, Varaždin, Croatia), K. Lazar (BHS Corrugated Strojevi LLC, Varaždin, Croatia), M. Mikac (University North, Department of Electrical Engineering, Varaždin, Croatia)

#### Realizacija sustava za kontrolu pristupa temeljenog na Raspberry platformi

22.05.19. 15<sup>00</sup>-19<sup>00</sup>  
23.05.19. 09<sup>30</sup>-13<sup>00</sup> 15<sup>00</sup>-19<sup>00</sup>

Hall · Dvorana Liburna, Remisens Hotel Admiral

**CHAIRS · VODITELJI**

**Slobodan Ribarić**, [slobodan.ribaric@fer.hr](mailto:slobodan.ribaric@fer.hr) (University of Zagreb, Croatia), **Andrea Budin** (Ericsson Nikola Tesla, Zagreb, Croatia)

**SUBMITTED PAPERS · RADOVI**

1. A. Stojanović (Zagreb University of Applied Sciences, Croatia), N. Lazić (Faculty of Humanities and Social Sciences, Zagreb, Croatia)

**A Method for Estimating Variations in Speech Tempo from Recorded Speech**

2. P.V. Georgieva (Burgas Free University, Bulgaria), R. Dolchinkov (Faculty of Computer Science and Engineering, Burgas, Bulgaria)

**Fuzzy Models for Managing a Micro Grid PV System**

3. I. Stančin, A. Jović (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)

**An Overview and Comparison of Free Python Libraries for Data Mining and Big Data Analysis**

4. J. Grönman, P. Sillberg, P. Rantanen, M. Saari (Faculty of Information Technology and Communication Sciences, Pori, Finland)

**People Counting in a Public Event - Use Case: Free-to-Ride Bus**

5. V.G. Bogdanova, S.A. Gorsky (Matrosov Institute for System Dynamics and Control Theory of SB RAS, Irkutsk, Russia)

**Multiagent Technology for Parallel Implementation of Boolean Constraint Method for Qualitative Analysis of Binary Dynamic Systems**

6. D. Baeva ("Angel Kanchev" University of Ruse, Computer Science Department, Bulgaria), B. Baev (American University in Bulgaria, Blagoevgrad, Bulgaria)

**Semantic Approach in Encoding of the Meanings in Bulgarian Folklore Embroidery in Digital Libraries**

7. G.S. Maltugueva, A.Y. Yurin (Matrosov Institute for System Dynamics and Control Theory of SB RAS, Irkutsk, Russia)

**Improving Case-Based Reasoning with the Aid of Multi-Criteria and Group Decision-Making Methods**

8. A.F. Berman, N.O. Dorodnykh, O.A. Nikolaychuk, A.Y. Yurin (Matrosov Institute for System Dynamics and Control Theory of SB RAS, Irkutsk, Russia)

**Event Trees Transformation for Rule Bases Engineering**

9. D. Kinaneva, G. Hristov, J. Raychev, P. Zahariev ("Angel Kanchev" University of Ruse, Telecommunications Department, Bulgaria)

**Early Forest Fire Detection Using Drones and Artificial Intelligence**

10. N. Vrbčević, I. Mijić, D. Petrinović (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)

**Emotion Classification Based on Convolutional Neural Network Using Speech Data**

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**A Novel NLP-FUZZY System Prototype for Information Extraction from Medical Guidelines**

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**Parallel Framework for Evolutionary Black-box Optimization with Application to Algebraic Cryptanalysis**
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**Unconstraint Meitei Mayek Handwritten Character Recognition by Fusion of Local and Global Attributes**
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**Computational Study of Time Constrained Influence Maximization Problem under Deterministic Linear Threshold Model for Networks with Nonuniform Thresholds**
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**Short-Term Forecasting of Electricity Consumption Using Artificial Neural Networks - an Overview**
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**Using High Performance Computing in Vehicles to Create Image Datasets for Deep Learning**
25. P.K. Bhagat (National Institute of Technology Manipur, Imphal, India), P. Choudhary (National Institute of Technology Hamirpur, India), K.M. Singh (National Institute of Technology Manipur, Imphal, India)  
**Two Efficient Image Bag Generators for Multi-Instance Multi-Label Learning**
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**Feature Selection for Improved Classification of Protein Structures**
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31. I. Hrga (Faculty of Informatics, Pula, Croatia), M. Ivašić-Kos (University of Rijeka, Department of Informatics, Croatia)

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32. A. Stipić, T. Bronzin, B. Prole (CITUS LLC, Zagreb, Croatia), K. Pap (Faculty of Graphic Arts, Zagreb, Croatia)

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33. K. Vidović (Ericsson Nikola Tesla Inc., Zagreb, Croatia), S. Mandžuka, M. Šoštarić (Faculty of Transport and Traffic Sciences, Zagreb, Croatia)

### **National Access Point for Provision of EU-wide Multimodal Travel Information Services**

34. D. Marčetić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia), L. Maleš (Faculty of Humanities and Social Sciences, Split, Croatia), S. Ribarić (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)

### **Crowd Motion Pattern Detection at the Microscopic Level**

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### **Investigating Modern Cars**

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### **Investigating File Use and Knowledge with Windows 10 Artifacts**

5. T. Velki (Faculty of Education, Osijek, Croatia), A. Mayer, J. Noret (Faculty of Arts and Humanities, Aachen, Germany)

### **Development of a New International Behavioral-Cognitive Internet Security Questionnaire: Preliminary Results from Croatian and German Samples**

6. C.-K. Yang, C.-H. Kao, Y.-C. Lai, N.-W. Lo (National Taiwan University of Science and Technology, Taipei, Taiwan)

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### **Influence of Digital Transformation Drivers on Business Model creation**

2. M. Nikitović (College for Information Technologies, Zagreb, Croatia), A. Mahmutović (Elektroprojekt, Zagreb, Croatia)

### **Hidden Costs of ERP Implementation**

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**Conceptual Framework for Entity Integration from Multiple Data Sources**
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**Digital Transformation Case Studies across Industries – Literature Review**
9. M. Matetić (University of Rijeka, Department of Informatics, Croatia)  
**Mining Learning Management System Data Using Interpretable Neural Networks**
10. A. Tunjić (Multicom LLC, Zagreb, Croatia)  
**Automation of Data Lake Ingestion Process from Various Sources**
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**Big Data for Smart Factories: A Bibliometric Analysis**
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**Detecting Credit Card Fraud Using Selected Machine Learning Algorithms**
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**Analysis of the Simulation-based Procurer Behavior Determinants**
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**Game-to-Game Prediction of NBA Players' Points in Relation to Their Season Average**

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## INVITED LECTURE · POZVANO PREDAVANJE

M. Mauher, D. Salamon (Zagreb University of Applied Sciences, Croatia)

**Exogenous and Endogenous Drivers of Digitized Economic and Social Transformations**

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1. J. Raychev, G. Hristov, D. Kinaneva, P. Zahariev ("Angel Kanchev" University of Ruse, Telecommunications Department, Bulgaria)

**Workflow for Development and Integration of Digital Content for Holographic Displays**

2. M. Pejić Bach, K. Dumčić, B. Žmuk, A. Bartolić, J. Zoroja (Faculty of Economics and Business, Zagreb, Croatia)

**Use of Hierarchical Clusters Analysis in Identification of Obstacles to Introduction of e-Commerce in European Countries**

3. A. Skendžić (College of Information Technology, Zagreb, Croatia), B. Kovačić (University of Rijeka, Department of Informatics, Croatia), L. Ljubičić (Croatian Pension Insurance Institute, Zagreb, Croatia)

**Cost-Effective Transition to Wi-Fi 5 Standard in Small Office / Home Office (SOHO) Environment**

4. N. Žajdela Hrustek, G. Bubaš, A. Čizmešija (Faculty of Organization and Informatics, Varaždin, Croatia)

**Usluge e-uprave za studente: usporedba nekoliko zemalja i rezultati anketiranja studenata**

5. N. Vlahović, Z. Baće (Faculty of Economics and Business, Zagreb, Croatia)

**Dedicated Wireless Personal Area Network Specification for Retail Shop Management**

6. M. Rašić (Zagreb School of Economics and Management, Croatia), M. Milenković, G. Vojković (Faculty of Transport and Traffic Sciences, Zagreb, Croatia)

