Program of

The 21st Conference of Open Innovations Association FRUCT

Helsinki, Finland
6-10 November 2017

UNIVERSITY OF HELSINKI DELL EMC IEEE IEEE ComSoc IEEE Communications Society IEEE Finland





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!

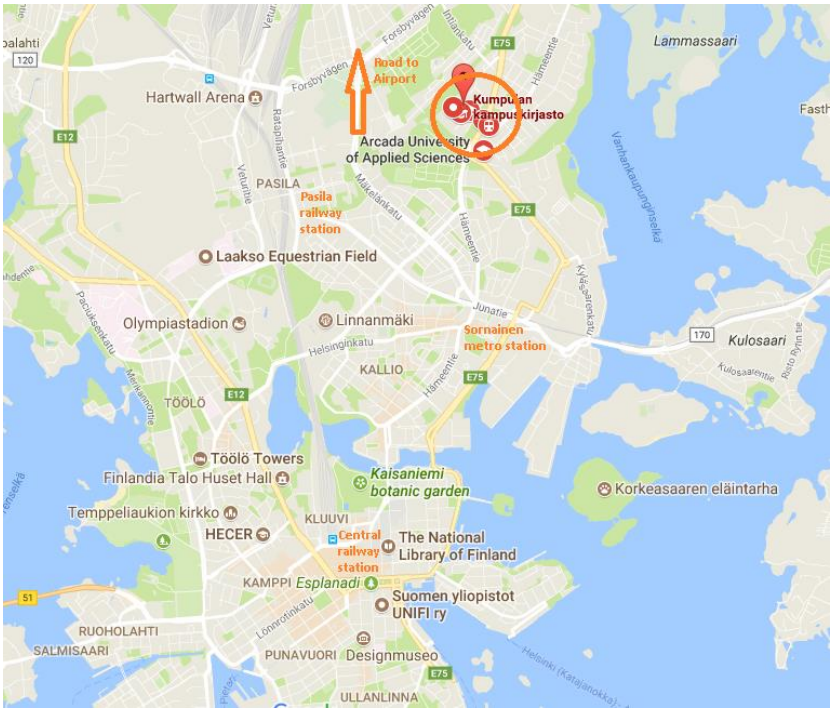
VIVANT OMNES VIRGINES
FACILES, FORMOSAE!
VIVANT ET MULIERES,
TENERAE, AMABILES,
BONAE, LABORIOSAE!

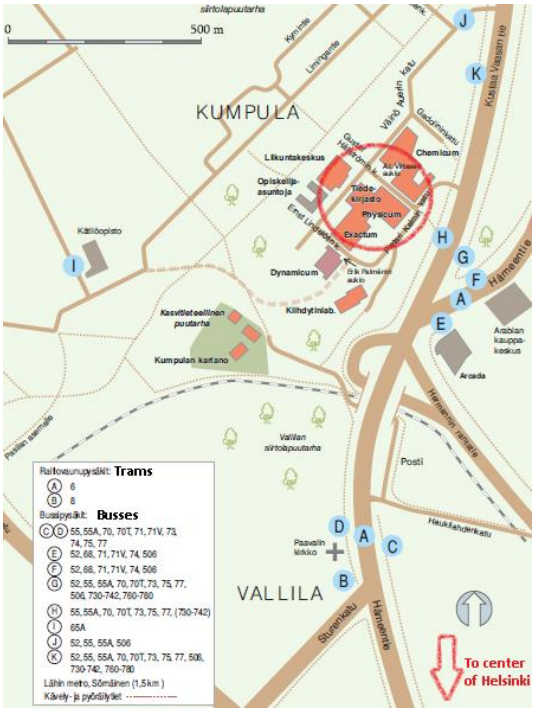
VIVAT ET RESPUBLICA,
ET QUI ILLAM REGIT!
VIVAT NOSTRA CIVITAS,
MAECENATUM CARITAS,
QUAE NOS HIC PROTEGIT

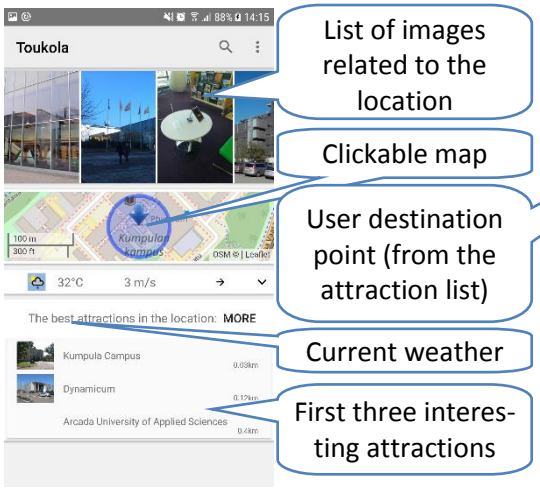
PEREAT TRISTITIA,
PEREANT DOLORES,
PEREAT DIABOLUS,
QUIVIS ANTIBURSCHIUS,
ATQUE IRRISORES!

