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

Friday Nov. 26th, 2021

Eastern European Time		
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**	**SESSION 1B**
	Information Systems & Information Society	Neural Networks
13:40 − 14:30	**Light Lunch**	
14:30 − 16:40	**SESSION 2A** (Special Session)	**SESSION 2B**
	Soft Computing in Software Engineering	Artificial Intelligence
16:40 − 17:00	**Coffee break**	
17:00 − 19:30	**SESSION 3A** (Special Session)	**SESSION 3B**
	Retrieval and Dissemination of Information	Hardware, Architecture & Digital Systems
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)	**SESSION 4B**
	Cyber Security of Critical Infrastructures (part 1)	Data Mining & Recommender Systems
	Urban and IT security – the Interplay	
11:30 − 11:50	**Coffee break**	
11:50 − 14:00	**SESSION 5A** (Special Session)	**SESSION 5B** (Special Session)
	Cyber Security of Critical Infrastructures (part 2)	Quantum Computing: Current state and future trends
14:00 − 14:50	**Light Lunch**	
14:50 − 17:00	**SESSION 6A** (Special Session)	**SESSION 6B**
	Intelligent Hospital Management Systems	Algorithms
17:00 − 17:20	**Coffee break**	
17:20 − 19:30	**SESSION 7A**	**SESSION 7B**
	Data Mining & Data Analysis Issues	Games & Gamification

Sunday Nov. 28th, 2021

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

PCI 2021 Detailed Program

Friday Nov. 26th, 2021

Eastern European Time		
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. *Effect of Potential Issues Flagged by Automated Tools on Web Accessibility Evaluation Results: A Case Study on University Department Websites*
- Panos Fitsilis and Angelika Kokkinaki. *Smart Cities Body of Knowledge*
- Thomas K. Dasaklis, Theodore G. Voutsinas and Athanassios Mihiotis. *Integrating blockchain with Enterprise Resource Planning systems: benefits and challenges*
- Niki Kyriakou, Euripidis Loukis and Alexandra Papanikou. *Economic Crisis and Enterprise Systems Adoption*
- Apostolos Skouloudakis and Eleni Christopoulou. *Participatory Budgeting: Combining Smart Cities and Open Data*

SESSION 1B / Chair D. Katsaros (UTH, GR)
Neural Networks

- Andreas Chouliaras, Evangelia Fragkou and Dimitrios Katsaros. *Feed Forward Neural Network Sparsification with Dynamic Pruning*
- Dimitrios Manolakis, Georgios Spanos and Ioannis Refanidis. *Shallow Neural Networks beat Deep Neural Networks trained with transfer learning*
- Vasileios Balafas and Nikolaos Ploskas. *Computational Comparison of Deep Learning Algorithms for Object Detection*
- Antigoni Panagiotopoulou, Eleni Charou, Konstantinos Poirazidis, Yorghos Voutos, Aristotelis Martinis, Lazaros Grammatikopoulos, Eleni Petsa, Emmanuel Bratsolis and Phivos Mylonas. *Deep-Learning Based Super-Resolution of Sentinel-2 Images for Monitoring Supercentenarian Olive Trees*
- Vasileios Tsoukas, Eleni Boumpa, Georgios Giannakas and Athanasios Kakarountas. *A Review of Machine Learning and TinyML in Healthcare*

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	**SESSION 2B / Chair A. Daskalopulu (UTH, GR)** Artificial Intelligence

ROOM A (14:30 − 16:40):

• Christos Bazinas, Eleni Vrochidou, Chris Lytridis and Vassilis G. Kaburlasos. *Yield Estimation in Vineyards Using Intervals' Numbers Techniques*

• Efthimios Lallas, Ilias Santouridis, Georgios Mountzouris, Vassilis. C. Gerogiannis and Anthony Karageorgos. *An Ontology based Conceptualization of Data Integrity Regulatory Compliance in Pharmaceutical Industry: The SPuMoNI Case*

• Dimitrios Tzimos, Vassilis Gerogiannis, Le Hoang Son and Anthony Karageorgos. *A Recommender System based on Intuitionistic Fuzzy Sets for Software Requirements Prioritization*

• George Sidiropoulos, Chairi Kiourt, Vasileios Sevetlidis and George Pavlidis. *Shaping the Behavior of Reinforcement Learning Agents*

• Kiriakos Alexiou, Efthimios Pariotis, Theodoros Zannis, Stylianos Polyzos and Helen Leligou. *Comparative evaluation of Machine Learning algorithms and Physical based models for the prediction of Vessel Speed in real life applications.*

ROOM B (14:30 − 16:40):

• Theofanis Aravanis. *Relevance-Sensitive Belief Revision in the Realm of Partial Preorders*