**Electronic Auction in European and Croatian Public Procurement Law**

7. M. Alić, V. Antolović (Zagreb University of Applied Sciences, Croatia)

**Percepcija društveno odgovornog poslovanja kod generacije Z**

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**An Overview of Security Challenges of Seaport IoT Systems**

9. S. Bizant (Vocational College, Kranj, Slovenia)

**Financijska pismenost studenata Više stručne škole ŠČ Kranj**

10. N.M. Novak, M. Rabiee, A.M. Tjoa (Vienna University of Technology, Austria)

**ICTs for Education: An Inclusive Approach to Addressing Challenges Faced by Roma Communities in Europe**

11. J. Miočić, Lj. Zekanović-Korona (University of Zadar, Department of Tourism and Communication Sciences, Croatia), B. Bosančić (Faculty of Humanities and Social Sciences, Osijek, Croatia)

**Information Systems in Sports Organizations: Case Study of the Sports Association of the City of Zadar**

12. F. Gabela, A. Gabela, J. Gabela (BH Telecom, Sarajevo Inc., Bosnia and Herzegovina)

**Informacijske tehnologije i intelektualno vlasništvo s osvrtom na regulaciju kaznenih djela protiv intelektualnog vlasništva u Bosni i Hercegovini**

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**Developing a Communication Application System for Chamwino Small-Scale Farmers in Tanzania: A Participatory Design Research**

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**Smart Specialization within Industry 4.0 Network Strategies**

15. M. Marolt, A. Pucihar, G. Lenart, D. Vidmar (Faculty of Organizational Sciences, Kranj, Slovenia)

**Digital Transformation Scoreboard – Case of Slovenia and Croatia**

16. M. Jović (Faculty of Maritime Studies, Rijeka, Croatia) N. Kavran (Faculty of Transport and Traffic Sciences, Zagreb, Croatia), S. Aksentijević (Aksentijević Forensics and Consulting LLC, Viškovo, Croatia), E. Tijan (Faculty of Maritime Studies, Rijeka, Croatia)

**The Transition of Croatian Seaports into Smart Ports**

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**Students' Perception of Studying in Digital Environment and Preparedness for Workplaces in Digital Economy - Current State and Perspectives**

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**The Potential of ICT-Enabled Social Innovation**

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**Ontology Literature Review as Guidelines for Improving Croatian Qualification Framework**

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21. M. Kljajić Borštnar (Faculty of Organizational Sciences, Kranj, Slovenia), T. Ilijiaš (Arctur LLC, Nova Gorica, Slovenia)

**Assessment of High Performance Computing Services Potential of SMEs**

22. P. Karanikić, M. Matulja (University of Rijeka, Department of Biotechnology, Croatia), E. Tijan (Faculty of Maritime Studies, Rijeka, Croatia)

**The Role of University Technology Transfer Process in Digital Economy**

21.05.19. 14<sup>00</sup>-19<sup>00</sup>

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## INVITED LECTURES · POZVANA PREDAVANJA

1. R. Christianson (Olin College of Engineering, Needham, United States)  
**Engineering Education Transformation at Olin**
2. P. Zenzerović (Institute for Youth Development and Innovativity, Zagreb, Croatia)  
**Early Development of Critical and Computational Thinking**

## PAPERS · RADOVI

1. M. Špoljarić, A. Prelas Kovačević, M. Hajba (Virovitica College, Croatia)  
**Učenje „e-learning“ putem e-learninga – primjer iz prakse**
2. D. Delija, G. Sirovatka, D. Tulićić, M. Žagar (Zagreb University of Applied Sciences, Croatia)  
**Comparison of Graduate Specialist Study of Computing and Specialist Study of Information Security and Digital Forensics at the Technical Polytechnic Zagreb**
3. B. Pejčinović (Maseeh College of Engineering and Computer Science, Portland, United States)  
**Introducing Cornerstone Courses into Electrical and Computer Engineering Curriculum**
4. F. Urem (Polytechnic of Šibenik, Croatia), C. Vlad, I. Voncila (Faculty of Automation, Computer Sciences, Electronics and Electrical Engineering, Galati, Romania)  
**Education for Technology Transfer to Small and Medium Entrepreneurship - Results of the T4 Project Implementation**
5. V. Paunović, S. Tomić, I. Bosnić, M. Žagar (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)  
**A System for Managing Classes with a Large Number of Participants**
6. G.I. Ivanova, V. Kozov and P. Zlatarov ("Angel Kanchev" University of Ruse, Computer Systems and Technologies Department, Bulgaria)  
**Gamification in Software Engineering Education**
7. P.V. Georgieva (Burgas Free University, Bulgaria), E.P. Nikolova (Faculty of Computer Science and Engineering, Burgas, Bulgaria)  
**Enhancing Communication Competences through Mathematics in Engineering Curriculum**
8. Ž. Deljkić, P. Pale, J. Petrović (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)  
**Computer-based Methods for Assessing Information Security Competencies**
9. G.I. Ivanova ("Angel Kanchev" University of Ruse, Computer Systems and Technologies Department, Bulgaria), A.I. Ivanov (Faculty of Mechanical and Manufacturing Engineering, Ruse, Bulgaria), M. Radkov ("Angel Kanchev" University of Ruse, Computer Systems and Technologies Department, Bulgaria)  
**3D Virtual Learning and Measuring Environment for Mechanical Engineering Education**
10. I.I. Stoev, V.A. Mutkov (Faculty of Electrical Engineering, Electronics and Automation, Ruse, Bulgaria), A.N. Borodzhieva ("Angel Kanchev" University of Ruse, Telecommunications Department, Bulgaria)  
**Laboratory Module for Training in the Subject "Specialized Communication Networks in the Vehicles"**
11. A.N. Borodzhieva ("Angel Kanchev" University of Ruse, Telecommunications Department, Bulgaria)  
**Modeling of Cryptosystems Based on Linear Feedback Shift Registers Using Spreadsheets**
12. M. Zelenika Zeba, K. Friganović (Faculty of Electrical Engineering and Computing, Zagreb, Croatia) M. Palmović (Faculty of Education and Rehabilitation Sciences, Zagreb, Croatia), V. Išgum (University of Zagreb, Croatia), M. Cifrek (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)  
**Assessment of Mental Fatigue during Examination Period with P300 Oddball Paradigm**

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**How Green is Your Software?**

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**Using Modern Web Frameworks when Developing an Education Application: A Practical Approach**

2. B. Šumak, V. Podgorelec, S. Karakatič (Faculty of Electrical Engineering and Computer Science, Maribor, Slovenia), K. Dolenc, A. Šorgo (Faculty of Natural Sciences and Mathematics, Maribor, Slovenia)

**Development of an Autonomous, Intelligent and Adaptive e-Learning System**

3. A. Tanović, I. Serna-Marjanović (Faculty of Electrical Engineering, Sarajevo, Bosnia and Herzegovina)

**Development of a New Improved Model of ISO 20000 Standard Based on Recommendations from ISO 27001 Standard**

4. D. Savchenko, J. Kasurinen, O. Taipale (LUT School of Engineering Science, Lappeenranta, Finland)

**Smart Tools in Software Engineering: A Systematic Mapping Study**

5. M. Fandáková, B. Bučko, K. Zábovská (University of Žilina, Slovakia)

**Parametric versus Direct Modeling in Manufacturing Process Management**

6. I. Fosić (HEP Telecommunications, Osijek, Croatia), K. Solić (Faculty of Medicine, Osijek, Croatia)

**Graph Database Approach for Data Storing, Presentation and Manipulation**

7. S. Hyrynsalmi (Tampere University, Pori, Finland), S. Rauti, E. Kaila (University of Turku, Department of Future Technologies, Finland)