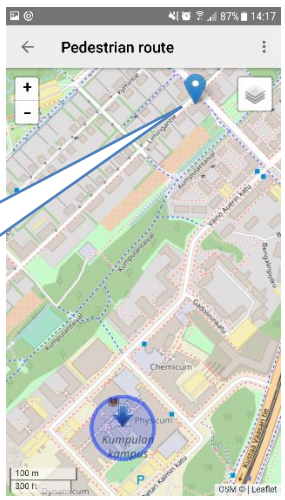
Practical Information

The 21st FRUCT conference will be held in the downtown of Helsinki - at Kumpula Campus of University of Helsinki, address: Ernst Lindelöfin katu 1, 00560 Helsinki. There is a lot of public transport connecting to the city center, e.g., busses, trams, and Sörnäinen metro station is only 1.5 km away. Please refer to map and campus plan below.









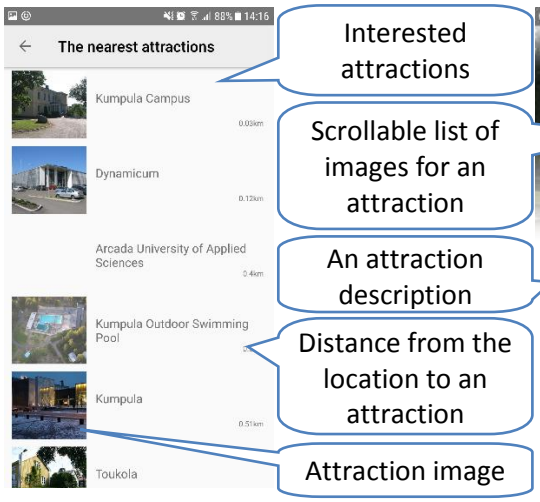
List of images related to the location

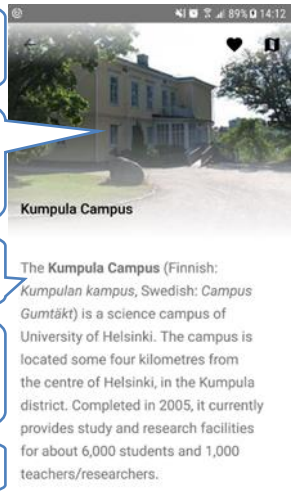
Clickable map

User destination point (from the attraction list)

Current weather

First three interes-ting attractions





Interested attractions

Scrollable list of images for an attraction

An attraction description

Distance from the location to an attraction

Attraction image

Also we recommend using Tourist Assistant – TAIS app - a mobile tourist guide for Android devices. Based on your current location, events and recommendations of other tourists, the app provides the list of attractions around. You can see your location on the map, browse information about attractions located within walking distance, check photos, get weather updates, create route to the selected attractions and a lot more. The app aggregates information from all major sources, e.g., Wikipedia, Wikivoyage, Wikitravel, Google Place, etc.

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FRUCT Chair: Sergey Balandin

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Program of the 21st FRUCT conference

November 6-10, 2017, Helsinki, Finland

University of Helsinki, Kumpula Campus, Ernst Lindelöfin katu 1, 00560 Helsinki

DATE	TIME	PROGRAM	
6.11.17	10:00-18:00	**Internal meetings of FRUCT working groups** (by invitation only)	
7.11.17	10:00-18:00	**Internal meetings of FRUCT working groups** (by invitation only)	
8.11.17	10:00-11:30	***Smart Spaces & IoT FRUCT Working Group meeting***	
	11:00-12:00	**Conference Registration**, Lobby of Chemicum building	
	12:00-14:15	**Opening of the 21st FRUCT conference**, Chemicum bld, A129 **Keynote talk:** Repairing the internet with Responsible Disclosures", by Victor Gevers, GDI.Foundation, Netherlands	
	14:15-14:45	**Coffee break,** Lobby of Chemicum building	
	14:45-16:15	Network technologies I, Chemicum bld, A129	
	16:15-16:30	**Break**	
	16:30-18:00	Embedded Systems, Chemicum bld, A129	AMICT I, Chemicum bld, A127
9.11.17	09:00-09:30	**Conference Registration**, Lobby of Chemicum building	
	09:30-10:15	**Keynote talk:** 5G security in standardization, by Valtteri Niemi, University of Helsinki, Finland, Chemicum bld, A129	
	10:15-10:30	**Break**	
	10:30-11:45	AMICT II, Chemicum bld, A129	ISMW: Natural Language Processing, Physicum bld, E205
	11:45-12:00	**Break**	
	12:00-13:00	Smart Spaces & IoT I, Chemicum bld, A127	Privacy & Security, Exactum, C222
	13:00-14:00	**Lunch break**	
	14:00-14:45	**Keynote talk:** RLLC and Future Industrial Applications, by Dmitry Petrov, Nokia, Finland, Chemicum bld, A129	
	14:45-15:00	**Break**	
	15:00-16:00	Network technologies II, Chemicum bld, A129	Smart Spaces and IoT II, Exactum bld, B120
	16:00-16:30	**Coffee break,** Lobby of Chemicum building	
	16:30-18:00	Robotic Systems, Chemicum bld, A129	
	18:00-18:20	Pecha Kucha pitches of demo, Chemicum bld, A129	
	18:30-21:00	**Demo Session and Social Event**, Exactum building open space	
10.11.17	09:00-09:30	**Conference Registration**, Exactum bld, B121	
	09:30-10:30	Software Development and Data Management I, Exactum bld, B121	On-line session, Exactum bld, B222
	10:30-10:45	**Break**	
	10:45-12:00	Software Development and Data Management II, Exactum bld, B121	AMICT III, Exactum bld, B222
	12:00-13:00	**Lunch break**	
	13:00-14:30	eHealth, Chemicum bld, A128	Image and Video Processing, Exactum bld, C129
	14:30-14:45	**Official closing of the 21st FRUCT conference**, Chemicum bld, A128	

