Program of

The 35th Conference of Open Innovations Association FRUCT

Tampere, Finland

24-26 April 2024

Tampere University

IEEE

IEEE Finland

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 quaelibet!
Semper sint in flore!

Vivant omnes virgines
Faciles, formosae!
Vivant et mulieres,
Tenerae, amabiles,
Bonae, laboriosae!

Vivat et respublica,
Et qui illam regit!
Vivat nostra civitas,
Maecenatum caritas,
Quae nos hic protegit

Pereat tristitia,
Pereant dolores,
Pereat diabolus,
Quivis antiburschius,
Atque irrisores

Practical Information

The FRUCT35 conference is held in a hybrid mode. The first day (April 24, 2024) is reserved for onsite presentations. The second and the third days (April 25-26, 2024) are reserved for online sessions. 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 downtown campus, Virta building, address: Åkerlundinkatu 5, Tampere, Finland / Online participation.** 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) **Please join the Questions and Answers (Q&A) in MS Teams**. You can use MS Teams either locally installed or web version. Please use the corresponding Teams links. Please use your real name at the registration and we will immediately approve the request to connect. Please, make sure to mute your microphone. If you have any questions, please click on a button with the hand (Raise hand button), so the chairman can easily manage the session. We recommend joining a Teams 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 GMT+3, which corresponding to Finnish time zones. The MS Teams links 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, April 22, 2024. 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:

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.)

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 **20% discount**.

The proceedings of 35th FRUCT conference are available online:
Issue 1: https://fruct.org/publications/fruct35/
Issue 2: https://fruct.org/publications/acm35/

General Facts and Statistics for the 35th FRUCT Conference:

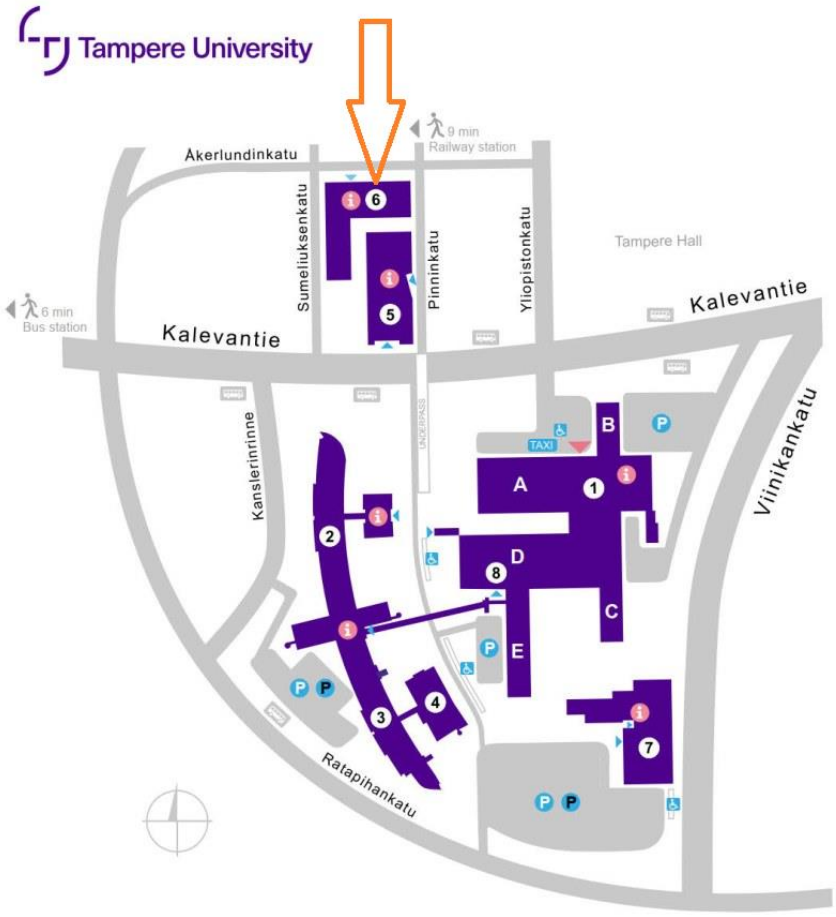
Total submissions: **94** | Accepted Full Papers: **35** | Acceptance rate: **37%**
Total authors: **179** | representing **26** countries