**Bridging the Gap between Software Architecture and Business Model Development: A Literature Study**

8. B. Bučko, K. Zábovská, M. Zábovský (University of Žilina, Slovakia)

**Ontology as a Modeling Tool within Model Driven Architecture Abstraction**

9. Y. Kalmukov, I. Valova ("Angel Kanchev" University of Ruse, Computer Systems and Technologies Department, Bulgaria)

**Design and Development of an Automated Web Crawler Used for Building Image Databases**

10. A. Čerimagić Hasibović, A. Tanović (Faculty of Electrical Engineering, Sarajevo, Bosnia and Herzegovina)

**PRINCE2 vs Scrum in Digital Business Transformation**

11. L. Hrgarek, T. Welzer, A. Kamišali (Faculty of Electrical Engineering and Computer Science, Maribor, Slovenia)

**Version Control Features for Versioning - Required Documents within Relation Databases**

12. M. Ponjavić (International Burch University, Sarajevo, Bosnia and Herzegovina), A. Karabegović (Faculty of Electrical Engineering, Sarajevo, Bosnia and Herzegovina), E. Ferhatbegović (GAUSS LLC, Tuzla, Bosnia and Herzegovina), I. Bešić (Faculty of Electrical Engineering, Sarajevo, Bosnia and Herzegovina)

**Spatial Data Integration in Heterogeneous Information Systems' Environment**

13. K. Kous, S. Kuhar, M. Pušnik, B. Šumak (Faculty of Electrical Engineering and Computer Science, Maribor, Slovenia)

### **Comparative Analysis of Faculties' Websites Accessibility Based on an Automatic Evaluation**

14. A.G. Feoktistov, S.A. Gorsky, I.A. Sidorov (Matrosov Institute for System Dynamics and Control Theory of SB RAS, Irkutsk, Russia), A. Tchernykh (Ivannikov Institute for System Programming of RAS, Moscow, Russia)

### **Continuous Integration in Distributed Applied Software Packages**

15. M. Gradišnik, T. Beranič, S. Karakatič (Faculty of Electrical Engineering and Computer Science, Maribor, Slovenia), G. Mauša (Faculty of Engineering, Rijeka, Croatia)

### **Adapting God Class Thresholds for Software Defect Prediction: A Case Study**

16. E. Leka (South East European University, Tetovo, Macedonia), L. Lamani (Polytechnic University of Tirana, Albania), B. Selimi (South East European University, Tetovo, Macedonia), E. Deçolli (Polytechnic University of Tirana, Albania)

### **Design and Implementation of Smart Contract: A Use Case for Geo-Spatial Data Sharing**

**SSRCI**

**SMART, SUSTAINABLE AND RESILIENT CITIES AND INFRASTRUCTURES**  
**PAMETNI, ODRŽIVI I ELASTIČNI GRADOVI I INFRASTRUKTURA**

(EN)

**23.05.19. 10<sup>30</sup>-13<sup>00</sup> 15<sup>00</sup>-19<sup>00</sup>**

**Hall · Dvorana Collegium, Grand Hotel Adriatic**

**CHAIRS · VODITELJI**

**Adrian Boukalov**, [adrian.boukalov@eai.eu](mailto:adrian.boukalov@eai.eu) (EAI Belgium, Gent, Belgium), **Dragan Čišić** (University of Rijeka, Croatia)

**STEERING COMMITTEE · VODITELJSTVO**

**M. Airaksinen** (Finnish Association of Civil Engineers, Helsinki, Finland), **D. Jardas** (Institution Regional Energy Agency Kvarner, Rijeka, Croatia), **P. Kess** (University of Oulu, Finland), **S. Krile** (University of Dubrovnik, Croatia), **P. Timmers** (University of Oxford, UK)

**PROGRAM COMMITTEE · PROGRAMSKO VODITELJSTVO**

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**PAPERS · RADOVI**

1. W. Brenner, N. Adamovic (Institute of Sensor and Actuator Systems, Vienna, Austria)  
**Creating Sustainable Solutions for Photovoltaics**
2. Z.-G. Liu, X.-Y. Li (School of Management, Harbin Institute of Technology, China), L.-M. Qiao (Beijing Institute of New Technology Applications, China)

### **Driving Model of Big Data Governance in Urban Community Safety Service**

3. X.-Y. Li, Z.-G. Liu (School of Management, Harbin Institute of Technology, China), L.-M. Qiao (Beijing Institute of New Technology Applications, China)
4. L. Faramondi, G. Oliva, L. Ardito, A. Crescenzi, M. Caricato (Campus Bio-Medico University, Rome, Italy), M. Tessei (Rete Ferroviaria Italiana, Rome, Italy), A. Onetti Muda, R. Setola (Campus Bio-Medico University, Rome, Italy)

### **Typhoon Emergency Evacuation Vehicle Disposition Model Based on Capacity Analysis**

5. L. Faramondi (Campus Bio-Medico University, Rome, Italy), P. Bragatto (National Institute for Insurance against Accidents at Work, Monte Porzio Catone, Italy), C. Fioravanti (Campus Bio-Medico University, Rome, Italy), M.G. Gnoni (University of Salento, Lecce, Italy), S. Guarino, R. Setola (Campus Bio-Medico University, Rome, Italy)

### **Use of Drone to Improve Healthcare Efficiency and Sustainability**

6. L. Faramondi (Campus Bio-Medico University, Rome, Italy), P. Bragatto (National Institute for Insurance against Accidents at Work, Monte Porzio Catone, Italy), C. Fioravanti (Campus Bio-Medico University, Rome, Italy), M.G. Gnoni (University of Salento, Lecce, Italy), S. Guarino, R. Setola (Campus Bio-Medico University, Rome, Italy)

## **A Privacy-Oriented Solution for the Improvement of Workers Safety**

6. F. Holik (Faculty of Electrical Engineering and Informatics, Pardubice, Czech Republic), U. Roedig (School of Computer Science and Information Technology, Cork, Ireland), N. Race (School of Computing and Communications, Lancaster, United Kingdom)

## **LoRa-SDN: Providing Wireless IoT Edge Network Functions via SDN**

7. B. Mihajlovski (South East European University, Tetovo, Macedonia), B. Fetaji (Mother Teresa University, Skopje, Macedonia), L. Abazi, M. Fetaji (South East European University, Tetovo, Macedonia)

## **Analyses of Ecological and Energy Footprint as Indicators of Energy Management in the Transition to Sustainability Using Social Networks**

8. M. Jadrić, M. Ćuković, D. Pavlić (Faculty of Economics, Business and Tourism, Split, Croatia)

## **Review of Discrete Simulation Modelling Use in the Context of Smart Cities**

9. L. Tišljaric, T. Carić, T. Erdelić, M. Erdelić (Faculty of Transport and Traffic Sciences, Zagreb, Croatia)

## **Traffic State Estimation Using Speed Profiles and Convolutional Neural Networks**

10. J. Pivar, N. Vlahović (Faculty of Economics and Business, Zagreb, Croatia)

## **Stakeholder Support as Critical Success Factor in Adopting Big Data Technologies for Smart Cities**

11. A. Barišić, V. Amaral (Universidade NOVA de Lisboa, Caparica, Portugal), M. Challenger (University of Antwerp, Belgium)

## **Enhancing Occupants Comfort and Well-being through a Smart Office Setup**

12. L. Franchina, A. Socal (Italian Association of Critical Infrastructure Experts, Rome, Italy)

## **Innovative Predictive Model for Smart City Security Risk Assessment**

13. M. Mimica, G. Krajačić (Faculty of Mechanical Engineering and Naval Architecture, Zagreb, Croatia), D. Medved (Ericsson Nikola Tesla Inc., Zagreb, Croatia), D. Jardas (Regional Energy Agency Kvarner, Rijeka, Croatia)

## **Digitalization and Smart Islands in the Kvarner Archipelago**

14. I. Zajc (IBM Slovenia, Ljubljana, Slovenia), R. Sernek (AV Living Lab, Ljubljana, Slovenia), G. Lenart, A. Pucihar (Faculty of Organizational Sciences, Kranj, Slovenia)

## **Autonomous Mobility and User Perception: A Case of City as a Lab in Slovenia**

15. V. Rosato, A. Tofani, A. Di Pietro, M. Pollino, S. Giovinazzi, L. Lavalle, G. D'Agostino (Enea, Laboratory for the Analysis and Protection of Critical Infrastructures, Rome, Italy)