Program of the 21st FRUCT conference

November 6-10, 2017, Helsinki, Finland

November 8 (Wednesday)
University of Helsinki, Kumpula Campus, Ernst Lindelöfin katu 1, 00560 Helsinki

10:00	1.5h	***Smart Spaces & IoT FRUCT Working Group meeting***	
11:00	1h	**21st FRUCT Conference Registration**	
Session: Official opening of the 21st FRUCT conference **Room:** Chemicum building, A129 Chairman: Sergey Balandin			
12:00	10m	Official opening of the 21st FRUCT conference	
12:10	15m	Dell EMC Academic Ecosystem: Knowledge and Business Processes Enhancement, by Gennady Smorodin, FRUCT, Russia	
12:25	30m	Building a product based on open collaboration, by Vesa-Matti Hartikainen, Jolla, Finland	
12:55	30m	Building an ecosystem for trusted mobile platform, by Kirill Chuvilin, Open Mobile Platform Ltd., Russia	
13:25	50m	**Keynote talk:** Repairing the Internet with Responsible Disclosures, by Victor Gevers, GDI.Foundation, Netherlands	
14:15	30m	**Coffee break**	
Session: Network technologies I **Room:** Chemicum building, A129 Chairman: Victor Gevers			
14:45	15m	Analysis of the Functioning of a Multi-Domain Transport Software-Defined Network with Controlled Optical Layer, by Vladimir Deart and Timur Fatkhulin, Moscow Technical University of Communications and Informatics, Russia	
15:00	15m	Analysis of crowdsensed WiFi fingerprints for indoor localization, by Zhe Peng, Philipp Richter, Helena Leppäkoski and Elena Simona Lohan, Tampere University of Technology, Finland	
15:15	15m	Evaluation of Optimization Control Parameters in Multi-Leveled Cloud Platform, by Dmitrii Zubok, Tatiana Kharchenko, Aleksandr Maiatin and Maksim Hegai, ITMO University, Russia	
15:30	15m	Space Experiment “Kontur-2”: Applied Methods and Obtained Results, by Vladimir Muliukha, Alexander Ilyashenko, Vladimir Zaborovsky and Andrey Novopasheniy, Peter the Great Saint-Petersburg Polytechnic University, Russia	
15:45	15m	Sessions and Services Management Models in NGN/IMS and post-NGN Networks, by Alexander Goldstein, The Bonch-Bruevich Saint-Petersburg State University of Telecommunications, Russia	
16:00	15m	Channel Estimation for MIMO-OFDM Systems based on Data Nulling Superimposed Pilots, by Emad Farouk, Michael Ibrahim, Mona Saleh and Salwa Elramly, Ain Shams University, Egypt	
16:15	15m	**Break**	
Session: Embedded Systems **Room:** Chemicum, A129 Chairman: Kirill Chuvilin			**Session:** AMICT I **Room:** Chemicum, A127 Chairman: Iurii Bogoiavlenskii
16:30	15m	Simulation Tools for a Smart Micro-Grid: Comparison and Outlook, by Aron Kondoro, Diana Rwegasira, Amleset Kelati and Hannu Tenhunen, KTH, Sweden, Imed Dhaou, University of Monastir, Tunisia, Nerey Mvungi and Naiman Shililiandumi, University of Dar es Salaam, Tanzania	Towards a Mobile System for Hypertensive Outpatients' Treatment Adherence Improvement, by Aleksandr Borodin, Yulia Zavyalova and Alexander Meigal, Petrozavodsk State University, Russia
16:45	15m	Fault-Tolerance Analysis Algorithm for SpaceWire Onboard Networks, by Irina Lavrovskaya, Valentin Olenev and Ilya Korobkov, Saint-Petersburg State University of Aerospace Instrumentation, Russia	Long-term Identity Privacy in Cellular Networks, by Mohsin Khan, University of Helsinki, Finland

17:00	15m	A Framework for Load Shedding and Demand Response in DC Microgrid using Multi Agent System, by Diana Rwegasira, Aron Kondoro, Amleset Kelati and Hannu Tenhunen, Royal Institute of Technology, Sweden, Imed Ben Dhaoa, College of Engineering, Qassim University, Saudi Arabia, Anastasia Anagnostou, Simon Je Taylor, Brunel University, United Kingdom, Naiman Shililiandumi and Nerey Mvungi, University of Dar es salaam, Tanzania	ECG Feature Extraction based on Joint Application of Teager Energy Operator and Level-Crossing Sampling, by Aleksandr Borodin, Petrozavodsk State University, Russia
17:15	15m	Conformance Testing of the STP-ISS Protocol Implementation by Means of Temporal Logic, by Nadezhda Chumakova, Valentin Olenev and Irina Lavrovskaya, Saint-Petersburg State University of Aerospace Instrumentation, Russia	Private Membership Test with Homomorphic Encryption, by Sara Ramezanian, University of Helsinki, Finland
17:30	15m	Energy Efficient Cooperative Spectrum Sensing in Cognitive Radio Sensor Network using FPGA: A survey, by Amel Alfahham and Mladen Berekovic, TU-Braunschweig, Germany	Towards a Personal At-Home Lab for Motion Video Tracking in Patients with Parkinson's Disease, by Alexander Meigal, Kirill Prokhorov, Nikita Bazhenov, Liudmila Gerasimova-Meigal and Dmitry Korzun, Petrozavodsk State University, Russia
17:45	15m	Using Structural Redundancy and the Design Space Exploration Method to Project a Hardware Component With Fault Mitigation, by Valentin Rozanov, Elena Suvorova and Yuriy Sheynin, Saint-Petersburg State University of Aerospace Instrumentation, Russia	Bug Trace Service for IBM Bluemix, by Vladyslav Stopin, Bohdan Horbatenko and Volodymir Sayenko, KhNURE, Ukraine
18:00		**Closing of Day**	