Tampere University

IEEE

IEEE Finland

FRUCT



CITY CENTRE CAMPUS

1. Main building
2. Pinni A
3. Pinni B
4. TietoPinni
5. Linna
6. Virta
7. Atalpa
8. Theatre

- Main entrance
- Info desk
- Parking
- Guest parking
- Disabled parking
- TAXI Taxi drop-off & pick-up

Organization Committee of the 35th FRUCT conference

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FRUCT President: Sergey Balandin
Publishing team leader: Tatiana Shatalova

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Tatiana Sherstinova
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Alexander Smirnov
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Timofey Turenko
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Lenis Wong
Victor Zappi
Mark Zaslavskiy

Program of the 35th FRUCT conference

April 24-26, 2024, Tampere, Finland

Tampere University downtown campus, Virta building, Auditorium 109
Address: Åkerlundinkatu 5, Tampere, Finland / Online participation
NOTE: Conference time is Finnish time (GMT+3) as conference is held in Tampere, Finland

DATE	TIME	PROGRAM
24.04.24	11:30-12:00	**Onsite registration to the 35th FRUCT conference**
	12:00-13:00	**Opening of the 35th FRUCT conference**
	13:00-14:00	**Lunch**
	14:00-14:50	**Keynote talk:** Including Everyone in Green Data Analytics, by Michal Kvet
	14:50-15:00	**Break**
	15:00-16:40	Onsite session: Artificial Intelligence Applications I
	16:40-17:00	**Break**
	17:00-18:00	Onsite session: PROCSI/2023 project meeting
25.04.24	10:00-11:30	Online session: Artificial Intelligence Applications II
	11:30-11:40	**Break**
	11:40-12:55	Online session: Computer Vision, Image, Audio and Video Processing
	12:55-13:05	**Break**
	13:05-14:35	Online session: Natural Language Processing
	14:35-14:45	**Break**
	14:45-15:45	Online session: Big Data, Knowledge Management and Data Mining Systems
	15:45-15:55	**Break**
	15:55-17:40	Online session: Workshop: The 8th DataWorld
	17:40-18:00	**Break**
	18:00-18:30	Online session: **Demos & Posters**
26.04.24	10:00-12:00	Online session: Algorithms and Modeling
	12:00-12:10	**Break**
	12:10-13:10	Online session: Security and Privacy
	13:10-13:20	**Break**
	13:20-14:25	Online session: Healthcare and Wellbeing
	14:25-14:35	**Break**
	14:35-15:30	Online session: Innovative Applications
	15:30-15:45	**Official closing of the 35th FRUCT conference**

MS Teams links:

April 24, 2024 (Wednesday): https://teams.microsoft.com/l/meetup-join/19%3ameeting_NDZjZDdlZDMtYmU4OC00ZmY0LTk5YjItOGI5MzFhNTVjOTJh%40thread.v2/0?context=%7b%22Tid%22%3a%228324ff4b-14c8-4bf5-b07e-a0713179f37e%22%2c%22Oid%22%3a%224d479202-a42c-46e9-b2f3-e8b1c1583ae9%22%7d

April 25, 2024 (Thursday): https://teams.microsoft.com/l/meetup-join/19%3ameeting_MGIwZWRjZjgtYjAxOC00OTJmLThiZGItYzYyYmJkOGRkZWE1%40thread.v2/0?context=%7b%22Tid%22%3a%228324ff4b-14c8-4bf5-b07e-a0713179f37e%22%2c%22Oid%22%3a%224d479202-a42c-46e9-b2f3-e8b1c1583ae9%22%7d

