



PCI 2021

25th Pan-Hellenic Conference on Informatics

with International Participation

26 - 28 November 2021, Volos, Greece

Venue

Department of Electrical and Computer Engineering of the University of Thessaly
Sekeri & Cheiden st., Pedion Areos, 383 34, Volos, Greece

Conference Program



PCI 2021 Program Overview

PCI 2021, 26 - 28 Nov. 2021, Volos, Greece

Eastern European
Time

Friday Nov. 26th, 2021

9:00 – 10:00	Registration	
	ROOM A	ROOM B
10:00 – 10:30	CONFERENCE OPENING	
10:30 – 11:10	KEYNOTE SPEECH by Prof. Elias Houstis IME – A Big Data Business Analytics System for SMEs	
11:10 – 11:30	Coffee break	
11:30 – 13:40	SESSION 1A Information Systems & Information Society	SESSION 1B Neural Networks
13:40 – 14:30	Light Lunch	
14:30 – 16:40	SESSION 2A (Special Session) Soft Computing in Software Engineering	SESSION 2B Artificial Intelligence
16:40 – 17:00	Coffee break	
17:00 – 19:30	SESSION 3A (Special Session) Retrieval and Dissemination of Information	SESSION 3B Hardware, Architecture & Digital Systems
20:00 – 22:00	Banquet	

Saturday Nov. 27th, 2021

	ROOM A	ROOM B
9:10 – 9:50	KEYNOTE SPEECH by Prof. Andy Koronios Informatics as an enabler, driver and even disrupter of Space Technologies	
9:50 – 11:30	SESSION 4A (Special Sessions) Cyber Security of Critical Infrastructures (part 1) Urban and IT security – the Interplay	SESSION 4B Data Mining & Recommender Systems
11:30 – 11:50	Coffee break	
11:50 – 14:00	SESSION 5A (Special Session) Cyber Security of Critical Infrastructures (part 2)	SESSION 5B (Special Session) Quantum Computing: Current state and future trends
14:00 – 14:50	Light Lunch	
14:50 – 17:00	SESSION 6A (Special Session) Intelligent Hospital Management Systems	SESSION 6B Algorithms
17:00 – 17:20	Coffee break	
17:20 – 19:30	SESSION 7A Data Mining & Data Analysis Issues	SESSION 7B Games & Gamification

Eastern European
Time

Sunday Nov. 28th, 2021

	ROOM A	ROOM B
9:30 – 10:45	SESSION 8A Augmented, Virtual & Mixed Reality	SESSION 8B Signal processing & Video transmission
10:45 – 10:50	Short break	
10:50 – 12:05	SESSION 9A Software Engineering	SESSION 9B Networks & Communications
12:05 – 12:25	Coffee break	
12:25 – 13:55	SESSION 10A Distributed & Mobile Computing	SESSION 10B Machine Learning & Data Mining

