



Program of The 32nd Conference of Open Innovations Association FRUCT

Tampere, Finland
9-11 November 2022



IEEE

IEEE ComSoc
IEEE Communications Society

IEEE Finland



electronics
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*big data and
cognitive computing*

**GAUDEAMUS IGITUR,
JUVENES DUM SUMUS!
POST JUCUNDAM JUVENTUTEM,
POST MOLESTAM SENECTUTEM
NOS HABEBIT HUMUS.**

**UBI SUNT, QUI ANTE NOS
IN MUNDO FUERE?
VADITE AD SUPEROS,
TRANSITE AD INFEROS,
UBI JAM FUERE.**

**VITA NOSTRA BREVIS EST,
BREVI FINIETUR,
VENIT MORS VELOCITER,
RAPIT NOS ATROCITER,
NEMINI PARCETUR.**

**VIVAT ACADEMIA,
VIVANT PROFESSORES!
VIVAT MEMBRUM QUODLIBET,
VIVANT MEMBRA QUÆLIBET!
SEMPER SINT IN FLORE!**

**VIVANT OMNES VIRGINES
FACILES, FORMOSÆ!
VIVANT ET MULIERES,
TENERÆ, AMABILES,
BONÆ, LABORIOSÆ!**

**VIVAT ET RESPUBLICA,
ET QUI ILLAM REGIT!
VIVAT NOSTRA CIVITAS,
MÆCENATUM CARITAS,
QUÆ NOS HIC PROTEGIT**

**PEREAT TRISTITIA,
PEREANT DOLORES,
PEREAT DIABOLUS,
QUIVIS ANTIBURSCHIUS,
ATQUE IRRISORES!**

Practical Information

The FRUCT32 conference is held in a hybrid mode. The first conference day (November 9, 2022) is primary designated to the conference attendees that have managed to visit the conference in person. The other two days (November 10-11, 2022) are reserved for online conference. Correspondingly the conference processes are adapted to best fit on site and online participation correspondingly. For the onsite day we are going to use the traditional format of presentations at **Tampere University, Hervannan kampus, Festia, auditorio Pieni Sali, address: Korkeakoulunkatu 8, Tampere, Finland**. In addition the sessions will be broadcasted online.

For the online part of the conference, all presentations are pre-recorded by the authors and uploaded to Youtube. The conference program contains links to individual presentations and playlists of all talks for each session. All conference sessions consist of two modules:

- 1) **Self-watching of the presentations on Youtube.** You are welcome to use the advantages of online participation and freely manage your time. You can ask questions in the comments of the videos. Please subscribe to the FRUCT youtube channel as it will help us to organize video streaming in the future.
- 2) **Questions and Answers (Q&A) in Zoom.** Zoom links are in the conference program. We recommend joining a Zoom session in audio mode (without video). Please prepare your questions/comments to the authors and use this time to discuss the presented works.

The conference time is EET (GMT/UTC+2), which corresponding to Finnish time zones. The sessions Zoom IDs and passwords are published in the conference program. You are welcome to watch video presentations in advance. Please note that all online presentations will be available online starting from Monday, November 7, 2022. If you have any further questions don't hesitate to email us at info@fruct.org.

Authors of the selected conference papers get an invitation to publish an extended version of the paper in our partner journals. If you are interested in this opportunity, please express it clearly to the chair of your session. The list of partner journals is as follows:

An official publication of
the Information Resources
Management Association



IGI PUBLISHING
WWW.IGI-GLOBAL.COM

INTERNATIONAL JOURNAL OF Embedded and Real-Time Communication Systems

Authors of the best papers of FRUCT conference can get invitation to publish extended version of the paper in the International Journal of Embedded and Real-Time Communication Systems (IJERTCS) (ISSN 1947-3176, **Scopus** indexing, etc.).



electronics
an Open Access Journal by MDPI

Authors of the best papers of FRUCT conference can get invitation to publish extended version of the paper in the Electronics journal (impact factor 2.690) with at least **10% discount**.



*big data and
cognitive computing*

Authors of the best papers of FRUCT conference can get invitation to publish extended version of the paper in the Big Data and Cognitive Computing journal (Citescore 6.1 in Scopus and Q1 in 3 categories) with **10% discount**.