April 26, 2024 (Friday): https://teams.microsoft.com/l/meetup-join/19%3ameeting_NmY5MWI2YzEtZDRjZS00NGFiLWEyODEtYjZjZjYwZjg2ZmVi%40thread.v2/0?context=%7b%22Tid%22%3a%228324ff4b-14c8-4bf5-b07e-a0713179f37e%22%2c%22Oid%22%3a%224d479202-a42c-46e9-b2f3-e8b1c1583ae9%22%7d

Thank you and looking forward to see you at the 36th FRUCT in Lappeenranta, Finland on October 30 – November 1, 2024! (Note that the 36th FRUCT conference allows online participation)

Program of the 35th FRUCT conference

Tampere University downtown campus, Virta building, Auditorium 109
Address: Åkerlundinkatu 5, Tampere, Finland / Online participation
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11:30	30m	**Onsite registration to the 35th FRUCT conference and Welcome coffee**
Onsite Session: Opening and Plenary session of the 35th FRUCT conference		Chairman: Sergey Balandin
12:00	5m	Welcome words of behalf of FRUCT Association and practical information, by Sergey Balandin
12:05	15m	Addressing on behalf of Tampere University, by Jari Nurmi
12:20	20m	Survey of real-world process sandboxing, by Arto Niemi
12:40	20m	EDISS: a Master Programme Bridging the Gap Between Data Science and Software Engineering, by Sebastien Lafond
13:00	1h	**Lunch**
14:00	50m	**Keynote talk: Including Everyone in Green Data Analytics**, by Michal Kvet
14:50	10m	**Break**
Onsite Session: Artificial Intelligence Applications I		Chairman: Alexey Kashevnik
15:00	20m	Enhancing Breast Microcalcification Classification: From Binary to Three-Class Classifier, by Adam Mračko, Ivan Cimrak
15:20	20m	Novel Framework for Job Interview Processing Automation Based on Intelligent Video Processing, by Kenan Kassab, Alexey Kashevnik
15:40	20m	Semi-Automated Ki67 Index Label Estimation for HE Images Classification, by Dominika Petríková, Ivan Cimrak
16:00	20m	Empowering Prior to Court Legal Analysis: A Transparent and Accessible Dataset for Defensive Statement Classification and Interpretation, by Yannis Spyridis, Jean-Paul Younes, Haneen Deeb, Vasileios Argyriou
16:20	20m	Multi-Sensor Fusion for Human Action Detection and Human Motion Prediction, by Thean Chun Koh, Chai Kiat Yeo, Sunil Sivadas
16:40	20m	**Break**
Onsite Session: PROCSI/2023 project meeting		Chairman: Nadezda Kunicina
17:00	20m	Development of Emerging Technology-driven NordPlus Competence Network in the Baltic and Nordic Regions, by Nadezda Kunicina, Rasa Brūzgienė, Lina Narbutaite, Anton Rassõlkin, Mahmoud Ibrahim, Sergey Balandin
17:20	40m	PROCSI/2023 project discussion
18:00		**Closing of the day**

April 25 (Thursday), Online participation
NOTE: Conference time is Finnish time (GMT+3) as conference is held in Tampere, Finland

10:00		**Online Session:** Artificial Intelligence Applications II — Chairman: Nikolay Shilov Playlist: https://www.youtube.com/watch?v=Eh_2F18Kv7o&list=PLKlZJpq1JqdNzmTACzSWepPCpf5y0Gygi
10:00	55m	Detection of Pleuropulmonary Blastoma at an Early Stage Using Vision Transformer Model, by Sahar Almenwer, Hoda El-Sayed, Kamruzzaman Sarker Enhancing NLP through GNN-Driven Knowledge Graph Rewiring and Document Classification, by Alex Romanova Analysis of the Vehicle Maneuver and Driver Emotion: Methodology and Results Discussion, by Varvara Shushkova, Alexey Kashevnik, Yulia Rzhonsnitskaya, Alexey Blazhenov Decision Support Based on Human-Machine Collaboration Patterns: Conceptual Model and Scenario, by Alexander Smirnov, Tatiana Levashova On Gait-Based Identification of Persons During Winter Conditions, by Grigorij Einovich Rego, Yulia Vahroeva, Aleksei Falev
10:55	35m	**Q&A for the Artificial Intelligence Applications II session**