PCI 2021 Detailed Program

Eastern European Time	Friday Nov. 26th, 2021	
9:00 – 10:00	Registration	
	ROOM A	ROOM B
10:00 – 10:30	CONFERENCE OPENING	
10:30 – 11:10	KEYNOTE SPEECH by Prof. Elias Houstis IME – A Big Data Business Analytics System for SMEs	
11:10 – 11:30	Coffee break	
11:30 – 13:40	SESSION 1A / Chair P. Fitsilis (UTH, GR) Information Systems & Information Society • Georgios Akritidis and Christos Katsanos. <i>Effect of Potential Issues Flagged by Automated Tools on Web Accessibility Evaluation Results: A Case Study on University Department Websites</i> • Panos Fitsilis and Angelika Kokkinaki. <i>Smart Cities Body of Knowledge</i> • Thomas K. Dasaklis, Theodore G. Voutsinas and Athanassios Mihiotis. <i>Integrating blockchain with Enterprise Resource Planning systems: benefits and challenges</i> • Niki Kyriakou, Euripidis Loukis and Alexandra Papanikou. <i>Economic Crisis and Enterprise Systems Adoption</i> • Apostolos Skouloudakis and Eleni Christopoulou. <i>Participatory Budgeting: Combining Smart Cities and Open Data</i>	SESSION 1B / Chair D. Katsaros (UTH, GR) Neural Networks • Andreas Chouliaras, Evangelia Fragkou and Dimitrios Katsaros. <i>Feed Forward Neural Network Sparsification with Dynamic Pruning</i> • Dimitrios Manolakis, Georgios Spanos and Ioannis Refanidis. <i>Shallow Neural Networks beat Deep Neural Networks trained with transfer learning</i> • Vasileios Balafas and Nikolaos Ploskas. <i>Computational Comparison of Deep Learning Algorithms for Object Detection</i> • Antigoni Panagiotopoulou, Eleni Charou, Konstantinos Poirazidis, Yorghos Voutos, Aristotelis Martinis, Lazaros Grammatikopoulos, Eleni Petsa, Emmanuel Bratsolis and Phivos Mylonas. <i>Deep-Learning Based Super-Resolution of Sentinel-2 Images for Monitoring Supercentenarian Olive Trees</i> • Vasileios Tsoukas, Eleni Boumpa, Georgios Giannakas and Athanasios Kakarountas. <i>A Review of Machine Learning and TinyML in Healthcare</i>
13:40 – 14:30	Light Lunch	

Friday Nov. 26th, 2021

Eastern European Time	ROOM A	ROOM B
14:30 – 16:40	SESSION 2A (Special Session) / Chair V. Gerogiannis (UTH, GR) Soft Computing in Software Engineering • Christos Bazinas, Eleni Vrochidou, Chris Lytridis and Vassilis G. Kaburlasos. <i>Yield Estimation in Vineyards Using Intervals' Numbers Techniques</i> • Efthimios Lallas, Ilias Santouridis, Georgios Mountzouris, Vassilis. C. Gerogiannis and Anthony Karageorgos. <i>An Ontology based Conceptualization of Data Integrity Regulatory Compliance in Pharmaceutical Industry: The SPuMoNI Case</i> • Dimitrios Tzimos, Vassilis Gerogiannis, Le Hoang Son and Anthony Karageorgos. <i>A Recommender System based on Intuitionistic Fuzzy Sets for Software Requirements Prioritization</i> • George Sidiropoulos, Chairi Kiourt, Vasileios Sevetlidis and George Pavlidis. <i>Shaping the Behavior of Reinforcement Learning Agents</i> • Kiriakos Alexiou, Efthimios Pariotis, Theodoros Zannis, Stylianos Polyzos and Helen Leligou. <i>Comparative evaluation of Machine Learning algorithms and Physical based models for the prediction of Vessel Speed in real life applications.</i>	SESSION 2B / Chair A. Daskalopulu (UTH, GR) Artificial Intelligence • Theofanis Aravanis. <i>Relevance-Sensitive Belief Revision in the Realm of Partial Preorders</i> • Alexandros Vassiliades, Ilias Papadimitriou, Nick Bassiliades and Theodore Patkos. <i>Visual Gorgias: A Mechanism for the Visualization of an Argumentation Dialogue</i> • Dimitrios Loukatos, Maria Kondoyanni and Konstantinos G. Arvanitis. <i>Automatic Fruit Picking: An Entry-level, in Scale, Approach for Cyber Physical Systems' Understanding</i> • Alexandros Mitsou, Evaggelos Spyrou and Theodoros Giannakopoulos. <i>Multimodal Workplace Monitoring for Human Activity Recognition</i> (short paper) • Paraskevi Tsoutsas, Panos Fitsilis and Omiros Iatrellis. <i>Towards an Ontology for Smart City Competences</i>
16:40 – 17:00	Coffee break	
17:00 – 19:30	SESSION 3A (Special Session) / Chairs N. Karanikolas, C. Skourlas (UNIWA, GR) Retrieval and Dissemination of Information • Konstantinos Stakoulas, Konstantinos Georgiou, Nikolaos Mittas and Lefteris Angelis. <i>An Analysis of User Profiles from Covid-19 Questions in Stack Overflow</i> • Eirini Manga, Nikitas Karanikolas, Catherine Marinagi and Christos Skourlas. <i>Evaluating Citizen Comments in Public Consultations Using Data Mining</i> • Panteleimon Krasadakis, Evangelos Sakkopoulos and Vassilios S. Verykios. <i>A Natural Language Processing Survey on Legislative and Greek Documents</i> • Vassilios Verykios and Dimitrios Karapiperis. <i>Entity Resolution in Dissimilarity Spaces</i> • Alkiviadis Tsimpiris, Dimitrios Varsamis, Charalampos Strouthopoulos, George Pavlidis and Kiourt Chairi. <i>Open-source OCR engine integration with Greek dictionary</i> (short paper) • Georgios Patsoulis, Rafail Promikyridis and Efthimios Tambouris. <i>Integration of chatbots with Knowledge Graphs in eGovernment: The case of Getting a Passport</i>	SESSION 3B / Chair A. Kakarountas (UTH, GR) Hardware, Architecture & Digital Systems • Stylianos Voutsinas, Dimitrios Karolidis, Ioannis Voyiatzis and Maria Samarakou. <i>Development of an IoT Structural Damage Monitoring system</i> • Antonios Dadaliaris, Antonios Tragoudaras, George Kranas, Michael Dossis and Georgios Dimitriou. <i>Juxtaposing Vivado Design Flows in Batch Mode</i> • Ioannis Galanakis, Athanasios Milidonis and Ioannis Voyiatzis. <i>A high performance architecture for object detection in drones</i> • Dimitrios Bountas, Nestor Evmorfopoulos, George Dimitriou, Antonios Dadaliaris, George Floros and Georgios Stamoulis. <i>Statistical Estimation of Leakage Power Bounds in CMOS VLSI Circuits</i> • Christos Kompogiannis, Maria Sapounaki and Athanasios Kakarountas. <i>Development of a Neuromorphic Circuit in Reconfigurable Technology for the Simulation of Synapses</i> • Stylianos Voutsinas, Dimitrios Karolidis, Ioannis Voyiatzis and Maria Samarakou. <i>Development of a fault detection algorithm for Photovoltaic Systems</i> (short paper)
20:00 – 22:00	Banquet	