November 9 (Thursday)
University of Helsinki, Kumpula Campus, Ernst Lindelöfin katu 1, 00560 Helsinki

09:00	30m	**Conference registration**	
09:30	45m	**Keynote talk:** 5G security in standardization, by Valtteri Niemi, University of Helsinki, Finland, in Chemicum building, room A129	
10:15	15m	**Break**	
Session: AMICT II **Room:** Chemicum, A129 Chairman: Valtteri Niemi			**Session:** ISMW: Natural Language Processing **Room:** Physicum bld, E205 Chairman: Svetlana Popova
10:30	15m	An Algorithm for Building an Enterprise Network Topology Using Widespread Data Sources, by Anton Andreev and Iurii Bogoiavlenskii, Petrozavodsk State University, Russia	A Generalized Approach to Keyphrase Extraction using Extended Lists of Stop Words, by Svetlana Popova, Saint Petersburg State University, Russia, and Gabriella Skitalinskaya, Institute of Technology Tallaght, Ireland
10:45	15m	Study of Active Subscription Control Parameters in Large-Scale Smart Spaces, Andrey Vdovenko, Olga Bogoiavlenskaia and Dmitry Korzun, Petrozavodsk State University, Russia	Sentiment Classification of Long Newspaper Articles Based on Automatically Generated Thesaurus with Various Semantic Relationships, by Ivan Shchitov, Ksenia Lagutina, Nadezhda Lagutina and Ilya Paramonov, Yaroslavl State University, Russia

10:00	15m	Smart Museum of Everyday Life History in Petrozavodsk State University: Software Design and Implementation of the Semantic Layer, by Sergey Marchenkov, Andrey Vdovenko, Oksana Petrina and Dmitry Korzun, Petrozavodsk State University, Russia	Fast and modular regularized topic modeling, by Denis Kochedykov, J.P.Morgan, Data Science, USA, Murat Apishev, Moscow State University, Lev Golitsyn, Integrated Systems, Moscow, Russia, and Konstantin Vorontsov, Moscow Institute of Physics and Technology, Russia
11:15	15m	Empirical Mode Decomposition and Mean Power Frequency for detection of Pre-term Labor using EHG Signals, by Mohammad Shahbakhti and Somayeh Mohammadi Far, Mehr Private Hospital, Matin Beiramvand, Islamic Azad University, Dezful Branch, and Mohammadreza Bavi, Ahwaz Jundi Shapour University of Medical Scinence, Iran	A Survey On Thesauri Application In Automatic Natural Language Processing, by Ivan Shchitov, Ksenia Lagutina, Nadezhda Lagutina, Ilya Paramonov and Andrey Vasilyev, Yaroslavl State University, Russia
11:30	15m	Machine Vision for Selective Polymer Curing Devices: Challenges and Solutions, by Maxim Afanasev, Yuri Fedosov, Anastasiya Krylova and Sergey Shorokhov, University ITMO, Russia	The “Migration” Topic in the Russian-Language Sector of LiveJournal, by Svetlana Popova, Saint Petersburg State University, and Vera Danilova, Russian Presidential Academy of National Economy and Public Administration, Russia
11:45	15m	**Break**	
Session: Smart Spaces and Internet of Things I **Room:** Chemicum bld, A127 Chairman: Alexey Kashevnik			**Session:** Privacy and Security **Room:** Exactum, C222 Chairman: Vladimir Deart
12:00	15m	Blockchain-Based Platform Architecture for Industrial IoT by Nikolay Teslya, SPIIRAS, and Igor Ryabchikov, ITMO University, Russia	Software Security in Open Source Development: A Systematic Literature Review, by Shao-Fang Wen, Norwegian University of Science and Technology, Norway
12:15	15m	Smart-Fish System for Fresh Fish Cold Chain Transportation – Overall Approach and Selection of Sensor Materials, by Vadim Kramar, Harri Määttä and Henry Hinkula, Oulu University of Applied Sciences, Finland, Øistein Thorsen and Georgina Cox, FAI Aquaculture, United Kingdom	Mitigating the Security of the Database by Applying a Conceptual Model of Integrity for the Civil Registry of Ecuador, by Segundo Moisés Toapanta Toapanta, Universidad Politécnica Salesiana del Ecuador y CUCEA - Universidad de Guadalajara, Luis Enrique Mafla Gallegos, Escuela Politécnica Nacional, Ecuador, and José Antonio Orizaga Trejo, CUCEA - Universidad de Guadalajara, Mexico
12:30	15m	Digital Signage and Targeted Advertisment Based on Personal Preferences and Digital Business Models, by Kurt Sandkuhl and Matthias Wißotzki, The University of Rostock, Germany, and Alexander Smirnov, Alexey Kashevnik and Nikolay Shilov, SPIIRAS, Russia	Analysis of paradoxes in fingerprint countermeasures, by Vafa Andalibi, Indiana University Bloomington, USA, Francois Christophe and Tommi Mikkonen, University of Helsinki, Finland
12:45	15m	Development of Collaborative Editing Application through Semantic Publish-Subscribe Platforms, by Fabio Viola, Francesco Antoniazzi, Alfredo D'Elia, Giacomo Corsi, Luca Roffia and Tullio Salmon Cinotti, University of Bologna, Italy	Investigation of Keyless Cryptosystem Proposed by Dean and Goldsmith, by Valery Korzhik, Vladimir Starostin and Kseniia Akhrameeva, The Bonch-Bruevich Saint-Petersburg State University of Telecommunications, Russia
13:00	1h	**Lunch break**	
14:00	45m	**Keynote talk:** RLLC and Future Industrial Applications, by Dmitry Petrov, Nokia, Finland, in Chemicum building, room A129	
14:45	15m	**Break**	