11:30	10m	**Break**
11:40	**Online Session:** Computer Vision, Image, Audio and Video Processing Playlist: https://www.youtube.com/watch?v=UD2o8jTH6CA&list=PLKlZJpq1JqdNTRANXozv9G6AcGjMmFh8e	Chairman: Nikolay Teslya
11:40	45m	Specialized Non-local Blocks for Recognizing Tumors on Computed Tomography Snapshots of Human Lungs, by Aleksei Samarin, Aleksandr Savelev, Egor Kotenko, Artyom Nazarenko, Valentin Malykh, Alexandr Motyko, Alina Dzestelova, Aleksei Toropov, Elena Mikhailova Image Plagiarism Detection Pipeline for Vast Databases, by Mariam Kaprielova, Andrey Grabovoy, Ksenia Varlamova, Ivan Potyashin, Yury Chekhovich, Aleksandr Kildyakov EfficientSwin: A Hybrid Model for Blood Cell Classification with Saliency Maps Visualization, by Tanviben Patel, Kamruzzaman Sarker, Hoda El-Sayed Assessment of Changes in the Rise and Fall of the Audio Broadcasting Signal in the Transmission Channel, by Oleg Popov, Tatiana Chernysheva, Valentin Abramov, Andrey Borisov, Kirill Orlov
12:25	30m	**Q&A for Computer Vision, Image, Audio and Video Processing session**
12:55	10m	**Break**
13:05	**Online Session:** Natural Language Processing Playlist: https://www.youtube.com/watch?v=7ZSKfCc5S9E&list=PLKlZJpq1JqdMwLQsqUCNJAdVhSM5uTV90	Chairman: Lidia Pivovarova
13:05	1h	Matching Literature Heritage Entities From Heterogeneous Data Sources Based On The Textual Description, by Georgii Sipovskii, Nikolay Teslya Past Voices, Present Insights: Sociolinguistic Research through Literary Artifacts, by Tatiana Sherstinova, Margarita Kirina N-gram Analysis of Everyday Russian Speech: in Search of Multiword Units, by Tatiana Sherstinova, Olga Markovich Bridging Gaps in Russian Language Processing: AI and Everyday Conversations, by Tatiana Sherstinova, Nikolay Mikhaylovskiy, Evgenia Kolpashchikova, Violetta Kruglikova The Impact of Multilinguality and Tokenization on Statistical Machine Translation, by Alidar Asvarov, Andrey Grabovoy
14:05	30m	**Q&A for Natural Language Processing session**
14:35	10m	**Break**
14:45	**Online Session:** Big Data, Knowledge Management and Data Mining Systems Playlist: https://www.youtube.com/watch?v=YMZPMo2IJU0&list=PLKlZJpq1JqdOQGtTIyxT-g8zA9OCJltIN	Chairman: Michal Kvet
14:45	35m	Order in Desbordante: Techniques for Efficient Implementation of Order Dependency Discovery Algorithms, by George Chernishev, Yakov Kuzin, Dmitriy Shcheka, Michael Polyntsov, Kirill Stupakov, Mikhail Firsov Extending Desbordante with Probabilistic Functional Dependency Discovery Support, by George Chernishev, Ilia Barutkin, Maxim Fofanov, Sergey Belokonny, Vladislav Makeev Technical Readiness of Prescriptive Analytics Platforms: A Survey, by Marvin Niederhaus
15:20	25m	**Q&A for Big Data, Knowledge Management and Data Mining Systems session**
15:45	10m	**Break**
15:55	**Online Session:** Workshop: The 8th DataWorld Playlist: https://www.youtube.com/watch?v=02Kc1eP8S1U&list=PLKlZJpq1JqdM9Pk1NTAVijUw9GKmJjkmV	Chairman: Marek Kvet
15:55	1.15h	Analytical Tool for Oracle SQL Statements, by Lukáš Jancík, Michal Kvet API Interface for Analyzing the Correctness of DML Queries, by Michal Kvet, Andrea Meleková, Dmytro Demchenko Comparative Analysis of Simulated Cloud Task Scheduling, by Jarmila Skrinarova, Adrian Hamada Referring Null Values in Partitioned Tables, by Martina Hrínová Durneková, Michal Kvet Fast and Precise Convolutional Jaro and Jaro-Winkler Similarity, by Ondřej Rozinek, Jan Mares A Novel Regression Approach: Analyzing Textual Data in Similarity Space, by Ondřej Rozinek, Monika Borkovcova
17:10	30m	**Q&A for Workshop: The 8th DataWorld session**
17:40	20m	**Break**
18:00	30m	**Online Session: Demo & Poster Session,** Playlist: https://www.youtube.com/watch?v=svZflu609Ps&list=PLKlZJpq1JqdN4_OHTfwYEUzgVr0TiNOyf
18:30		**Closing of the Day**