The proceedings of 32nd FRUCT conference are available online:

Issue 1: <https://fruct.org/publications/fruct32/>

Issue 2: <https://fruct.org/publications/acm32/>

General Facts and Statistics for the 32nd FRUCT Conference:

Total submissions: **89**
Total authors: **206**

Accepted Full Papers: **36**
representing **26** countries

Acceptance rate: **40%**
from **all continents**

Organization Committee of the 32nd IEEE FRUCT

Local Chair: Yevgeni Koucheryav

Publishing team leader: Tatiana Tyutina

FRUCT President: Sergey Balandin

Technical team: Nikolay Teslya, Nikolay Shilov

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Timofey Turenko
Tatiana Tyutina
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Michal Zabovsky
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Mark Zaslavskiy
John Z. Zhang
Yunpeng Zhang

Program of the 32nd FRUCT conference

November 9-11, 2022, Tampere, Finland

Tampere University, Hervanta campus, Korkeakoulunkatu 8, Tampere, Finland / Online participation

NOTE: Conference time is in Finnish time (EET, GMT/UTC+2) as conference is held in Tampere, Finland

DATE	TIME	PROGRAM
09.11.22	10:30-12:00	Opening of the 32nd FRUCT conference Keynote talk: Wireless IoT and DECT-2020 NR technology, by Juho Pirskanen, Wirepas Ltd.
	12:00-13:00	Lunch break
	13:00-14:15	Innovative Applications I
	14:15-14:30	Coffee break
	14:30-15:45	Innovative Applications II
	15:45-16:00	Break
	16:00-17:00	Demos & Posters Session
10.11.22	09:30-10:15	Invited talk: PreScouter & Introduction to Research Consulting, by Ekaterina Balandina, PreScouter Ltd.
	10:15-12:00	Algorithms and Modeling
	12:00-12:45	Lunch break
	12:45-14:00	Natural Language Processing and Speech Technologies
	14:00-14:05	Break
	14:05-15:20	Artificial Intelligence in Text Analysis and Generation
	15:20-15:25	Break
	15:25-17:10	Artificial Intelligence, Robotics and Automation
11.11.22	09:30-10:45	Next Generation Networks and Blockchain Technologies
	10:45-10:50	Break
	10:50-12:05	Security and Privacy
	12:05-12:45	Lunch break
	12:45-14:00	The 5th DataWorld Workshop
	14:00-14:05	Break
	14:05-15:50	e-Health and Wellbeing
	15:50-16:00	Official closing of the 32nd FRUCT conference

KEYNOTE SPEAKER



JUHO PIRSKANEN has over 20 years of experience in technology development on wireless radio technologies such as 3G, HSPA, LTE and WLAN and the latest on different 5G technologies. He has held several positions in Nokia Networks, Nokia Wireless Modem, Renesas Mobile Corporation and Broadcom Corporation and then again at Nokia Networks for 5G research and standardization. He has participated actively for several years in different standardization forums such as 3GPP, IEEE802.11 and ETSI by doing numerous technical presentations, being a rapporteur of technical specifications and leading different delegations. His research work has resulted in over 40 (co-)authored patent families on different wireless technologies and several publications on radio interface solutions. On 5G, his research focus is on a physical layer and radio protocol layer concepts and solutions.

In late 2017, he joined Wirepas Ltd. having headquarters in Tampere Finland. Since then, he has been one of the leading contributors to ETSI DECT-2020 NR 5G technology. Wirepas develops a decentralized wireless mesh connectivity suite that can be used to connect, locate, and identify machines, meters, lights, sensors, assets and other IoT devices with unprecedented scale, density, flexibility and reliability. Juho Pirskanen holds a Master of Science in Engineering, from Tampere University of Technology, Finland.

Program of the 32nd FRUCT conference

November 9 (Wednesday)

Tampere University, Hervannan kampus, Festia, auditorio Pieni Sali, Korkeakoulunkatu 8, Tampere, Finland /
Online participation

NOTE: Conference time is in Finnish time (EET, GMT/UTC+2) as conference is held in Tampere, Finland