## **The European Infrastructure Simulation and Analysis Centre (EISAC) Initiative and its Technological Assets**

16. M. Zysińska (Motor Transport Institute, Warsaw, Poland)

## **Comparative Analysis of the Selected Practices in the Field of the Urban Logistics of Polish Cities**

17. F. Molinari (Massa, Italy), B. Kovačić (University of Rijeka, Department of Informatics, Croatia)

## **Unleashing the Power of Urban Living Labs to Make our Cities Humanly Smart**

18. H.H. Abdeltawab, A.I. Mohamed (Penn State Altoona, United States)

## **The Potential of Mobile Energy Storage in Microgrids**

21.05.19. 12<sup>00</sup>-13<sup>00</sup>

Hall · Dvorana Liburna, Remisens Hotel Admiral

22.05.19. 17<sup>00</sup>-19<sup>00</sup>

Hall · Dvorana Collegium, Grand Hotel Adriatic

## CHAIRS · VODITELJI

**Csaba Szabó**, [csaba.szabo@tuke.sk](mailto:csaba.szabo@tuke.sk) (Technical University of Košice, Slovakia), **Tihana Galinac Grbac** (Juraj Dobrila University of Pula, Croatia)

## STEERING COMMITTEE · VODITELJSTVO

**L. Csató** (Babeş-Bolyai University, Cluj-Napoca, Romania), **J. Paulo Fernandes** (University of Coimbra, Portugal), **C. Grelck** (University of Amsterdam, Netherlands), **T. Galinac Grbac** (Juraj Dobrila University of Pula, Croatia), **J. Kollár** (Technical University of Košice, Slovakia), **P. Koopman** (Radboud University, Nijmegen, Netherlands), **Š. Korečko** (Technical University of Košice, Slovakia), **A. Oprescu** (University of Amsterdam, Netherlands), **R. Plasmeijer** (Radboud University, Nijmegen, Netherlands), **Z. Porkoláb** (Eötvös Loránd University, Budapest, Hungary), **J. Saraiva** (University of Minho, Braga, Portugal), **E. Somova** (University of Plovdiv, Bulgaria), **C. Szabó** (Technical University of Košice, Slovakia), **V. Zsók** (Eötvös Loránd University, Budapest, Hungary)

## INVITED LECTURE · POZVANO PREDAVANJE

1. A.-B. Salem (Faculty of Computer and Information Sciences, Cairo, Egypt)  
**Knowledge Engineering Paradigms for Smart Education and Learning Systems**

## PAPERS · RADOVI

1. T. Hynninen (South-Eastern Finland University of Applied Sciences, Mikkeli, Finland), A. Knutas, J. Kasurinen (LUT School of Engineering Science, Lappeenranta, Finland)  
**Designing Early Testing Course Curricula with Activities Matching the V-Model Phases**
2. G. Nagy (Faculty of Informatics, Budapest, Hungary)  
**Comparing Software Complexity of Monadic Error Handling and Using Exceptions**
3. M. Lubbers, P. Koopman, R. Plasmeijer (Institute for Computing and Information Sciences, Nijmegen, Netherlands)  
**Multitasking on Microcontrollers Using Task Oriented Programming**
4. M. Mészáros, M. Cserép, A. Fekete (Eötvös Loránd University, Budapest, Hungary)  
**Delivering Comprehension Features into Source Code Editors through LSP**
5. C. Szabó (Faculty of Electrical Engineering and Informatics, Košice, Slovakia)  
**Software Evolution and Profiling in a Competitive Environment**
6. Š. Korečko (Faculty of Electrical Engineering and Informatics, Košice, Slovakia)  
**Project-Based Approach to Teaching Event-Driven Simulation**
7. D. Karuovic, I. Tasic („Mihajlo Pupin“ Technical Faculty, Zrenjanin, Serbia), C. Szabo (Faculty of Electrical Engineering and Informatics, Košice, Slovakia), V. Vidaček Hainč (Faculty of Organization and Informatics, Varaždin, Croatia), Z. Namestovski (Teacher Training Faculty in the Hungarian Language, Subotica, Serbia), M. Kocaleva (Faculty of Computer Science, Štip, Macedonia), D. Glušac, D. Milanov („Mihajlo Pupin“ Technical Faculty, Zrenjanin, Serbia)  
**Influence of Student Computer Literacy on Qualification for Creating Virtual Learning Environments**
8. A.-B. Salem (Faculty of Computer and Information Sciences, Cairo, Egypt), A.Y. Nikitaeva (Faculty of Economics, Rostov-on-Don, Russia)  
**Smart Education for Digital Economy**

23.05.19. 10<sup>15</sup>-13<sup>00</sup>

Hall · Dvorana Camelia 2, Grand Hotel Adriatic

## CHAIRS · VODITELJI

**Matej Janjić**, [matej.janic@fer.hr](mailto:matej.janic@fer.hr) (University of Zagreb, Croatia), **Dubravko Sabolić** (University of Zagreb, Croatia), **Nikola Filip Fijan** (University of Zagreb, Croatia)

## PAPERS · RADOVI

1. L. Amelio (Faculty of Medicine and Surgery, Bologna, Italy), A. Amelio (DIMES, University of Calabria, Rende, Italy)

**New Frontiers in Document Classification with Applications to Medical Context**

2. I. Pauletić, L. Načinović Prskalo, Marija Brkić Bakarić (University of Rijeka, Department of Informatics, Croatia)

**An Overview of Clustering Models with an Application to Document Clustering**

3. K. Burnik, D. Bjelobrk Knežević (Zagreb University of Applied Sciences, Croatia)

**Using Convolutional Neural Networks for Emoticon Classification**

4. K. Babić, A. Meštrović (University of Rijeka, Department of Informatics, Croatia)

**Visualizations of the Training Process of Neural Networks**

5. M. Bizjak, P. Peer, Ž. Emeršič (Faculty of Computer and Information Science, Ljubljana, Slovenia)

**Mask R-CNN for Ear Detection**

6. I. Permozer (Faculty of Economics and Tourism „Dr. Mijo Mirković“, Pula, Croatia), T. Orehočački (Faculty of Informatics, Pula, Croatia)

**Utilizing Apple's ARKit 2.0 for Augmented Reality Application Development**

7. A. Salihbašić (Faculty of Economics and Tourism „Dr. Mijo Mirković“, Pula, Croatia), T. Orehočački (Faculty of Informatics, Pula, Croatia)

**Development of Android Application for Gender, Age and Face Recognition Using OpenCV**

8. A. Crnjak, D. Jakšić, P. Poščić (University of Rijeka, Department of Informatics, Croatia)

**Query Optimization in Relational Database Systems**

9. I. Puja, P. Poščić, D. Jakšić (University of Rijeka, Department of Informatics, Croatia)

**Overview and Comparison of Several Relational Database Modelling Methodologies and Notations**

10. A. Šag, T. Orehočački (Faculty of Informatics, Pula, Croatia)

**Development of 2D Game with Construct 2**

11. K. Pavlinić, L. Skorin-Kapov (Faculty of Electrical Engineering and Computing, Zagreb, Croatia)

**Network and Service Performance Measurements in a High School Equipped in the Scope of the Pilot Project e-Schools**

12. M. Šipek, B. Mihaljević, A. Radovan (Rochester Institute of Technology, Zagreb, Croatia)

**Exploring Aspects of Polyglot High-Performance Virtual Machine GraalVM**

13. P. Pufek, H. Grgić, B. Mihaljević (Rochester Institute of Technology, Zagreb, Croatia)

**Analysis of Garbage Collection Algorithms and Memory Management in Java**

14. D. Aksentijević, N. Kolačević (Faculty of Economics and Business, Rijeka, Croatia)

**ACL kao računalni alat za pouzdano menadžersko planiranje i odlučivanje**

# 05. LIFELONG EDUCATION – TUTORIALS CJELOŽIVOTNO OBRAZOVANJE – SEMINARI



HR

HEP

INFORMATION AND COMMUNICATION TECHNOLOGY IN THE ELECTRIC POWER SECTOR  
INFORMACIJSKA I KOMUNIKACIJSKA TEHNOLOGIJA U ELEKTROPRIVREDNOJ DJELATNOSTI20.05.19. 09<sup>30</sup>-12<sup>30</sup> 15<sup>30</sup>-19<sup>00</sup>