April 26 (Friday), Online participation

NOTE: Conference time is Finnish time (GMT+3) as conference is held in Tampere, Finland

10:00	**Online Session:** Algorithms and Modeling Playlist: https://www.youtube.com/watch?v=sBCyP3-6veA&list=PLKlZJpq1JqdPR7W-dHNJWMVwJQ2vIBpYz	Chairman: Alexey Kashevnik
10:00	1.25h	An Evaluation Framework for Validating the Quality of a Data Vault 2.0 Data Model, by Heli Helskyaho, Marko Helskyaho, Laura Ruotsalainen, Tomi Männistö Curriculum Learning-Based Multivariate Time Series Anomaly Detection, by Devilliers Dube, Mehmet Akar iBRF: Improved Balanced Random Forest Classifier, by Asif Newaz, Salman Mohosheu, Abdullah al Noman, Taskeed Jabid Reflective Models of Information Use for System Functioning, by Alexander Geyda Automation of Machine Learning Pipeline Design by an Ontology as an Integrative Meta-Learning Model, by Maksim Aliev, Sergey Muravyov Leveraging SIR and Barabasi-Albert Models for Epidemic Modelling, by Smruthi Bhat A Meta-Heuristic Approach for Optimizing Neural Network Model for Heart Disease Prediction, by Gummuluri Venkata Ravi Ram, Jayanth prathipati, Hemanth Kumar Mogilipalem, Sona Mundody, Ram Mohan Reddy Guddeti
11:25	35m	**Q&A for Algorithms and Modeling session**
12:00	10m	**Break**
12:10	**Online Session:** Security and Privacy Playlist: https://www.youtube.com/watch?v=KGvf_R_mLjY&list=PLKlZJpq1JqdP2uAc_LVpkxCm-aGe5jFYY	Chairman: Nikolay Shilov
12:10	40m	Vulnerability of the Key Sharing Protocol Executing over the Noiseless Public Channels with Feedback, by Alexey Lapshin, Valery Korzhik, Viktor Yakovlev, Vladimir Starostin, Aleksei Zhuvikin A Multilayered Approach to Enhance Cloud Security using Homomorphic, AES, and Hashgraph, by Ayush Verma, Tanuj Chandela, Geetanjali Rathee Maturity Model for Information Access Management of Peruvian IT Service Providers based on ISO/IEC 27001 and CMMI Security Controls, by Sergio Huamán, Luis Ponce, Lenis Wong
12:50	20m	**Q&A for Security and Privacy session**
13:10	10m	**Break**
13:10	**Online Session:** Healthcare and Wellbeing Playlist: https://www.youtube.com/watch?v=6ew6fx8qwQA&list=PLKlZJpq1JqdNOaLYpOrVEVWgdNGAD6n0-	Chairman: Kirankumari Patil
13:10	45m	Framework for Monitoring Peruvian Patients with Hypertension using a Smartwatch and GPT, by Miguel Rosales, Enzo Huacacolque, José Luis Castillo Sequera, Lenis Wong Machine Learning Approaches to Predict Biological Effects of Organic Compounds, by Aniket Sanjay Shitole, Shrikant Mete, Navnath Hatvate Modeling of Wave Propagation from a 5GHz Wi-Fi Router in the Experiment of an Electromagnetic Field on Biological Objects Effect Study, by Anna Rassadina, Gennadij Lukyanov On Cancer Breathing: How Otto Warburg Led Manfred von Ardenne and then the Whole World into Temptation, by Manfred Sneps-Sneppe
13:55	30m	**Q&A for the Healthcare and Wellbeing session**
14:25	10m	**Break**
14:35	**Online Session:** Innovative Applications Playlist: https://www.youtube.com/watch?v=Fd8kyacFsGo&list=PLKlZJpq1JqdNbT_GCGITQN6699xu_XltB	Chairman: Dmitry Korzun
14:35	35m	A Review of Approaches to Detecting Software Design Patterns, by Jameleh Asaad, Elena Avksentieva Measuring the Learning Progress of Autistic Students Using the Smart Heuristic Kit: An Experimental Study in the UAE, by Ahmed Shuhaiber, Khaled Alomoush Digital Modeling of Territory for Smart e-Tourism Services, by Kirill Ivashnev, Dmitry Korzun
15:10	20m	**Q&A for the Innovative Applications session**
15:30	15m	**Official closing of the 35th FRUCT conference**