Onsite Session: Opening and Plenary session of the 32 nd FRUCT conference		Chairman: Sergey Balandin
Auditorio Pieni Sali, Festia building, Hervannan kampus, Korkeakoulunkatu 8, Tampere		
10:30	15m	Welcome words and practical information, Sergey Balandin
10:45	1.15h	Keynote talk: Wireless IoT and DECT-2020 NR technology, by Juho Pirskanen, Wirepas Ltd., Finland
12:00	1.15h	Lunch break
Onsite Session: Innovative Applications I		Chairman: Yevgeni Koucheryavy
Auditorio Pieni Sali, Festia building, Hervannan kampus, Korkeakoulunkatu 8, Tampere		
13:15	20m	Driving Safe Speed Estimation Based on Outside Environment Vision Analysis , by Alexey Kashevnik, Ammar Ali
13:35	20m	Ground Level Mobile Signal Prediction Using Higher Altitude UAV Measurements and ANN, by Ibtihal Al Saadi, Naser Tarhuni, Mostefa Mesbah
13:55	20m	Solving a Real-World Traffic Congestion Problem at T-Intersections Using AnyLogic Simulation, by Syed Muhammad Mustafa Kazmi, Xu Sun, Hao Yu, Jan-Arne Pettersen, Diana Santalova Thordarson
14:15	15m	Coffee break
Onsite Session: Innovative Applications II		Chairman: Alexey Kashevnik
Auditorio Pieni Sali, Festia building, Hervannan kampus, Korkeakoulunkatu 8, Tampere		
14:30	15m	Automatic Directory Classification of Test Cases Based on Machine Learning Algorithms at an Android Smartphone Vendor , by Abdirahman Osman Hashi, Octavio Ernesto Romo Rodriguez
14:45	20m	IoT in Arctic Tourism Case-Study of the Tourist Information Office in Narvik, by Ayah Mustafa, Rami Noureddine, Diana Thordarson
15:05	20m	A Straightforward and Efficient Approach to Secure Smart Home Communication Using Identify-Based Cryptosystems, by Muhammad Mazhar Ullah Rathore, Sushil Chaurasia, Dharendra Shukla, Elmahdi Bentafat
15:25	20m	Localization, Navigation and Activity Planning for Wheeled Agricultural Robots a Survey, by Syed Abdur Rahman Tahir
15:45	15m	Break
16:00	1h	Demo & Poster Session combined with Social Event (pre-recorded presentations)
17:00		Closing of the Day

November 10 (Thursday)

Tampere University, Tampere, Finland / Online participation by Youtube + Zoom

NOTE: Conference time is in Finnish time (EET, GMT/UTC+2) as conference is held in Tampere, Finland

09:30	30m	Invited talk: PreScouter & Introduction to Research Consulting , by Ekaterina Balandina, PreScouter Ltd., USA and Finland
10:00	15m	Q&A for the Invited talk , Zoom 974-238-2704, passcode 490571
10:15		Online Session: Algorithms and Modeling Chairman: Nikolay Teslya Playlist: https://www.youtube.com/watch?v=YBtvDjNNtHw&list=PLKIZJpq1JqdPAV2Jt4vv8Qk8VrOExS4W
10:15	1.15h	Where to Put a Rower: A Novel and Practical Solution to Dragon Boat Partition Problem , by Brett Regnier, John Zhang Review of Immunotherapy Classification: Application Domains, Datasets, Algorithms, Software Tools and Publications From Machine Learning Perspective , by Ahsanullah Yunas Mahmoud, Daniel Neagu, Daniele Scrimieri, Amr Rashad Ahmed Abdullatif Enterprise Modelling Assistance: Edge Prediction Improvement Using Textual Information , by Walaa Othman, Nikolay Shilov Social Network Users Profiling Using Machine Learning for Information Security Tasks , by Elizaveta Dubasova, Oleg Metsker, Pavel Kashlikov, Artem Berdashkevich, Georgy Kopanitsa Ontology Concept Extraction Algorithm for Deep Neural Networks , by Andrew Ponomarev, Anton Agafonov An Anomaly Detection and Network Filtering System for Linux Based on Kohonen Maps and Variable-Order Markov Chains , by Sergey Staroletov, Roman Chudov Low-Voltage Ride-Through Response of Renewable-Penetrated Distribution Networks , by Pouya Salyani, Ramin Nourollahi, Kazem Zare, Behnam Mohammadi Ivatloo, Mehdi Abapour
11:30	30m	Q&A for the Algorithms and Modeling session , Zoom 974-238-2704, passcode 490571
12:00	45m	Lunch break
12:45		Online Session: Natural Language Processing and Speech Technologies Chairman: Ksenia Lagutina Playlist: https://www.youtube.com/watch?v=ixmilM9f7KA&list=PLKIZJpq1JqdPsmCJGKfzSWFIqjB5Fi1d
12:45	50m	Discourse on Vaccination on Russian Social Media: Topics and Controversy , by Konstantin Platonov, Kirill Svetlov, Viktoriia Saifulina Opinion Mining for Modeling User Experience of Online Education: Sentiment Analysis and Keywords Extraction of Student Reviews , by Anna Moskvina, Margarita Kirina, Anastasia Gavriluk Empirical Studies of Everyday Professional, Domestic and Client-Service Communication for the Development of Voice Assistants in Russian , by Tatiana Sherstinova, Irina Petrova, Olga Mineeva, Maria Fedosova Thesis Review and Analysis Automated System , by Alfredo Barrientos, Armando Soto Linares, Jean Patrick Lostaunau Chavez
13:35	25m	Q&A for the Natural Language Processing and Speech Technologies session , Zoom 974-238-2704, passcode 490571
14:00	5m	Break
14:05		Online Session: Artificial Intelligence in Text Analysis and Generation Chairman: Nikolay Shilov Playlist: https://www.youtube.com/watch?v=-bxBbsBvBjQ&list=PLKIZJpq1JqdP0rOvxaI362O5SjKpq3HXD
14:05	50m	Named Entity Recognition for Russian Judicial Rulings Text , by Maria Averina, Olga Levanova, Natalia Kasatkina Preliminary Systematization of Corporate Knowledge Objects for the Use of Prescriptive Analytics Methods When Creating an Innovative Product by Small and Medium-Sized Companies , by Ekaterina Mashina Uniform Assessment of the Company's Employee's Competence Using Natural Language Processing Methods for Their Further Use in Corporate Knowledge Management Systems , by Ekaterina Mashina Towards Better Evaluation of Topic Model Quality , by Maria Khodorchenko, Nikolay Butakov, Denis Nasonov