Hall · Dvorana Camelia 2, Grand Hotel Adriatic

## CHAIRS · VODITELJI

**Vitomir Komen**, vitomir.komen@hep.hr (HEP-ODS d.o.o., Rijeka, Hrvatska), **Ivan Periša** (HEP-ODS d.o.o., Zagreb, Hrvatska), **Renato Ćučić** (HEP-ODS d.o.o., Zagreb, Hrvatska)

## THEMATIC FRAMEWORK · TEMATSKI OKVIR

- napredne tehnologije, spremnici energije, mikromreže, fleksibilna trošila, energetska učinkovitost
- informacijska integracija elektroprivredne organizacije
- informacijska i komunikacijska tehnologija (ICT) u vođenju elektroenergetskog sustava
- IP tehnologija i informacijski sustavi u elektroprivredi
- komunikacije u sustavima upravljanja
- nova rješenja i standardi za SCADA, EMS, DTS i DMS programske sustave
- sekundarni sustavi u elektroenergetskim objektima
- sigurnost sustava procesne informatike
- sustavi namijenjeni vođenju tržišta električne energije

## LECTURES · PREDAVANJA

- Igor Kuzle (Sveučilište u Zagrebu, Fakultet elektrotehnike i računarstva)  
**Izazovi u razvoju naprednih elektroenergetskih mreža**
- Edo Jerkić (AMPnet, Zagreb), Mladen Perkov (Inteligentna energija d.o.o., Zagreb)  
**Mogućnosti primjene blockchain i IoT tehnologije u (mikro)mrežama**
- Azer Viđen (Schneider Electric d.o.o., Zagreb)  
**ADMS - rješenje za održivo upravljanje elektroenergetskim sustavom**
- Davor Petraković (Computer Systems d.o.o., Zagreb)  
**Cisco ACI - SDN u podatkovnom centru**
- Ivica Kontent (Microlink d.o.o., Zagreb)  
**Integracija različitih komunikacijskih tehnologija za pouzdan i učinkovit elektroenergetski sustav**
- Emil Matica (Iteratio d.d., Zagreb)  
**C37.94 protokol u telekomunikacijskim transportnim sustavima**
- Ivan Krajnović, Hrvoje Keko, Stjepan Sučić (Končar-Inženjering za energetiku i transport d.d., Zagreb)  
**Norme kibernetičke sigurnosti i sustavan razvoj proizvoda za automatizaciju postrojenja kao ključ upravljanja sigurnošću kritične infrastructure**
- Marko Ostanek (Check Point, Zagreb), Ivan Šašlin (King ICT d.o.o., Zagreb)  
**Otkrivanje anomalija u OT mreži**

20.05.19. 09<sup>30</sup>-13<sup>00</sup> 15<sup>00</sup>-17<sup>00</sup>

Hall · Dvorana Camelia 1, Grand Hotel Adriatic

**CHAIR · VODITELJ****Dubravko Sabolić**, dubravko.sabolic@hops.hr (HOPS d.o.o., Zagreb, Hrvatska)**ABOUT TUTORIAL · O SEMINARU**

Seminar je namijenjen prevenstveno polaznicima iz poduzeća i ustanova zahvaćenih procesima deregulacije sektora elektroenergetike. O sposobljenost radnika kompanija koje su zahvaćene reformama za rad u novim okolnostima u velikoj mjeri ovisi o dosadašnjem trajanju i uspjehu same reforme sektora.

Ovogodišnji seminar fokusirat će se na reformu tržista električne energije i elektroenergetskog sustava. Tradicionalne granice između igrača u sektoru, kao i koncepti u strateškom osmišljavanju njegovog razvoja te u njegovom operativnom vođenju se brišu, a sve veća decentralizacija i istodobno sve veća potreba za koordinacijom i u operativnoj i u strateškoj domeni nameću potrebu za novim tehnološkim i organizacijskim rješenjima.

Kao i ranijih godina, za obradu gore navedenih tema angažirat ćemo najeminentnije hrvatske stručnjake te kreirati radnu i kolegjalnu atmosferu koja će uroditи zanimljivim diskusijama i suprotstavljanjima stručnih mišljenja. Razmjerno manji format ovog seminara potiče slobodu raspravljanja i razmijene mišljenja, zbog koje na njemu tradicionalno nikad nije dosadno.

**LECTURES · PREDAVANJA**

1. Goran Piškor (HEP-Operator distribucijskog sustava d.o.o., Zagreb)  
**Zakon i uredba o kibernetičkoj sigurnosti operatora ključnih usluga i davatelja digitalnih usluga**
2. Zdravko Lipaščak (HEP-Operator distribucijskog sustava d.o.o., Zagreb)  
**Uspostava napredne mjerne infrastrukture i distribucijskoj mreži**
3. Ratko Mutavdžić (CEE PS Cloud Services, Microsoft Corporation, Zagreb)  
**Uvod u blockchain tehnologiju**
4. Željko Vrban (Hrvatska energetska regulatorna agencija, Zagreb)  
**Primjena blockchain tehnologije u energetskom sektoru**
5. Renata Rubeša, Tin Bobetko (Hrvatski operator prijenosnog sustava d.o.o., Zagreb)  
**Projekt SincroGrid: ciljevi, konцепција i nova tehnološka rješenja**
6. Goran Slipac (Hrvatska elektroprivreda d.d., Zagreb)  
**Časopis Energija i izdavaštvo stručne i znanstvene literature iz područja energetike u Hrvatskoj**

20.05.19. 10<sup>00</sup>-13<sup>00</sup> 14<sup>00</sup>-17<sup>00</sup>  
21.05.19. 10<sup>00</sup>-13<sup>00</sup> 14<sup>00</sup>-17<sup>00</sup>

Hall · Dvorana Bellavista, Grand Hotel Adriatic

#### CHAIRS AND LECTURERS · VODITELJI I PREDAVAČI

**Robert Brekalo**, robert.brekalo@hteurep.hr (HT-Eurep d.o.o., Zagreb, Hrvatska), **Matija Marković** (HT-Eurep d.o.o., Zagreb, Hrvatska)

#### ABOUT TUTORIAL · O SEMINARU

Tvrtka HT-Eurep organizira seminar na kojem će biti predstavljeni novi trendovi s područja projektiranja i proizvodnje u elektronici. Na seminaru će biti prikazana svojstva i mogućnosti najnovijih programskih alata za profesionalno elektroničko projektiranje.

Prezentacije i seminarske vježbe održat će se na PC računalima za sljedeće proizvode:

- Altium Designer – popularni programski paket za projektiranje u elektronici:  
SCHEMATIC, VHDL, SPICE SIMULATOR, PLD, FPGA, PCB, SIGNAL INTEGRITY, SITUS TOPOLOGICAL AUTOROUTER, CAMTASTIC
- TASKING – C/C++ /EC++ compileri za niz DSP-a, 8-, 16-, i 32-bitnih procesora/kontrolera, alati za debugiranje, integracija sa RTOS i TCP/IP rješenjima...
- Maxim Integrated, Silicon Labs, Alliance... - nova tehnološka dostignuća vodećih svjetskih proizvođača integriranih elektroničkih komponentata.

Predavanja će popratiti praktičan rad na računalima, gdje će polaznici biti vođeni stručnjacima za specifična područja i to:

- hijerarhijsko projektiranje i izrada elektične sheme
- analiza oblika signala – analogno-digitalna simulacija
- VHDL projektiranje, CPLD i FPGA optimizacija
- automatsko postavljanje i povezivanje elektroničkih veza
- optimizacija električnih veza
- priprema za proizvodnju tiskanih pločica
- EMC analiza (integritet signala, refleksija, preslušavanje)
- pravila za optimalno analogno projektiranje
- izrada potrebne dokumentacije
- primjena elektroničkih komponenata visoke integracije

Seminar je namijenjen svima koji žele unaprijediti svoje znanje, upoznati mogućnosti najnovijih vrhunskih programskih paketa, te dobiti kvalitetnu edukaciju, što će im omogućiti brži i uspješniji budući rad.