PROCSI - Promoting Cyber Security for Critical Infrastructures **Network Meeting**, funded by Nordplus Higher Education 2023

In co-location with the 35th FRUCT conference we organize a meeting of the newly established network **PROCSI – Promoting Cyber Security for Critical Infrastructures/2023**, funded by Nordplus Higher Education 2023 (project number **NPHE-2023/10510**). The PROCSI network is led by Riga Technical University 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:

- Institute of Industrial Electronics and Electrical Engineering, and Department of Modelling and Simulation, Riga Technical University, Latvia,
- ArcLog – Technological Competence Center for Arctic Logistics Operations, established at the Department of Industrial Engineering, UiT Narvik, Norway,
- Faculty of Information Technology and Communication Sciences, Tampere University, Finland,
- Department of Electrical Power Engineering and Mechatronics, Tallinn University of Technology, Estonia,
- Faculty of Informatics, Kaunas University of Technology, Lithuania,
- Department of Electrical Engineering and Automation, Aalto 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 topical seminars. The event program consists of the project meeting to summarize the main finding and achievements of the project, plan future activities in the follow-up projects, and life participation in three days program of the FRUCT conference, technically sponsored by IEEE.

Demos/Posters Session of the 35th FRUCT Conference

Playlist:
Link to the Online Q&A session:

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 MS Teams teleconference.

All conference participants are warmly welcome to take part in voting for the best demo/poster of the 35th 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/demo35.