• Alexandros Vassiliades, Ilias Papadimitriou, Nick Bassiliades and Theodore Patkos. *Visual Gorgias: A Mechanism for the Visualization of an Argumentation Dialogue*

• Dimitrios Loukatos, Maria Kondoyanni and Konstantinos G. Arvanitis. *Automatic Fruit Picking: An Entry-level, in Scale, Approach for Cyber Physical Systems' Understanding*

• Alexandros Mitsou, Evaggelos Spyrou and Theodoros Giannakopoulos. *Multimodal Workplace Monitoring for Human Activity Recognition* (short paper)

• Paraskevi Tsoutsa, Panos Fitsilis and Omiros Iatrellis. *Towards an Ontology for Smart City Competences*

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	**SESSION 3B / Chair A. Kakarountas (UTH, GR)** Hardware, Architecture & Digital Systems

ROOM A (17:00 − 19:30):

• Konstantinos Stakoulas, Konstantinos Georgiou, Nikolaos Mittas and Lefteris Angelis. *An Analysis of User Profiles from Covid-19 Questions in Stack Overflow*

• Eirini Manga, Nikitas Karanikolas, Catherine Marinagi and Christos Skourlas. *Evaluating Citizen Comments in Public Consultations Using Data Mining*

• Panteleimon Krasadakis, Evangelos Sakkopoulos and Vassilios S. Verykios. *A Natural Language Processing Survey on Legislative and Greek Documents*

• Vassilios Verykios and Dimitrios Karapiperis. *Entity Resolution in Dissimilarity Spaces*

• Alkiviadis Tsimpiris, Dimitrios Varsamis, Charalampos Strouthopoulos, George Pavlidis and Kiourt Chairi. *Open-source OCR engine integration with Greek dictionary* (short paper)

• Georgios Patsoulis, Rafail Promikyridis and Efthimios Tambouris. *Integration of chatbots with Knowledge Graphs in eGovernment: The case of Getting a Passport*

ROOM B (17:00 − 19:30):

• Stylianos Voutsinas, Dimitrios Karolidis, Ioannis Voyiatzis and Maria Samarakou. *Development of an IoT Structural Damage Monitoring system*

• Antonios Dadaliaris, Antonios Tragoudaras, George Kranas, Michael Dossis and Georgios Dimitriou. *Juxtaposing Vivado Design Flows in Batch Mode*

• Ioannis Galanakis, Athanasios Milidonis and Ioannis Voyiatzis. *A high performance architecture for object detection in drones*

• Dimitrios Bountas, Nestor Evmorfopoulos, George Dimitriou, Antonios Dadaliaris, George Floros and Georgios Stamoulis. *Statistical Estimation of Leakage Power Bounds in CMOS VLSI Circuits*

• Christos Kompogiannis, Maria Sapounaki and Athanasios Kakarountas. *Development of a Neuromorphic Circuit in Reconfigurable Technology for the Simulation of Synapses*

• Stylianos Voutsinas, Dimitrios Karolidis, Ioannis Voyiatzis and Maria Samarakou. *Development of a fault detection algorithm for Photovoltaic Systems* (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 (UNIPI, 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 Nikoletseas, 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 Pukhovsky, 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 European Time	ROOM A	ROOM B
14:50 − 17:00	**SESSION 6A** (Special Session) **/ Chairs C. Douligeris (UNIPI, GR), A. Billis (AUTH, GR)** Intelligent Hospital Management Systems	**SESSION 6B / Chair T. Loukopoulos (UTH, GR)** Algorithms

ROOM A:

• 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)

ROOM B:

• Dimitris Tsarmpopoulos, 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*

17:00 − 17:20	**Coffee break**	
17:20 − 19:30	**SESSION 7A / Chair V. Verykios (HOU, GR)** Data Mining & Data Analysis Issues	**SESSION 7B / Chair C. Goumopoulos (UAEGEAN, GR)** Games & Gamification

ROOM A:

• 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:

• 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 COGNIPLAT 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 Tsiafaki. *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	**SESSION 8B / Chair D. Kallergis (UNIWA, GR)** Signal processing & Video transmission
	• Iakovos Stratigakis, Theodoros Amanatidis, Christina Volioti, George Kakarontzas, Thrasyvoulos Tsiatsos, Ioannis Stamelos, Charalampos Avratoglou, Apostolos Ampatzoglou, Alexander Chatzigeorgiou and Dimitris Folinas. *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*	• 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	**SESSION 9B / Chair N. Ploskas (UOWM, GR)** Networks & Communications
	• 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 Devel-opment by Automating Service Creation, Composition, Testing, and Deployment*	• Alexandra Bousia and Aspassia 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	**SESSION 10B / Chair A. Voulodimos (UNIWA, GR)** Machine Learning & Data Mining
	• 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, Evaggelos 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*	• 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)