**Oprema:** Sva predavanja i vježbe izvode se na PC računalima

**Materijali:** Zbornik, tiskane materijale i CD-e s primjerima izraditi će HT-Eurep i dobit će ih polaznici seminara.

**E-mail:** hteurep@hteurep.hr

**URL:** <http://www.hteurep.hr>

## 06. GUEST EVENTS GOSTUJUĆI DOGAĐAJI

HAKOM

MARKET DAY  
DAN TRŽIŠTA

HR

23.05.19., 10<sup>30</sup>-12<sup>30</sup>

Congress Hall · Kongresna dvorana, Grand Hotel Adriatic

**Organizatori:** MIPRO i HAKOM

**Kontakt osoba:** Velimir Švedek, velimir.svedek@hakom.hr (HAKOM)

**Voditelj:** Ana Katalinić Mucalo, ana.katalinic@hakom.hr (HAKOM)

**Moderator:** HAKOM

**Uvodničari:** HAKOM, predstavnici operatora i industrije

**Tema i cilj okruglog stola:** "Dan tržišta", u organizaciji Hrvatske regulatorne agencije za mrežne djelatnosti (HAKOM), događaj je koji već nekoliko godina okuplja predstavnike dionika tržišta elektroničkih komunikacija, poštanskih usluga i željezničkih usluga, kao i tijela državne uprave, gospodarstva i medija. Na ovogodišnjem skupu bit će predstavljene najvažnije aktivnosti na tržištu koja HAKOM regulira te ciljevi i zadaci HAKOM-a u budućem razdoblju. Sudionici okruglog stola pod nazivom "Prilagodba na nove trendove i tehnologije" govorit će, između ostalog, o tome kako se pripremaju za 5G tehnologiju, kakva su njihova viđenja i očekivanja od uvođenja 5G tehnologije te kako planiraju razvoj infrastrukture i usluga.



EN

## URBAN INNO

## UTILIZING INNOVATION POTENTIAL OF URBAN ECOSYSTEMS ISKORIŠTAVANJE INOVATIVNOG POTENCIJALA URBANIH EKOSISTEMA

23.05.19., 13<sup>00</sup>-17<sup>30</sup>

Hall · Dvorana Camelia 2, Grand Hotel Adriatic

24.05.19., 09<sup>00</sup>-13<sup>00</sup>

Hall · Dvorana Camelia 2, Grand Hotel Adriatic (closed meeting group)

**About:** Interreg Central Europe project URBAN INNO - Utilizing Innovation Potential of Urban Ecosystems is addressing the challenge to make Central Europe more innovative and competitive by maximizing the innovation potential of smaller and medium sized urban ecosystems. A significantly better linkage of actors within urban innovation ecosystems is needed for a better use of innovation potentials. The project activities of URBAN INNO have been implemented in the ecosystems of the project partners. 5 new quadruple-helix innovation networks are established, and 6 regional/urban innovation plans developed in partnership regions. In parallel, a Toolbox of smart participatory methods and tools has been developed and tested in 9 pilot projects, implemented in partners regions.

### Lectures:

1. Tina Ragužin (City of Rijeka, Croatia)

#### **Opening Remarks & Introduction**

2. Ante Lučić (A-link LLC, Croatia)

#### **Human Capital, Work, and Educational Perspectives on SmartCity Initiatives**

3. Matjaž Gerl (E-zavod, Slovenia)

#### **Involving Users into Urban Innovation: Tools for Facilitating the Process**

4. Nicola Doppio (Hub Innovation Trentino, Italy)

#### **An Introduction to Design Sprint Innovation Challenges**

5. František Janke (Technical University of Košice, Slovakia)

#### **Creating the Agri-Food Digital Marketplace Upon End-Users' Inputs in Košice Region**

6. Balázs Barta (Pannon Business Network, Hungary)

#### **Story of a Successful Digital Innovation Hub in Western Hungary**

7. Bojana Suzić (Fachhochschule Vorarlberg, Austria)

#### **Collaborative Business Model: Quadruple Helix Perspective to Modelling Business Processes**

8. Carina Halper (Forschung Burgenland, Austria)

#### **Burgenland Pilot: A Motivational Pitch for the Energy Strategy**

9. Christin Eckerle (CyberForum, Germany)

#### **Karlsruhe Pilot: Shaping the Vision of Energy Efficiency with the Support of Citizens**

10. Damir Medved (Ericsson Nikola Tesla Inc., Croatia)

#### **Citizen Participation – Key Enabler for Optimal City Governance, Transparency and Trust**

11. Vesna Avguštinčič, Tadej Kurent (Municipality of Maribor, Slovenia)

#### **Engaging Users in Improvement of e-Services**

12. Joanna Rudawska (University of Jan Kochanowski/Kielce Technology Park, Poland)

#### **Modern Technologies in Urban Clusters**

13. Marco Combetto (Trentino Digitale S.p. A., Italy)

#### **Design Thinking as an Instrument for Smart Innovative city Government: The Trentino Pilot Experience and Results**

More details at: [www.interreg-central.eu/urban-inno](http://www.interreg-central.eu/urban-inno)

# 07. EXHIBITION IZLOŽBA



Exhibition of equipment, services, technical and technological solutions  
Izložba opreme, usluga i tehničko-tehnoloških rješenja

## 1 UDRUGA INOVATORA HRVATSKE Zagreb

- CLIK - Controllable Lighting Integration Kit  
*Modularno rješenje za glasovno upravljanje elektroničkim sustavima poput rasvjete, kuhinjskih i ostalih uređaja*
- Corona  
*Bežične slušalice koje koriste neinvazivnu metodu isporuke zvuka*

## 2 IRIM – Institut za razvoj i inovativnost mladih Zagreb

- MakeBlock edukacijski kompleti  
*mBot • mBot Ranger • mBot Ultimate*
- BBC micro:bit edukacijsko mikroračunalno  
*Napredni elektronički micro:bit set - Mjerjenje intenziteta svjetlosti • Napredni elektronički micro:bit set - Pregušivanje svjetlosti • Napredni elektronički micro:bit set - Regulacija temperature • Kreativni projekti: micro:bit sat, igra Lupi kriticu, Kolačić, Termometar, Srce, Kockica, Križić-kružić, Tetris*
- Kreativni projekti s BOSON edukacijskim kompletom
- TTS edukacijski roboti  
*ProBot • BlueBot i BeeBot*
- 3D printer PRUSA MK3

## 3 MJERNE TEHNOLOGIJE d.o.o. Zagreb

- Mjerni instrumenti i rješenja renomiranih proizvođača:  
*Keysight Technologies, EXFO, TEMS, ETS-Lindgren, Ixia, VeEX, CUBRO, Sumitomo, Softing, ELEKTRONIKA, TraceSpan, albedo*

## 4 MICRO-LINK d.o.o. Zagreb

- TETRA i DMR infrastruktura i terminali
- SDR radijski modemi najnovije generacije s TCP/IP funkcionalnostima
- Sustavi za širokopojasni bežični pristup PtP i PtMP konfiguracije
- Licencirani i nelicencirani mikrovalni radijski sustavi
- IoT rješenja za energetiku, smart city i industriju (LoRaWAN)
- WiFi profesionalna infrastrukturna rješenja i software

## 5 FAKULTET ORGANIZACIJE I INFORMATIKE Varaždin

- Predstavljanje rezultata projekta HigherDecision kroz postere  
*O projektu HigherDecision • Prepoznavanje i istraživanje problema • Razvoj metodologije odlučivanja i donošenje odluka • Provedba i praćenje strateške odluke • Evaluacija učinka strateške odluke*

## 6 RT-RK Computer Based Systems Novi Sad

- STARR - Decision Support and Self-Management System for Stroke Survivors

## 7 BRINTEL d.o.o., an IBM business partner Zagreb

- IBM Aspera will present next-generation

software technologies that move the world's data at maximum speed, regardless of file size, transfer distance and network conditions. Their patented, highly efficient bulk data transport technology FASP™ is unique and core to all Aspera high-performance file transfer software.