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

1. ***Demo:*** Accuracy of Movement Measurement for Training on Gym Machine (actual demo), by Konstantin Smirnov, Evgeniy Topchiy, Vladislav Ermakov, and Dmitry Korzun
   Abstract: During the exercise on a gym machine, the athlete performs a complex set of movements to move a weight. Quality evaluation of the performed moves (repetition) with sensor systems allow determining the number and correctness of performed repetitions. Various factors affect the quality of the collected sensor data during the exercise, such as: the technique; impacts, caused by external influences on the machine and the movement pattern. In this demo, we consider the impact of different movement types on the collected data describing this movement. The research uses a bench-press machine with an easy-start system, provided by MB Barbell (http://www.mbbarbell.com). Types of movements are divided into: movements with different speeds (slow execution, normal speed execution, fast execution), movements with different weights (warm-up weight, working weight, maximum weight), movements with different amplitudes (full amplitude, partial amplitude). In total there are 18 types of different movements. In total, there are 18 types of different movements, for each of them 3 tests were carried out, for a total of 56 tests.
   Additionally we studied the impact of non-standard movements on the obtained measurements quality, such as the easy-start system, apparatus impacts on the limiters, and the external vibrations influence. To visualize the results, the conducted research includes graphs showing the angle value of the machine movable frame during the performance in various movements, where the working amplitude is traced. Data collection was done at different sensor frequencies to evaluate its impact on the accuracy of calculating the distance covered by the athlete's hands.
   According to the results of the experiments, it was possible to achieve an error of no more than 1% of the actual distance traveled by the athlete's hands.
2. ***Demo:*** Targeted Contrastive Learning for NMT Tautologies Correction, by Nikolay Karpachev and Radoslav Neychev
   Abstract: Neural machine translation models achieve state-of-the-art performance on most domains and high-resource language pairs. However, they often exhibit certain types of errors that complicate or disrupt understanding of translation. Such errors require post-processing or human validation and thus hinder practical usage of NMT. Among such error types is the problem of tautologies in translation.
   In this work we present a robust and effective method for tackling the problem of tautologies in translation - Targeted Contrastive Learning. An NMT model is fine-tuned on synthetically generated "targeted" samples with contrastive loss function. This procedure explicitly penalizes model translations that exhibit tautologies and increases probability of alternative non-tautological translations.
   Experiments on WMT / new scrawl data show the effectiveness of the proposed approach, achieving parity with a two-stage procedure based on oracle re-ranking.
3. ***Demo:*** Development of a graphical system for the design and analysis of parallel programs, by Igor Vasiliev
   Abstract: With the growing need to process large amounts of data and optimize complex calculations in many terms such as computer modeling, analytics and artificial intelligence, the need for the use of parallel and distributed computing is growing and emerging. Parallel algorithms are used both in mathematics and in biology, chemistry, physics and astronomy, but the problem of tools for designing parallel programs remains relevant.
   The goal of the project proposed in the paper is to develop application that allow the creation and use of parallel programs and provide the programmer with a set of functions for analyzing and optimizing parallel programs without being tied to a specific machine architecture and a specific programming language. The main criterion is to achieve universality and modifiability of such a system: separating the abstractions of parallelism from the specifics, which can be concretized by the user himself. This approach should simplify the processes of optimization, debugging, projection of parallel programs on different forms of parallel computing, and translation of parallel programs into other programming languages.
   In addition, in the described system, a parallel program visually looks like a graph, the vertices of which are code elements, and the arcs are connections between them. This has advantages in finding errors characteristic of the field of parallel computing, and makes the structure of parallel programs clearer for programmers.

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FOR NOTES

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The 35th Conference of Open Innovations Association FRUCT

Program

Tampere, Finland
24-26 April 2024

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CALL FOR PARTICIPATION
The 36th Conference of Open Innovations Association FRUCT
Lappeenranta, Finland, 30 Oct - 1 Nov 2024

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 below 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 submitting 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/cfp36.

List of conference topics

- ✓ Artificial Intelligence in Text Analysis and Generation
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- ✓ Big Data, Knowledge Management, Data Mining Systems
- ✓ Cloud, Fog and Edge Computing and Engineering, HPC
- ✓ Coding Theory, DevOps and DevSecOps Technologies
- ✓ Commercialization of Technologies and Digital Economy
- ✓ Emerging Wireless Technologies, 5G and beyond
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- ✓ Location Based Services: Navigation, Logistics, Tourism
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- ✓ Predictive Analytics, Probability and Statistics
- ✓ Wearable Electronics: Novel Architectures and Solutions
- ✓ Workshop: Investigating and Mitigating Climate Changes
- ✓ Algorithms and Modeling
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- ✓ Workshop: The DataWorld

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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: 9 September 2024 **Early-bird deadline: 9 August 2024**

Notification of acceptance: **30 September 2024** Camera-ready deadline: **7 October 2024**

3. **Poster / Demo proposal:** submission deadline: **18 October 2024**

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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