14:55	25m	Q&A for the Artificial Intelligence in Text Analysis and Generation session , Zoom 974-238-2704, passcode 490571
15:20	5m	Break
15:25		Online Session: Artificial Intelligence, Robotics and Automation Chairman: Rajeev Kanth Playlist: https://www.youtube.com/watch?v=CSyuWA4TvOY&list=PLKIZJpq1JqdO6NTNoICQr0y1Q8EnhGe0E
15:25	1.15h	Classification Accuracy Comparison Between Machine Learning Algorithms and a Deep Learning Algorithm in Predicting Hand Gestures , by Shahed Alam, Md Saif Kabir, Mohammad Naveed Hossain, Quazi Rian Hasnaine, Md. Golam Rabiul Alam On Artificial Intelligence: Software and Statistical Issues , by Manfred Sneys-Snepe, Dmitry Namiot Classification and Analysis of Adversarial Machine Learning Attacks in IoT: A Label Flipping Attack Case Study , by Mahdi Abrishami, Sajjad Dadkhah, Euclides Neto, Pulei Xiong, Shahrear Iqbal, Suprio Ray, Ali Ghorbani An Event-Oriented Approach to Recognition Problem in Smart Video Surveillance Systems , by Nikita Bazhenov, Egor Rybin, Dmitry Korzun Comparative Analysis of Machine Learning Methods Application for Financial Fraud Detection , by Alexander Menshchikov, Vladislav Perfilev, Denis Roenko, Maksim Zykin, Maksim Fedosenko Method for Automated Data Collection for 3D Reconstruction , by Mark Zaslavskiy, Roman Shestopalov, Alexander Grebenshchikov, Evgeny Shkviryia, Danil Korenev
16:40	30m	Q&A for the Artificial Intelligence, Robotics and Automation session , Zoom 974-238-2704, passcode 490571
17:10		Closing of the Day

November 11 (Friday)

Tampere University, Tampere, Finland / Online participation by Youtube + Zoom

NOTE: Conference time is in Finnish time (EET, GMT/UTC+2) as conference is held in Tampere, Finland

09:30		Online Session: Next Generation Networks and Blockchain Technologies Chairman: S.P.Shiva Prakash Playlist: https://www.youtube.com/watch?v=i8Dj0yK8Ciw&list=PLKIZJpq1JqdOk7dmBbzsMfAnbRxN2UG6D
09:30	50m	A Brief Introduction to Content Centric Networks , by Antonio Cortes Model for the Monitoring of Competences of the PISA Test in Peru Under a B-Learning Approach , by Abel Rodríguez, Daniel Quispe, Lenis Wong Framework to Improve the Traceability of the Coffee Production Chain in Peru by Applying a Blockchain Architecture , by Alejandro Garcia, Javier Davila, Lenis Wong Effective Combinating of Wormhole Deadlock-Free Routs , by Valentin Olenov, Alexandr Karandashev
10:20	25m	Q&A for the Next Generation Networks and Blockchain Technologies session , Zoom 974-238-2704, passcode 490571
10:45	5m	Break
10:50		Online Session: Security and Privacy Chairman: Jan-Erik Ekberg Playlist: https://www.youtube.com/watch?v=edpv5AZfON4&list=PLKIZJpq1JqdNZJbgwQaD9NE6Y-fz7lInfe
10:50	50m	Data and Location Privacy of Smart Devices Over Vehicular Cloud Computing , by Hani Al-Balasmeh, Maninder Singh, Raman Singh Exploiting Control Device Vulnerabilities: Attacking Cyber Physical Water System , by Parul Sindhwad, Faruk Kazi Channel Traffic Minimizing Key Sharing Protocol Intended for the Use Over the Internet and Secure Without Any Cryptographic Assumptions , by Viktor Yakovlev, Valery Korzhik, Vladimir Starostin, Alexey Lapshin, Aleksei Zhuvikin Multi-Tenant Management in Secured IoT Based Solutions , by Kerem Aytac, Omer Korcak
11:40	25m	Q&A for the Security and Privacy session , Zoom 974-238-2704, passcode 490571