Session: Network Technologies II **Room:** Chemicum, A129 Chairman: Dmitry Petrov			**Session:** Smart Spaces and Internet of Things II **Room:** Exactum bld, B120 Chairman: Dmitry Korzun
15:00	15m	Scheduling of Fog Networks with Optimized Knapsack by Symbiotic Organisms Search, by Dadmehr Rahbari and Mohsen Nickray, University of Qom, Iran	Ontology-based Cloud Platform for Human-driven Applications, by Alexander Smirnov, Andrew Ponomarev, Tatiana Levashova and Nikolay Shilov, SPIIRAS, Russia
15:15	15m	Performance Evaluation of Diversity Combining Scheme for the Hybrid FSO/RF System, by Wafaa Shakir, University of Queensland, Australia	Modular Industrial Equipment in Cyber-Physical Production System: Architecture and Integration, by Maxim Afanasev, Yuri Fedosov, Anastasiya Krylova and Sergey Shorokhov, University ITMO, Russia
15:30	15m	A Hyper Heuristic Algorithm for Scheduling of Fog Networks, by Sabihe Kabirzadeh, Dadmehr Rahbari and Mohsen Nickray, University of Qom, Iran	Context-Based Driver Support System Development: Methodology and Case Study, by Alexey Kashevnik and Igor Lashkov, SPIIRAS & ITMO University, Vladimir Parfenov and Olesya Baraniuc, ITMO University, and Nikolay Mustafin, SPIIRAS & Saint Petersburg Electrotechnical University "LETI", Russia
15:45	15m	Non-Reference Metrics and Its Application for Distortion Compensation, by Andrey Kiselnikov, Mikhail Dubov and Andrey Priorov, Yaroslavl State University, Russia	A Web of Things Approach for Indoor Position Monitoring of Elderly and Impaired People, by Francesco Antoniazzi, Giacomo Paolini, Luca Roffia, Diego Masotti, Alessandra Costanzo and Tullio Salmon Cinotti, University of Bologna, Italy
16:00	30m	**Coffee break, Lobby of Chemicum building**	
Session: Robotic Systems **Room:** Chemicum, A129 Chairman: Alexey Kashevnik			
16:30	15m	Inertial Lever in the Structures of Vibrational Interactions: Estimation of Possibilities and the Peculiarities of External Excitations, by Alexey Orlenko, Krasnoyarsk Institute of Railway Transport, Andrey Eliseev and Sergey Eliseev, Irkutsk State Transport University, Russia	
16:45	15m	Power Distribution Unit (PDU) for a Distributed Computing Network, by Muhamamd Faisal, Thomas Walter and Sergio Montenegro, University of Wuerzburg, Germany	
17:00	15m	Collision-Free Path Planning Algorithm for Group of Robots in Spatio-Situational Uncertainty, by Serge Popov, Dmitrii Motorin and Vladimir Muliukha, Peter the Great St. Petersburg Polytechnic University, Russia	
17:15	15m	A Method to Derive TRiStar Diagrams from Textual Descriptions of Teleo-Reactive Systems, by José Miguel Morales and Pedro Sánchez, UPCT, Antonio Sánchez, SAES, Spain	
17:30	15m	2D SLAM Quality Evaluation Methods, by Anton Filatov, Artyom Filatov and Kirill Krinkin, Saint-Petersburg Electrotechnical University "LETI", Russia, and Baian Chen and Diana Molodan, MIT, USA	
17:45	15m	Not-Holding Connections as a Characteristic Feature of Dynamic Interactions of Elements of Technical Systems, by Andrey Eliseev and Sergey Eliseev, Irkutsk State Transport University, Alexey Orlenko, Krasnoyarsk Institute of Railway Transport, Russia	
Session: Pecha Kucha Pitches of Demos **Room:** Exactum, B121 Chairman: Ilya Paramonov			
18:00	20m	Pitch presentations of the demos (2min/pitch)	
18:20	10m	**Preparation to Social event combined with Demo & Poster Session**	
Session: Conference social event combined with Demo and Poster session **Exactum building open space** Chairman: Ilya Paramonov			
18:30	2.5h	**Demo & Poster Session combined with Social Event**	
21:00		**Closing of Day**	