## 8 INSTITUT RUĐER BOŠKOVIĆ Zagreb

- Data Science
- EOSC Hub project
- HPC Academy  
*Presenting program of High Performance Computing (HPC) Academy launched by the Ruđer Bošković Institute in cooperation with Algebra and the University of Rijeka with the sponsorship of the Croatian Academy of Engineering.*

## 9 ODAŠILJAČI I VEZE d.o.o. Zagreb

- OIV Smartino IoT s prikazom demo aplikacije za pametne gradove i otroke, pametnu poljoprivredu, okoliš i turizam  
*Senzori za: Daljinsko očitanje vodomjera, plinomjera • Popunjenoš spremljiva za otpad • Popunjenoš parkirališnih mjesa • Upravljanje i nadzor javnom rasvjetom • Mjerjenje buke • GPS praćenje vozila, osoba, plovila... • Kvalitetu zraka (CO<sub>2</sub>, CO, temperatura, vlažnost,...) • Mjerjenje UV indeksa • Mjerjenje vodostaja rijeke • Detekciju pokreta, dima, otvorenih vrata i pozora*
- Informacija o sustavu OIV Fire Detect AI (inteligentni sustav za video nadzor i rano otkrivanje požara) i CRONECT sustavu (profesionalna mobilna radijska mreža).

## 10 UMKI Rijeka

- Kultura inovacije

## 11 ROHDE & SCHWARZ ÖSTERREICH, Predstavništvo Ljubljana

- Mjerni instrumenti

## 12 JU ZAVOD ZA PROSTORNO UREĐENJE PGŽ Rijeka

- Informacijski sustav prostornog uređenja Primorsko-goranske županije

## 13 IEEE

- Promotivni materijal

## 14 PRACE - Partnership for Advanced Computing Europe

- High Performance Computing (HPC) in Europe: Introduction, Science & Industry Support, SHAPE programme for SMEs, Training & Education Opportunities (Training Centres, International Summer Schools in HPC, Online Learning), Cooperation Possibilities and Access to Europe's HPC Research Infrastructure resources
- Promotivni materijal



Više od struje

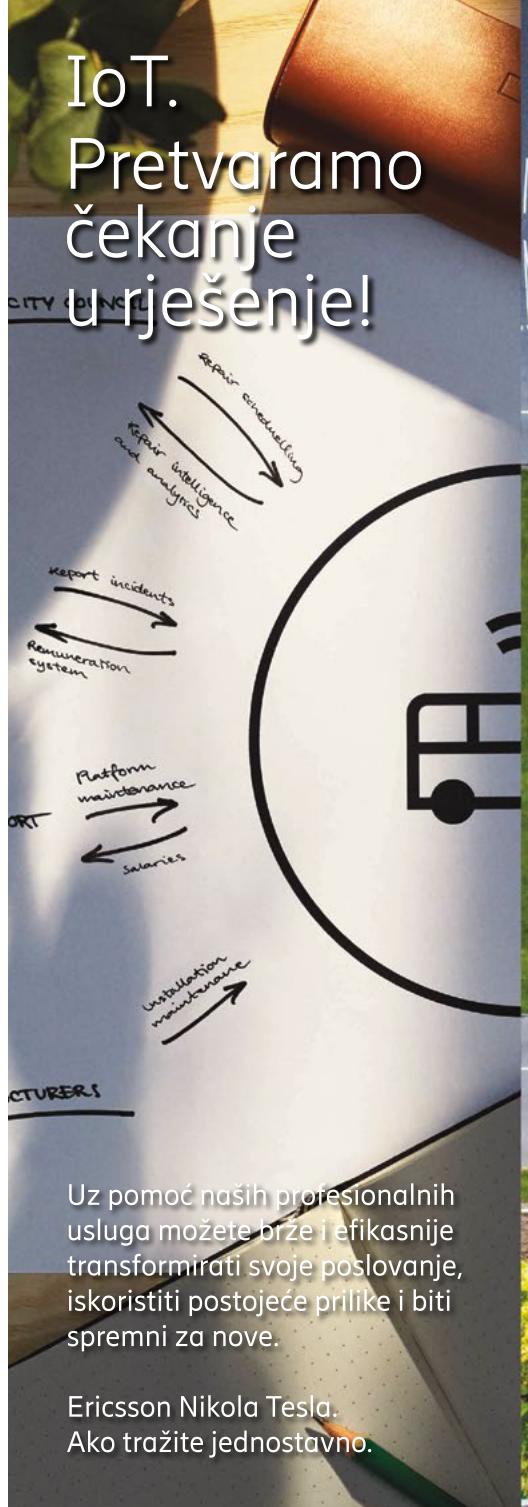


# PAMETNA RJEŠENJA ZA PAMETNE GRADOVE

Za više informacija pošaljite upit na [smart.cities@t.ht.hr](mailto:smart.cities@t.ht.hr)  
ili posjetite [hrvatskitelekom.hr/poslovni/smart-city](http://hrvatskitelekom.hr/poslovni/smart-city).



ŽIVJETI ZAJEDNO



# IoT. Pretvaramo čekanje u rješenje!



Uz pomoć naših profesionalnih usluga možete brže i efikasnije transformirati svoje poslovanje, iskoristiti postojeće prilike i biti spremni za nove.

Ericsson Nikola Tesla.  
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[ericsson.com/iot](http://ericsson.com/iot)  
ericsson.hr

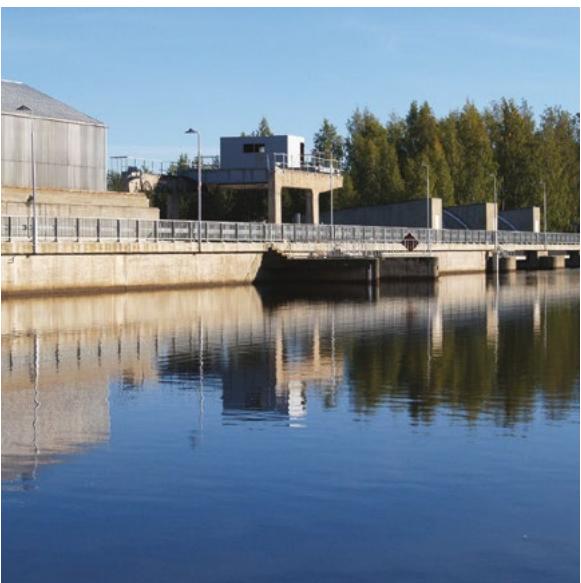


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IEEE Computer Society Dew Computing Special Technical Community (IEEE DewCom STC) is a new worldwide Open Community and forum for researchers, professionals, and students in the area of Dew Computing.

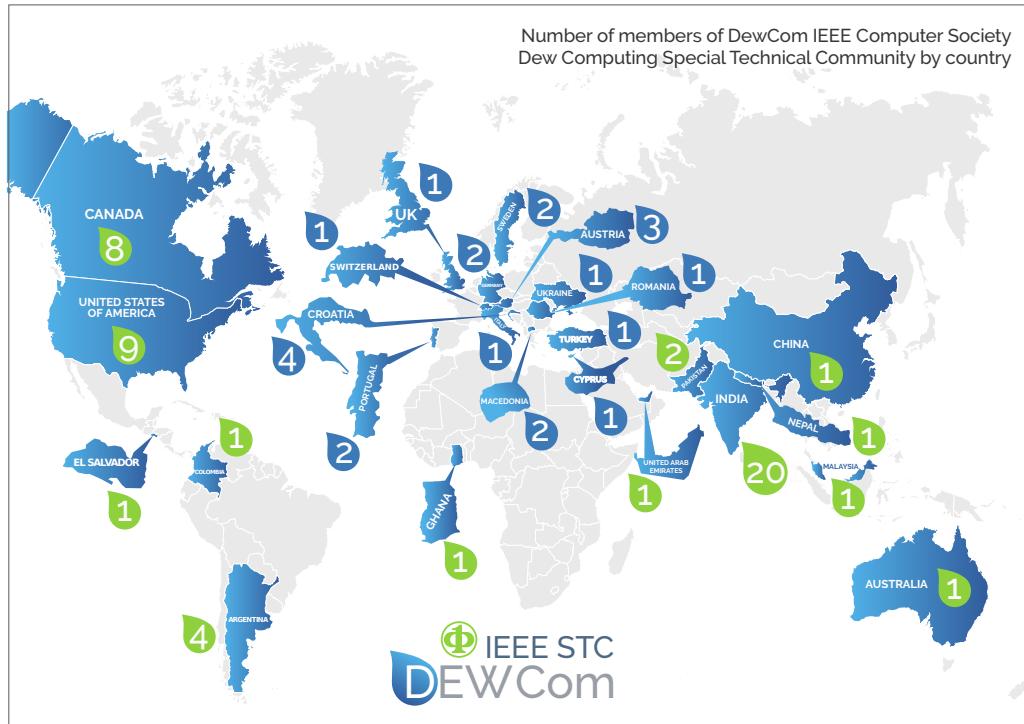
Dew Computing is an emerging research/ application area that is the complementary piece of cloud computing. The goal of Dew Computing is to fully realize the potentials of on-premises computers and cloud services. The vision of the Dew Computing Special Technical Community is that its efforts shall facilitate dew-computing research and dew computing application, for the benefit of all users and providers of the future global cloud-dew computing environment.