12:05	40m	Lunch break	
12:45		Online Session: The 5th DataWorld Workshop	Chairman: Michal Kvet
		Playlist: https://www.youtube.com/watch?v=v2AUzP2WkeI&list=PLKIZJpg1JqdOrxLg86fR_Gy8m8au_RqHa	
12:45	50m	The Digital Twin of the Activity: Role of Information Actions , by Alexander Geyda, Lyudmila Fedorchenko Database Block Management Using Master Index , by Michal Kvet Automated Rule-Based Data Cleaning Using NLP , by Konstantinos Mavrogiorgos, Argyro Mavrogiorgou, Athanasios Kiourtis, Nikolaos Zafeiropoulos, Spyridon Kleftakis, Dimosthenis Kyriazis Data Representation for Social Data Science and Humanities With Django and Wikibase: The PhytoLex Database Case , by Julia Amatuni, Ivan Bibilov, Kira Kovalenko, Olga Tushkanova, Ivan Usalko	
13:35	25m	Q&A for the The 5th DataWorld Workshop session , Zoom 974-238-2704, passcode 490571	
14:00	5m	Break	
14:05		Online Session: e-Health and Wellbeing	Chairman: Fabio Viola
		Playlist: https://www.youtube.com/watch?v=tl5-g-eaWKM&list=PLKIZJpg1JqdP5FBdquortJSvKBTggtShQ	
14:05	1.15h	Mobile Application: An Approach With the Analytical Hierarchy Process (AHP) for the Allocation and Generation of Dietary Plans , by Lourdes Pairazaman, Antony Quispe, Lenis Wong Multi-Kernel Convolutional Neural Network for Wrist Pulse Signal Classification , by Xiaofei Chen, Hua Xu, Peng Qian, Yunfeng Xu, Fufeng Li, Shengwang Li Motor Activity Sensorics for Digital Support of Human Resilience to Stresses in Daily Life , by Alexander Meigal, Liudmila Gerasimova-Meigal, Grigorij Rego, Dmitry Korzun Model for Implementing a IoMT Architecture With ISO/IEC 27001 Security Controls for Remote Patient Monitoring , by Brandon Alegria, Lenis Wong, Diego Bedrinana Mobile Application: For Anxiety and Cardiovascular Depression Monitoring Using a Smartwatch Based on Cognitive Behavioral Therapy , by Lucero Huaroto, Lenis Wong, Vanessa Alvarado The Indoor Air Quality Domain Ontology for the Development of COPD Self-Management System , by Ramsha Ali, Raluca Lefticaru, Marian Gheorghe	
15:20	30m	Q&A for the e-Health and Wellbeing session , Zoom 974-238-2704, passcode 490571	
15:50	10m	Official closing of the 32nd FRUCT conference , Zoom 974-238-2704, passcode 490571	

**Thank you and looking forward to see you at the 33rd FRUCT in Žilina, Slovakia on May 24-26, 2023!
(Note that the 33rd FRUCT conference allows online participation)**

PROCSI - Promoting Cyber Security for Critical Infrastructures Network Meeting, funded by Nordplus Higher Education 2022

In co-location with the 32nd FRUCT conference we organize a meeting of the newly established network **PROCSI – Promoting Cyber Security for Critical Infrastructures**, funded by Nordplus Higher Education 2022 (project number **NPHE-2022/10105**). The PROCSI network is led by UiT the Arctic University of Norway and it will contribute to the education of a new generation of engineers in the Nordic and Baltic regions with high-level competence in digitalization through sharing expertise in cyber-physical systems, power engineering, and informational technology. Critical infrastructure is the body of systems and networks that are so essential that their continued operation is required to ensure the security of a given nation, its economy, and the public's health and safety. Critical infrastructures span various sectors, from supply chains and manufacturing systems to power systems. IoT and sensor technologies, Advanced Manufacturing, Big Data, and AI increase automating, interconnecting, and optimizing a wide range of technological processes. This innovation cannot continue accelerating without the development of cybersecurity technology.