November 10 (Friday)
University of Helsinki, Kumpula Campus, Ernst Lindelöfin katu 1, 00560 Helsinki

09:00	30m	**Conference Registration, Exactum building, room B121**	
Session: Software Development and Data Management I **Room:** Exactum bld, B121 Chairman: Nikolay Teslya			**Session:** On-line session **Room:** Exactum bld, B222 Chairman: Sergey Balandin
09:30	15m	Software Defect Prediction in the Cloud, by Cagatay Catal, Merve Erdogan and Cem Isik, IKU, Turkey	Air Navigation: Optimisation Control of Means Cueing of the Air-Traffic Control System, by Igor Grishin and Rena Timirgaleeva, Kuban State Technological University, Russia
09:45	15m	Prediction of Common Weakness Probability in C/C++ Source Code Using Recurrent Neural Networks, by Petr Vytovtov and Kirill Chuvilin, Moscow Institute of Physics and Technology (State University), Russia	3-Dimensional Vector Analysis of 2-Dimensional Ultrasound Diagnostic Images, by Yuriy Kolesnichenko, Uzgraph, Olga Kolesnichenko, Security Analysis Bulletin, Gennady Smorodin, Dell EMC External Research and Academic Alliances, Russia
10:00	15m	Study of Two-Memcapacitor Circuit Model with Semi-Explicit ODE Solver, by Denis Butusov, Valerii Ostrovskii, Artur Karimov and Dmitriy Belkin, Saint-Petersburg Electrotechnical University "LETI", Russia	Internet of Things: Modern Paradigm of Health Care, by Gennady Smorodin, Dell EMC, Olga Kolesnichenko and Yuriy Kolesnichenko, Security Analysis Bulletin, Lydia Myakinkova, SRI Federal Research Centre for Projects Evaluation and Consulting Services, Nadezhda Prisyazhnaya, First Moscow State Medical University, Dariya Yakovleva and Lev Mazelis, Vladivostok State University of Economics and Service, Alexander Martynov, Valeriy Pulit and Dariya Danilova, SP.ARM, Nikolay Litvak, Remedium group, Russia, and Sergey Balandin, FRUCT, Finland
10:15	15m	Code Generation for Multiprocessor Distributed Computing Systems, by Victor Volkov, Alexey Syschikov and Vera Ivanova, Saint-Petersburg State University of Aerospace Instrumentation, Russia	Hemodynamic signal research and usage of mutual information method, by Tatyana Ermakova and Lev Buzykov, The Bonch-Bruevich Saint-Petersburg State University of Telecommunications, Russia
10:30	15m	**Break**	
Session: Software Development and Data Management II **Room:** Exactum bld, B121 Chairman: Nikolay Teslya			**Session:** AMICT III **Room:** Exactum bld, B222 Chairman: Aleksandr Borodin
10:45	15m	Different every time: A framework to model real-time instant message conversations, by Jonathan Dunne and David Malone, Maynooth University, Ireland	Quality of Experience of Commercially Deployed Adaptive Media Players, by Christian Timmerer, Alpen-Adria-Universität Klagenfurt, Austria, Anatoliy Zabrovskiy, Evgeny Kuzmin and Evgeny Petrov, Petrozavodsk State University, Russia
11:00	15m	An Investigation of Computer Icon Design, by Kleddao Satcharoen, King Mongkut's Institute of Technology Ladkrabang, Thailand	Privacy of V2X communications, by Masoud Naderpour, University of Helsinki, Finland
11:15	15m	Analysis of Model Clark Wilson to Adopt to the Database of the Civil Registry of Ecuador, by Segundo Moisés Toapanta Toapanta, Universidad Politécnica Salesiana del Ecuador y CUCEA - Universidad de Guadalajara, Luis Enrique Mafla Gallegos, Escuela Politécnica Nacional, Ecuador, and José Antonio Orizaga Trejo, CUCEA - Universidad de Guadalajara, Mexico	Correlation of educational material ontology with the individual knowledge structure of students, by Alexandra Vatian, Natalia Dobrenko, Daria Korotaeva, Ekaterina Chikshova, Niyaz Nigmatullin, Nikolay Vedernikov and Artem Vasilev, ITMO University, Russia