Saturday Nov. 27th, 2021

Eastern
European Time

ROOM A

ROOM B

- 9:10 – 9:50 **KEYNOTE SPEECH** by Prof. Andy Koronios
Informatics as an enabler, driver and even disrupter of Space Technologies
- 9:50 – 11:30 **SESSION 4A** (Special Sessions) /
Chairs C. Douligeris (UNIP, GR), L. Maglaras (DMU, UK), V. Vlachos (UTH, GR)
Cyber Security of Critical Infrastructures (part 1)
Urban and IT security – the Interplay
- Aikaterini Chalkiadaki, Christos Mourgelas, Dimitrios Psilias, Athanasios Milidonis and Ioannis Vogiatzis. *A survey for UAV open-source telemetry protocols* (short paper)
 - Vasileios Vlachos, Ioannis Katsidimas, Gerasimos Katevas, Emmanouil Kerimakis, Sotiris Nikolettseas, Stefanos Panagiotou and Paul Spirakis. *ASPIDA: A website cybersecurity evaluation and reward tool*
 - Athanasios Sersemis, Alexandros Papadopoulos, Georgios Spanos, Antonios Lalas, Konstantinos Votis and Dimitrios Tzovaras. *A Novel Cybersecurity Architecture for IoV Communication*
 - Christina Katsini, George E. Raptis, Christos Alexakos and Dimitrios Serpanos. *FoRePlan: Supporting Digital Forensics Readiness Planning for Internet of Vehicles*

SESSION 4B / Chair I. Varlamis (HUA, GR)