The PROCSI network consists of institutions having core competencies in educating professionals in the most rapidly developing areas: intelligent manufacturing and logistics, power engineering, and informational technology. The partners are:

- ArcLog – Technological Competence Center for Arctic Logistics Operations, established at the Department of Industrial Engineering, UiT Narvik,
- Institute of Industrial Electronics and Electrical Engineering, and Department of Modelling and Simulation, Riga Technical University, Latvia,
- Faculty of Information Technology and Communication Sciences, Tampere University, Finland.

The PROCSI network event consists of several meetings and presentations of educational and research priorities of the network members. The main focus of this event is on Tampere University. In addition to the presentations, demos and cooperation brainstorms, the event program includes two seminars. The seminar on academic publishing is organized for master students as part of the course INE-3602-1 22H Project (UiT master program Industrial Engineering 2022), and the academic staff interested in developing their academic careers. Seminar content is provided by Sergey Balandin from Tampere University. The seminar participants get an overview of the main metrics and indexes used by the scientific community, their historical background, and role. Also, the existing professional communities and associations of IT engineers to be discussed, as well as the advantages of using major open libraries, specialized search engines, and other Internet tools for scientific work. The seminar program consists of the introduction lectures and life participation in two days program of the FRUCT conference, technically sponsored by IEEE. Two master students and a researcher from UiT have their presentations included to the program of FRUCT32 conference. Moreover, three more master students from UiT are attending the conference with posters.

In addition, the seminar on Cyber Security for Critical Infrastructures is hosted in Tampere as well. Academic staff from RTU will provide the content, 5 introduction lectures (10 hours in total). Content of the seminar covers the following: concept of critical infrastructure and operational fundamentals, critical infrastructure reliability parameters and functional interdependencies, critical infrastructure networks mutual interdependencies assessment and modeling, critical infrastructure network control, and security considerations.



Nordplus

Demos/Posters Session of the 32nd FRUCT Conference

The first part of the Demos/Posters section is a promotional section to present/introduce demo projects to the public. Presentations will be done as 2 minutes videos on Youtube in the Pecha Kucha style. The second part of the session will be held in form of open discussion held by Zoom teleconference.

All conference participants are warmly welcome to take part in voting for the best demo/poster of the 32nd FRUCT conference by giving your “Like” for the demos you like the most. One person can vote for as many demos as he/she liked. If you have some special requirements please contact organizing committee by email info@fruct.org.

Pecha Kucha Presentation Format

Pecha Kucha is a presentation technique where a speaker shows a definite number of slides (usually 20 or 15), each for 20 seconds. The slides are changed automatically. The main intention for Pecha Kucha presentation style is to prevent participants from being too verbose and to make their talks more dynamic and impressive.

Pecha Kucha Night is an event where each speaker uses Pecha Kucha presentation, and speakers change each other in non-stop fashion. Initially invented by architects, this kind of event is often used to present creative projects or work; nowadays it is also used for R&D talks too. Pecha Kucha Night format allows all participants to make announcements about their demos in attractive and time-efficient way. That is why we have chosen this format for demo promotion section at FRUCT conference. More information can be found at <http://www.fruct.org/demo32>.

How to prepare Pecha Kucha presentation

Here is an instruction on how to prepare your Pecha Kucha style presentation for Demo promotion section. Your presentation must contain exactly 6 slides, and each of them will be displayed for 20 seconds. The slides will be changed automatically. The presentation will take exactly 2 minutes (it should be noted that classical Pecha Kucha has 20 slides, but we have to reduce the number due to a large amount of submitted presentations). Provide the information about yourself and your presentation on the first slide (name, institution, title of your presentation).

The main purpose of your talk would be to interest people, so your presentation should make absolutely clear the main ideas of your project and explain what you plan to show at the demo stand. Make your presentation fascinating to attract attendees and avoid technical details in your talk. Reveal one main idea on each slide. Do not overload your slides with information. Remember, that each slide is displayed only for 20 seconds. Place no more than 2 lines of text per slide, or one big picture. Avoid using slide titles. Do not duplicate the same slides in your presentation — it is cheating! If you see that 20 seconds for a particular slide is not enough for you, try to decouple it into the two or more, or omit the details. Do not place “Thank you” or “Q&A” slides in the presentation. Pecha Kucha session does not imply any questions from the auditory. All the questions will be asked afterwards in a poster room. Prepare your speech thoroughly and beforehand. As you have only 20 seconds per slide, it is quite impossible to improvise during the talk. Rehearse your speech several times to be sure in the absence of pauses when you wait for the slide change, or accelerations when you fails to follow your slides. Try to speak in the same pace during all the presentation. It definitely depends on your text, so try to prepare near the same amount of text in speech for each slide.