11:30	15m	CINFRA: A Quick System Modeling Approach, by Vladimir Ivanov, State University of Aerospace Instrumentation, Russia, and Swaminathan Ramachandran, CircuitSutra Technologies Pvt. Ltd., India	Automated Performance Evaluation of Adaptive HTML5 Player Deployments, by Anatoliy Zabrovskiy, Evgeny Petrov and Evgeny Kuzmin, Petrozavodsk State University, Russia, Christian Timmerer, Alpen-Adria-Universität Klagenfurt, Austria
11:45	15m	Revealing of entities interconnections in system dynamics modelling process by applying multimodal data analysis paradigm, by Olga Kalyonova and Ivan Perl, ITMO University, Russia	Data Storage and Management in Computational Edge Clouds, by Nitinder Mohan, University of Helsinki, Finland
12:00	1h	**Lunch break**	
Session: eHealth **Room:** Chemicum, A128 Chairman: Alexander Meigal			**Session:** Image and Video Processing **Room:** Exactum, C129 Chairman: Vladimir Khryashchev
13:00	15m	Mobile ECG Monitoring System Prototype and Wavelet-Based Arrhythmia Detection, by Andrey Kuzmin, Maxim Safronov and Oleg Bodin, Penza State University, Sergey Prokhorov and Anastasya Stolbova, Samara National Research University, Russia	Modern Methods and Algorithms in Digital Processing of Endoscopic Images, by Alexandr Motyko, Natalia Obuhova and Alexandr Pozdeev, Saint-Petersburg Electrotechnical University "LETI", Russia
13:15	15m	Investigation of Models for Prognosis of Critical Values of Non-Invasive Electrophysiological Parameters of Pregnant Women with Abnormalities of Heart Rate, by Maxim Mitrokhin, Andrey Kuzmin, Natalia Mitrokhina, Nikolay Dyatlov, Fagim Rakhmatullov, Alan Alimuradov and Alexander Tychkov, Penza State University, Russia	Digital Image Watermarking Using DWT Basis Matrices, by Elena Yakovleva and Anton Makarov, St. Petersburg State University, and Valery Gorbachev and Elena Kaynarova, High School of Print and Media of Saint-Petersburg State University of Industrial Technology and Design, Russia
13:30	15m	Portable Biomedical Air Thermostat with Remote Control, by Konstantin Kuliabin, Saint-Petersburg Electrotechnical University "LETI", Russia	On High-Precision Chessboard Detection on Static Scene Videos from Mobile Eye-Tracking Devices, by Sergey Afonin and Anastasia Afanaseva, Moscow State University, Russia
13:45	15m	Measurement of Speech Signal Patterns under Borderline Mental Disorders, by Alan Alimuradov, Alexander Tychkov, Andrey Kuzmin, Pyotr Churakov, Alexey Ageykin and Galina Vishnevskaya, Penza State University, Russia	Facial Expression Recognition Algorithm Based on Deep Convolution Neural Network, by Leonid Ivanovsky, Vladimir Khryashchev and Anton Lebedev, Yaroslavl State University, and Igor Kosterin, Ivanovo Fire and Rescue Academy, Russia
14:00	15m	Evaluation of PPT-based Method for Cuffless Monitoring of Arterial Blood Pressure, by Aleksei Anisimov and Anastasiya Sutyagina, Saint-Petersburg Electrotechnical University "LETI", and Timofey Sergeev, Institute of Experimental Medicine FSBSI "IEM", Russia	Full-focused Image Fusion in the Presence of Noise, by Andrey Noskov, Vladimir Volokhov, Andrey Priorov and Vladimir Khryashchev, Yaroslavl State University, Russia
14:15	15m	Sparse Gaussian Graphical Model with Missing Values, by Shinsuke Uda and Hiroyuki Kubota, Kyushu University, Japan	*Break to move to the conference closing session*
14:30	15m	**Official closing of the 21st FRUCT conference, Chemicum bld, A128**	

Thank you and looking forward to see you at the 22nd FRUCT in Petrozavodsk, Russia on April 9-13, 2018!

Demo Session of the 21st FRUCT Conference

Time: 9 November 2017
Time: 18:00 – 21:00

Place: University of Helsinki, Kumpula Campus, Exactum bld.
Ernst Lindelöfin katu 1, 00560 Helsinki

The Demo section of the 21st FRUCT conference will be combined with the conference social event. The first part is a promotional section to present/introduce demo projects to the public. Presentations will be done following the Pecha Kucha style. Main idea of this section is to make people aware of the demo and become interested to visit the demo stand at the second part of the session. During the second part of demo session teams get a place to install the demo and poster. 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 during the talk. 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/demo.

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. So, the whole presentation will take exactly 2 minutes (it should be noted that usually Pecha Kucha presentation 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 (*preliminary list based on submissions by November 3, 2017*)