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Chairs: Yingwei Wang, University of Prince Edward Island, Canada  
Karolj Skala, Ruder Bošković Institute, Zagreb, Croatia



# INFODOM

[www.infodom.eu](http://www.infodom.eu)

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Javne financije i finansijska industrija

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Poljoprivreda i prehrambena industrija

Regionalni razvoj

Zdravstvo

Razvoj pametne javne uprave

Digitalizacija poduzeća i "Smart Industry"

Kružno gospodarstvo i regionalni razvoj

Digitalni servisi i interoperabilnost

Primjena umjetne inteligencije u upravljačkim procesima

Strategija digitalne transformacije

Strategije pametnoga grada / županije

BPM za agilne sustave

Platforma za digitalizaciju procesa i dokumentacije (eGOP)

e-Račun & e-Plaćanje

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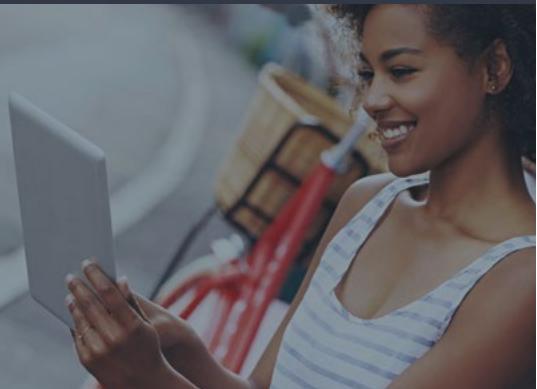
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## KNOWLEDGE MANAGEMENT

Today, knowledge is undoubtedly the key resource for achieving competitiveness and creating new business value. ESSPERTA provides a range of consulting services and develops software products in the area of organizational learning and knowledge management (KM).



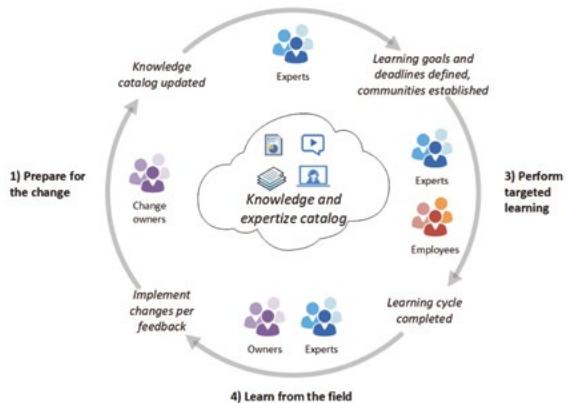
## Performa 365

**Performa 365** is a modern learning and change support system built to empower your employees with the right knowledge to do their job.

The dynamics of modern business is faced with continuous change, whether it comes to improving company's products and processes or supporting structural changes such as the shift in the company's strategy or implementing a new digital strategy. One of the biggest challenges in implementing such changes is their effective and efficient implementation in the daily operations.

The key requirements are typically as short time as possible to the full implementation, and minimal loss of business performance in the transition process.

We believe that the key to reaching those goals lies in the timely engagement of employees to understand upcoming changes and their implications in everyday operations together with the possibility of continuous learning and feedback. Performa 365 was created to support such processes.





# DIGIMET

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## UTILIZING INNOVATION POTENTIAL OF URBAN ECOSYSTEMS

**Interreg CE project URBAN INNO** addresses the challenge of making central Europe more innovative and competitive by maximizing the innovation potential of smaller and medium sized urban ecosystems.



### OUTPUTS

5 New Quadruple-helix  
Urban innovation networks

1 Toolbox for smart  
participatory methods and  
tools

9 Pilot projects

6 Urban innovation action  
plans

1 Transnational urban  
innovation cooperation  
strategy

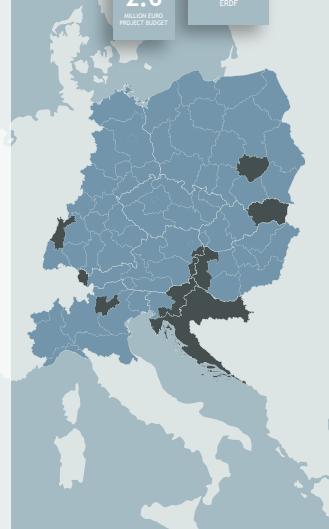
12  
PROJECT  
PARTNERS

10  
REGIONS

8  
COUNTRIES

2.6  
MILLION EURO  
PROJECT BUDGET

2.1  
MILLION EURO  
ERDF



### URBAN INNO FINAL CONFERENCE

**Open Day Event for MIPRO conference participants  
May 23<sup>rd</sup> 2019 • Grand Hotel Adriatic – Hall Camelia 2**

- 13:00 Tina Ragužin (City of Rijeka, HR)  
**Opening remarks & Introduction**
- 13:15 Ante Lučić (A-link Ltd., HR)  
**Human Capital, Work, and Educational Perspectives on SmartCity Initiatives**
- 13:45 Matjaž Gerl (E-zavod, SI)  
**Involving users into urban innovation: Tools for facilitating the process**
- 14:15 Nicola Doppio (Hub Innovation Trentino, IT)  
**An introduction to design sprint innovation challenges**
- 15:15 František Janke, Ph.D. (Technical University of Košice, SK)  
**Creating the agri-food digital marketplace upon end-users' inputs in Košice region**
- 15:30 Balázs Barta, Ph.D. (Pannon Business Network, HU)  
**Story of a successful Digital Innovation Hub in Western Hungary**
- 15:45 Bojana Suzić, M.Sc. (Fachhochschule Vorarlberg, AT)  
**Collaborative Business Model: Quadruple Helix Perspective to Modelling Business Processes**
- 16:00 Carina Halper (Forschung Burgenland, AT)  
**Burgenland Pilot: A Motivational Pitch for the Energy Strategy**
- 16:15 Christin Eckerle (CyberForum, DE)  
**Karlsruhe Pilot: Shaping the vision of energy efficiency with the support of citizens**
- 16:30 Damir Medved, M.Sc. (Ericsson Nikola Tesla d.d., HR)  
**Citizen participation – key enabler for optimal city governance, transparency and trust**
- 16:45 Vesna Avguštinčič, M.Sc. and Tadej Kurent, M.Sc.  
(Municipality of Maribor, SI)  
**Engaging users in improvement of e-services**
- 17:00 Joanna Rudawska, Ph.D. (University of Jan Kochanowski/  
Kielce Technology Park, PL)  
**Modern technologies in urban clusters**
- 17:15 Marco Combetto (Trentino Digitale spa, IT)  
**Design thinking as an instrument for smart innovative city government: The Trentino pilot experience and results**



# Promijenili smo boje. Proširili smo usluge.

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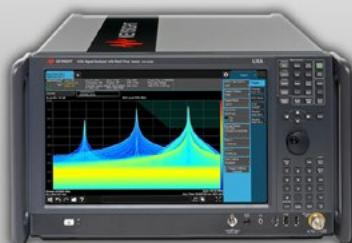
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- 5 Maiden with a seagull
- 6 St. James Church and Park
- 7 Croatian Museum of Tourism - Villa Angiolina
- 8 Croatian Museum of Tourism - Arts Pavilion Juraj Šporer



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