Check list

- Use exactly 6 slides.
- Place information about yourself and your presentation (name, institution) on the first slide.
- Reveal one main idea on each slide.
- Place no more than 2 lines of text or 1 large image per slide.
- Do not duplicate the same slides, do not place “Thank you” or “Q&A” slides in the presentation.
- Do not use any slide change animation.
- Prepare your speech thoroughly and do not forget to rehearse it.

List of Demos/Posters (preliminary list based on submissions by November 1, 2022)
1. *Poster: Smart Manufacturing, Intelligent Manufacturing & Industry 4.0: Bibliometric Analysis and Comparative Review, by Oluwatomi Abioye*

The subject of Smart Manufacturing has become an area of increased interest and discussion among researchers and organizations around the world. However, there continues to be an absence of a consistent and unified definition of Smart Manufacturing. The differences between Smart Manufacturing and Industry 4.0 are still vague and very few have a clear understanding of what these terms mean. Researchers have used the terms “digital manufacturing”; “smart manufacturing” and “intelligent manufacturing” interchangeably, some have even defined them as the same, while certain literatures have distinguished them. This paper analyzed diverse articles related to Smart Manufacturing, Intelligent Manufacturing, and Industry 4.0 to summarize the evolution, key technologies, and national strategies associated with these concepts.

2. *Poster: Comparison of Logistics Service Quality Models (A study on SERVQUAL, SERVPERF, and Kano's Models), by Emmanuel Yeboah Mensah*

Various models have been proposed by researchers on how to determine service quality for products and services. In this study, SERVQUAL, SERVPERF, and Kano's model will be compared. SERVQUAL focuses on customer's idea of expected quality as compared to their perceived quality. SERVPERF on the other hand considers service quality as a factor of performance. Kano's model seeks to put products and services under five attributes of quality; attractive, one-dimensional, must-be, indifferent, and reverse. The three models are fundamentally observed to see what they seek to achieve as a tool for measuring logistics service quality. The models are compared for similarities between them and the differences they present as applicable to the logistics industry. The foundation of these models is summarized in this study from previous research conducted on these models. The models are also discussed to look at what they lack according to order researchers and how they can fundamentally be applied to various industries.

3. *Poster: Optimizing Food logistics with Robots (A review consideration for rural Africa), by Caleb Nyamadi*

Food produce on farms in rural parts of Africa are wasted annually because they cannot be harvested and sent off the farmlands. Over the years, many improvements have been introduced to the logistics of food produce from farms. However, these majorly apply to accessible farmlands with a regular or uniform topography.

This study seeks to investigate the situation at irregular and inaccessible locations in rural Africa, and how Robotics can be employed to provide solutions. The current application of robots on farms would be reviewed and considerations made of how these can be redesigned for the rural farmlands.

4. *Demo: Video Cameras and Sensors Status Monitoring System in IoT Environments, by Nikita Besednyi, Artur Harkovchuk, Dmitry Korzun*

This short paper discusses a operation tracking problem of sensors and cameras in IoT. The authors were a separate module for installing and monitoring the status of sensors and video cameras of existing monitoring systems. The authors developed a prototype system to solve some problems of sensors and cameras operation tracking in IoT monitoring systems. To monitor the correct operation of sensors and cameras, the authors use neural networks and contextual information.

5. *Demo: Digital Statistics of Human Use of Sport Training Equipment, by Nikita Bazhenov, Egor Rybin, Dmitry Korzun*

Modern video surveillance systems (VSS) allow organizing the recognition of a person and human activity and are used in various application areas. A particular example of such a system is the monitoring and support of human health during exercise with sports equipment (eHealth/mHealth). In this demo, the following tasks of developing a smart video service for monitoring the movement of an athlete around the training equipment and its use are considered: a) training machine is free, human either not presented in frame or stand away; b) human stands in area near training machine; c) human is in working area of training machine, but not necessary to do anything with it; d) human actually working out, training machine is in use. An experimental study allows to evaluate the applicability of the service being developed in terms of accuracy and performance.

6. *Demo: Digital referee system for powerlifting competitions, by Smirnov Konstantin, Vlad Ermakov, Dmitry Korzun*

Currently, most of the powerlifting competitions are conducted without any digital systems, which will be responsible for the fairness of evaluation of participants. Since the evaluation of participants is carried out by judges, the following problems follow:

- Errors when checking the correctness of the exercise
- A large number of judges are needed to conduct competitions
- Occurrence of errors when logging competitions (entering all results manually)

To solve this problem, we have decided to create the prototype of a digital referee system designed to analyze the correctness of the athlete's performance of the "Chest Press" exercise on the MB Barbell "Chest Press / Bench Press" simulator, based on the readings of a three-axis accelerometer provided by MB Barbell. The developed prototype allows to fix the initial and final positions of the athlete's hands, with the calculation of the movement of the hands performing the exercises. Before performing the working approach, calibration is performed, consisting of an arbitrary number of repetitions on a simulator with an empty weight. Calibration determines the extreme positions of the hands when performing an exercise on this simulator for this athlete. All calibration measurement results are entered into a special calibration table, according to which, in the future, the average calibration value of the amplitude of the athlete's arm movement is calculated. Thus, the developed system has the following functions:

- Fixing the correctness of the exercise without the participation of a judge
- The function of individual calibration for each athlete
- Implementation of the electronic protocol of the competition in real time with integration on the electronic scoreboard.