Data Mining & Recommender Systems

- Vaios Stergiopoulos, Thalia Tsianaka and Eleni Tousidou. *AMiner Citation-Data Preprocessing for Recommender Systems on Scientific Publications*
- Panagiotis Valatsos, Thanasis Vafeiadis, Alexandros Nizamis, Dimosthenis Ioannidis and Dimitrios Tzovaras. *Freight transportation route time prediction with ensemble learning techniques*
- Christos Chronis, Christos Sardianos, Iraklis Varlamis, Dimitrios Michail and Konstantinos Tserpes. *A driving profile recommender system for autonomous driving using sensor data and reinforcement learning*
- Panagiotis Papagiannopoulos, Christos Aridas, Yiannis Kanellopoulos and Christos Makris. *Towards Discrimination-Free Classification via Fairness-Aware Bagging*

11:30 – 11:50

Coffee break

- 11:50 – 14:00 **SESSION 5A** (Special Session) /
Chairs I. Kantzavelou (UNIWA, GR), L. Maglaras (DMU, UK), V. Vlachos (UTH, GR)
Cyber Security of Critical Infrastructures (part 2)
- Vasileios Dimitriadis, Leandros Maglaras, Nineta Polemi, Ioanna Kantzavelou and Nick Ayres. *Uncuffed: A Blockchain-based Secure Messaging System*
 - Konstantinos Charmanas, Nikolaos Mittas and Lefteris Angelis. *Predicting the existence of exploitation concepts linked to software vulnerabilities using text mining*
 - Stylianos Karagiannis, Alexandros Tokatlis, Sotiris Pelekis, Michael Kontoulis, George Doukas, Christos Ntanos and Emmanouil Magkos. *A-DEMO: ATT&CK Documentation, Emulation and Mitigation Operations*
 - Célia Martinie, Christos Grigoriadis, Eleni-Maria Kalogeraki and Panayiotis Kotzanikolaou. *Modelling Human Tasks to Enhance Threat Identification in Critical Maritime Systems*
 - Shareeful Islam, Spyridon Papastergiou and Haralambos Mouratidis. *A Dynamic Cyber Security Situational Awareness Framework for Healthcare ICT Infrastructures*

SESSION 5B (Special Session) / **Chair I. Savvas (UTH, GR)**

Quantum Computing: Current state and future trends

- Sergey Gushanskiy, Viktor Potapov and Alexey Samoylov. *Research of Quantum Neural Networks and Development of a Single-qubit Model of Neuron*
- Valery Pukhovskiy, Sergey Gushanskiy and Viktor Potapov. *Developing a Hardware Approach to Simulating Quantum Computing Using an Optimization Algorithm*
- Maria Sabani, Ilias Galanis, Ilias Savvas and Georgia Garani. *Implementation of Shor's Algorithm and Some Reliability Issues of Quantum Computing Devices*
- Maria Avramouli, Ilias Savvas, Georgia Garani and Anna Vasilaki. *Quantum Machine Learning: Current State and Challenges*
- Dimitrios Ntalaperas, Konstantinos Prousalis and Nikos Konofaos. *A model for encoding multiple logical qubit states into the energy eigenstates of a transmon system*

14:00 – 14:50

Light Lunch

Saturday Nov. 27th, 2021

Eastern
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ROOM A

14:50 – 17:00

SESSION 6A (Special Session) / Chairs C. Douligeris (UNIP, GR), A. Billis (AUTH, GR)
Intelligent Hospital Management Systems

- Rafail Nikoviotis and Dimitrios Ringas. *Self-care Diabetes: a diabetes self-management application based on the seven self-management areas (AADE7) of the American Association of Diabetes Educators*
- Smaranda Nafsika Ketseridou, Evangelos Logaras, Antonis Billis, Maria Zouka, Barbara Fyntanidou and Panagiotis Bamidis. *AI-driven prediction for the disposition of medium-risk incidents visiting emergency departments*
- Nikolaos Papandrianos, Anna Feleki and Elpiniki Papageorgiou. *Exploring Classification of SPECT MPI images applying convolutional neural networks*
- Theodoros Karvounidis, Dimitrios Kallergis, Zacharenia Garofalaki and Christos Douligeris. *A Methodology for Adopting Security Management Principles in Health Sector Environments*
- Prosper Yeng. *Assessing the effect of human factors in healthcare cyber security practice: An empirical study* (short paper)