FOR NOTES

The 32nd IEEE Conference of Open Innovations Association FRUCT

Program

Tampere, Finland
9-11 November 2022

A special word of thanks goes to the
*Tampere University, Wirepas Ltd, IEEE Finland, Electronics MDPI
journal, and Big Data and Cognitive Computing MDPI journal for
sponsoring the conference; and to certifyme.online as an e-Badge
partner of the conference.*

CALL FOR PARTICIPATION

The 33rd Conference of Open Innovations Association FRUCT

Žilina, Slovakia, 24-26 May 2023



Overview

FRUCT conference is a high-quality scientific event for meeting academia and business people and setting projects. The average conference is attended by 150+ participants from academia and industry. The average **acceptance rate is 40%**. Traditionally the conference attracts most active and talented students to present their R&D projects, meet interesting colleagues, create new teams, and find employers and investors. The conference invites the world-class academic and industrial experts to lecture on the hottest topics. We welcome everybody to submit papers and take part in the conference, present your research results. The FRUCT conference **allows both onsite and online participation**.

The conference offers low registration fee. FRUCT doesn't offer deadline extension, but **we offer the Early-bird submission** with the additional review cycle. For further details please refer to <http://www.fruct.org/cfp33>.

List of conference topics

- ✓ Artificial Intelligence, Robotics and Automation Systems
- ✓ Location Based Services: Navigation, Logistics, e-Tourism
- ✓ Big Data and Data Mining, Data Storage and Management
- ✓ Open Source Mobile OS: Architectures and Applications
- ✓ Cloud Computing Systems, Networks and Applications
- ✓ Wearable-Computing Novel Architectures and Solutions
- ✓ Security and Privacy: Applications and Coding Theory
- ✓ Relational databases, Spatial databases, SQL tuning
- ✓ Natural Language Processing, Speech Technologies
- ✓ Internet of Things and Enabling Technologies
- ✓ Network Technologies, Next Generation Networks, Emerging Wireless Technologies, 5G
- ✓ Bioinformatics, e-Health and Wellbeing
- ✓ Smart Spaces, Linked Data and Semantic Web
- ✓ Knowledge and Data Managements Systems
- ✓ Context Awareness and Proactive Services
- ✓ Sensor Design, Ad-hoc and Sensor Networking
- ✓ Software Design, Innovative Applications
- ✓ Smart Systems and Embedded Networks
- ✓ Computer Vision, Image and Video Processing
- ✓ Crowdsourcing and Collective Intelligence
- ✓ Intelligence, Social Mining and Web
- ✓ Simulation platforms for Drone Applications
- ✓ Drones and IoT convergence

Call for papers

Depending on the type and maturity level please submit your work into one of the following 3 categories:

1. **Full paper** (min 6 full pages, max 12 pages) **OR** 2. **Short paper** (min 2 pages, max 6 pages)

Submission deadline: 24 March 2023 Early-bird deadline: 27 February 2023

Notification of acceptance: **21 April 2023** Camera-ready deadline: **28 April 2023**

3. **Poster / Demo proposal:** submission deadline: **15 May 2023**

Publication

All submitted Full Papers will be peer reviewed by the technical committee. Accepted Full papers and extended abstracts are published in the proceeding of FRUCT conference (ISSN 2305-7254). The accepted Full Papers will be included to **IEEE Xplore (application is pending)** and **DOAJ**, indexed by **Scopus**, **ACM**, **Web of Science**, **RSCI (VAK list)**, **DBLP**, etc. The conference proceedings are included in **AMiner**, **CORE**, and **Scimago Journal Rank (SJR)** <http://scimagojr.com/journalsearch.php?q=21100305223&tip=sid>. The selected papers get invitations to publish extended versions of the papers in the partner journals, e.g., **IJERTCS**. FRUCT is **rated by many national systems**, e.g., **Finnish (JUFO=1, ID: 72707)**, **Norwegian (NSD=1)**, **Danish (BFI=1, ID: 8782540)**.

Contacts

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