17:00 – 17:20

Coffee break

17:20 – 19:30

SESSION 7A / Chair V. Verykios (HOU, GR)
Data Mining & Data Analysis Issues

- Niki Kyriakou, Euripidis Loukis and Ioanna Damianou. *Social Media Use and Absorptive Capacity of Greek Food & Beverage Firms*
- Charis Ntakolia, Christos Kokkotiis, Serafeim Moustakidis and Elpiniki Papageorgiou. *An explainable machine learning pipeline for backorder prediction in inventory management systems*
- Konstantinos Korovesis, George Alexandridis, Iraklis Varlamis, Panagiotis Tsantilas and George Caridakis. *Emotion detection on Greek social media using Bidirectional Encoder Representations from Transformers*
- Rozita Tsoni, Vasilios Zorkadis and Vassilios Verykios. *A data pipeline to preserve privacy in educational settings*
- Nikolaos Maniatis, Georgios Alexandridis, Konstantinos Korovesis, Iraklis Varlamis, Panagiotis Tsantilas, George Michael Klimis and George Caridakis. *Bibliometrics for Measuring Social Media Influence: Evaluating the use of h -Index as a ranking metric of twitter users' influence.*

ROOM B

SESSION 6B / Chair T. Loukopoulos (UTH, GR)
Algorithms

- Dimitris Tsarmopoulos, Christina D. Nikolakakou and George S. Androulakis. *Solving LP problems using the ranking of the ratio of constraints' coefficients*
- Sotirios Salakos and Nikolaos Ploskas. *Analysis and Comparison of Binary and Interpolation Search Algorithms in a B-tree*
- Nikos Pappas, Panagiotis Oikonomou, Nikos Tziritas, Kostas Kolomvatsos and Thanasis Loukopoulos. *Bin Packing Heuristics for the Multiple Workflow Scheduling Problem*
- Panagiotis Oikonomou, Nikos Tziritas, Kostas Kolomvatsos and Thanasis Loukopoulos. *Fast Heuristics for Mixed Fleet Capacitated Multiple TSP with Applications to Location Based Games and Drone Assisted Transportation*
- Natalia Panagou, Panagiotis Belememis, Panos K. Papadopoulos, Maria Koziri and Thanasis Loukopoulos. *Fast Rules to Speedup HEVC to VVC Transcoding*

SESSION 7B / Chair C. Goumopoulos (UAE, GR)
Games & Gamification

- Nick Iliadis, Stergios Palamas and Phivos Mylonas. *Implementation and study of user strategies within a custom video game environment*
- Christos Goumopoulos, Georgios Skikos, Christos Karapapas, Maria Frounta and Georgios Koumanakos. *Applying Serious Games and Machine Learning for Cognitive Training and Screening: the COGNIPAT Approach*
- Katerina Vgena, Aikaterini Georgia Mavroeidi, Angeliki Kitsiou and Christos Kalloniatis. *Can social gamification and privacy co-exist? Identifying the major concerns*
- Alexandros Tremopoulos, George E. Raptis and Christos Katsanos. *WhatShapeWhatColor: Designing a Puzzle Game to Elicit the Field Dependence-Independence Cognitive Style*
- Helena G. Theodoropoulou, Chairi Kiourt, Natasa Michailidou, George A. Ioannakis, Paraskevi Motsiou, Ioannis Mourthos, Anestis Koutsoudis, George Pavlidis and Despoina Tsiadaki. *Three Gods in Eleusis: Discovering tangible and intangible cultural heritage of ancient Eleusis*

Sunday Nov. 28th, 2021

Eastern
European Time

ROOM A

ROOM B

9:30 – 10:45

SESSION 8A / Chair S. Vosinakis (UAEGEAN, GR)

Augmented, Virtual & Mixed Reality

- Ioannis Stamelos. *A low-cost AR assistant component architecture for Warehouse Management Systems*
- Spyros Vosinakis, Vasiliki Nikolakopoulou, Giorgos Nikopoulos, Labros Fragkedis, Modestos Stavrakis, Nikolaos Politopoulos and Panayiotis Koutsabasis. *Designing Mixed Reality Experiences that Provide Views to the Past: Reviving the Operation of an Industrial Olive Oil Factory*
- Evgenia Gkini, Ioannis Voyiatzis and Cleo Sgouropoulou. *Head-Mounted Display Systems as Visual Aids for the Visually Impaired: A Survey*

SESSION 8B / Chair D. Kallergis (UNIWA, GR)

Signal processing & Video transmission

- Konstantinos Angelopoulos and George Othon Glentis. *Nonparametric Spectral Estimation - An overview*
- Konstantinos Angelopoulos and George Othon Glentis. *Fast convolution and correlation computational methods in leakage localization applications*
- Dimitrios Psilias, Athanasios Milidonis and Ioannis Voyiatzis. *Secure Video Transmission System for UAV Applications*

10:45 – 10:50

Short break

10:50 – 12:05

SESSION 9A / Chair G. Dimitriou (UTH, GR)

Software Engineering

- Efstathia Chioteli, Ioannis Batas and Diomidis Spinellis. *Does Unit-Tested Code Crash? A Case Study of Eclipse*
- Georgios Dimitriou, Alexandros Angelou, Antonios Dadaliaris and Michael Dossis. *Branchless Code Generation for Modern Processor Architectures*
- Theodore Maikantis, Theodore Chaikalis, Apostolos Ampatzoglou and Alexander Chatzigeorgiou. *SmartCLIDE: Shortening the Toolchain of SOA-based Cloud Software Development by Automating Service Creation, Composition, Testing, and Deployment*

SESSION 9B / Chair N. Ploskas (UOWM, GR)

Networks & Communications

- Alexandra Bousia and Aspasia Daskalopulu. *Double Auction Offloading: Challenges and Opportunities for Energy Efficient Telecommunication Networks*
- Emmanouil Karantoumanis, Xristos Krallis and Nikolaos Ploskas. *An experimental evaluation of sensors on a LoRaWAN-based GPS tracking system*
- Leontios Sotiriadis, Basilis Mamalis and Grammati Pantziou. *Stable and Secure Clustering for Internet of Vehicles with RSU-assisted maintenance and trust management*

12:05 – 12:25

Coffee break

12:25 – 13:55

SESSION 10A / Chair A. Corral (UAL, Spain)

Distributed & Mobile Computing

- Vasiliki Giannou and Basilis Mamalis. *Utilizing Fog Computing for the Efficient Support of Innovative Teaching Scenarios in Primary and Secondary Education* (short paper)
- Ioannis Ballas, Vassilios Tsakanikas, Evangelos Pefanis and Vassilios Tampakas. *On Exploring the Optimum Configuration of Apache Spark Framework in Heterogeneous Clusters* (short paper)
- George Mavrommatis, Panagiotis Moutafis and Antonio Corral. *Enhancing the SliceNBound Algorithm for the Closest-Pairs Query with Binary Space Partitioning*
- Nikos Petrelis. *Exploring Feature Correlation in Plant Disease Diagnosis. A Smart Phone Application for Tomato Disorder Classification*

SESSION 10B / Chair A. Voulodimos (UNIWA, GR)

Machine Learning & Data Mining

- Petros Amanatidis, George Iosifidis and Dimitris Karampatzakis. *Comparative Evaluation of Machine Learning Inference Machines on Edge-class Devices*
- Athanasios Tzimourtas, Spyros Bakalakos, Panagiota Tselenti and Athanasios Voulodimos. *An exploration on text classification using machine learning techniques* (short paper)
- Athanasios Ioannis Arvanitidis and Dimitrios Bargiotas. *Use of Artificial Neural Networks for Short Term Load Forecasting*
- Georgia Rokkou, Nikolaos Spatiotis, Vasilis Triantafyllou and Michael Paraskevas. *A new approach applying Sentiment Analysis in Greek Language* (short paper)