1. ***Smartphone-based Motion Video Tracking in Patients with Parkinson's Disease, by Nikita Bazhenov and Dmitry Korzun, Petrozavodsk State University***
   Mobile treatment is an important component when dealing with people who need instant help. Due to the mobile application, which can recognize human images and, thus, track its behavior and gait, the work of doctors will be facilitated. Instead of the usual image from the camera, the doctor will also receive some additional information that will help to better establish the diagnosis of the patient. Now the service is oriented at patients with Parkinson's Disease. The Mobile treatment assistance system consists of one part: a mobile application for the Android.
2. ***Smart Services Demo for the History Museum of Petrozavodsk State University, by Oksana Petrina, Sergey Marchenkov and Andrey Vdovenko, Petrozavodsk State University***
   The demo presents the smart space-based museum system for the History Museum of PetrSU.
3. ***Offline information sources for tourist assistant — TAIS, by Nikolay Teslya and Sergei Mikhailov, SPIIRAS***
   The proposed demo shows update for the TAIS by providing service for uploading the selected area to user's device and providing functionality of offline usage. For this purpose, the database structure has been developed to store information (text descriptions and photos) and recommendations about attractions. A service for Smart-M3 has been developed to take the bounding box of the area and fill a database with information about attractions from various sources. The database then is uploaded to the user's device using TAIS client application that is configured to download and use the database with attractions. This approach is viewed to be used in offline mode that is highly required in foreign trips to save mobile traffic when the Wi-Fi network is not available or to aid in case of poor connection conditions.
4. ***Dangerous Events Identification and Recommendation Generation for a Vehicle Driver Using a Personal Smartphone, by Igor Lashkov, ITMO University and Alexey Kashevnik, SPIIRAS***
   "Drive Safely" application is aimed to understand the driver behavior in a real time using a personal smartphone and provide relevant context-based recommendations to avoid the road accidents. The application is process the video stream from front-facing camera, determine the driver face position, its turn, driver eye position, and percentage of eyelid closure. Based on this information the application recognizes the drowsiness or distraction dangerous situation and generates recommendations for the driver to prevent an accident in according to context situation.
5. ***Enabling Web Things Interaction and Discovery Through a SPARQL Event Processing Architecture, by Luca Roffia, Fabio Viola, Francesco Antoniazzi, Cristiano Aguzzi and Tullio Salmon Cinotti,* University of Bologna**
   The demo shows the use of SEPA to enable Web Things discovery and interaction and it includes the following elements: two sensors (RFID reader and reed sensor), two actuators (an RGB led and a LCD display) and a simple GUI to switch between 3 contexts (primary color composition, "three cards game" and user's identification). Starting from events produced by sensors, the application generates context aware actions for the actuators. Web Things can be also monitored and controlled through a web based discovery tool.
6. ***Mobile ECG Monitoring System Prototype on the Base of Texas Instruments Hardware and Android Platform, by Maxim Safronov, Penza State University***
   This paper describes a solution for mobile heart monitoring. In part of hardware, the authors focused on engineering problems of increasing the number of ECG leads and increasing the sampling rate. It potentially allows to increase the effectiveness and accuracy of localization and to decrease the influence of pacemaker pulses on the ECG signal recording respectively. Implementation of hardware and software parts is described. Proposed solutions are suitable for portable heart monitoring systems.
7. ***Self-calibrating indoor localization mobile application based on multilateration approach, by Maksim Shchekotov, SPIIRAS***
   The presented Android-based mobile application implements the multilateration approach, which relies on Bluetooth Low Energy (BLE) signals to localize the current position of the user. The multilateration approach is based on RSS measurement technique used to estimate the distance between transmitter and receiver. This technique invokes the automated calibration procedure for log-normal path loss signal propagation model. This procedure aims to avoid offline calibration phase need to adapt signal propagation model especially to particular environment. The application detects steps made by the user and movement direction via internal sensors to use it with several map-aided information to estimate distance calculation using calibrated parameters.

8. ***MDBCI - a tool to create a set of virtual machines, by Timofey Turenko, MariaDB Corporation Ab***
   Testing environment for our product requires a set of machines. Every machine must be very flexible: different Linux, different versions of data base server can be installed on it and different replication configuration can be set up. A set of solutions which allow to represent all components of such system as code is presented.
   Our solution includes own domain-specific language to describe sets of virtual machines, describe set of repositories to install different versions of database servers, set of virtual machines templates.
   Our tool also controls virtual machines start process, checks the status and restarts failed machines separately.
   Demo shows whole process - from writing virtual machines description file until accessing fresh virtual machines. Also, real-life running test and build system is shown. This system includes MDBCI-controlled sets of virtual machines and Jenkins instance to start builds/tests and store logs.

FOR NOTES

The 21st Conference of Open Innovations Association FRUCT

Program

Helsinki, Finland
6-10 November 2017

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CALL FOR PARTICIPATION

22nd Conference of Open Innovations

Association FRUCT

Petrozavodsk, Russia, 9-13 April 2018

Overview

FRUCT is a large regional cooperation framework that promotes open innovations of academia and industry. FRUCT conference is a high-quality scientific event for meeting academia and business people and setting projects. The average conference is attended by 120+ participants representing over 30 member organizations and guests from other organizations. Participants comes from Finland, Russia, Italy, UK, Denmark, India, and other countries and industry is primary represented by Dell EMC, Nokia, MariaDB, Intel, Jolla, Open Mobile Platform and Skolkovo.

The conference attracts most active and talented students to present their R&D projects, meet people alike, create new teams, and find employers and investors. The conference invites the world-class academic and industrial experts to lecture on the hottest topics. Traditionally the program consists of FRUCT work groups meetings, 2-3 intensive (half or full day) technology trainings (Mo-Tu) and **the last 3 days (We-Fr) are the main conference days**.

We welcome everybody to submit papers and take part in the conference, share your research and join the FRUCT Association. Thanks to sponsors we traditionally have low registration fee and various discounts can be applied. For further details refer to http://www.fruct.org/cfp and the registration is open at http://www.fruct.org/registration.

List of conference topics

- ✓ Internet of Things and enabling technologies
- ✓ Next Generation Networks, Wireless Technologies, 5G
- ✓ Smart Spaces, Linked Data and Semantic Web
- ✓ Big Data, Data Mining, Data Storage and Management
- ✓ Knowledge and Data Managements Systems
- ✓ Location Based Services: e-Tourism/Logistics/Navigation
- ✓ Open Source Mobile OS: Architectures and Applications
- ✓ Security and Privacy: Applications and Coding Theory
- ✓ Natural Language Processing, Speech Technologies
- ✓ Bioinformatics, e-Health and Wellbeing
- ✓ Sensor Design, Ad-hoc and Sensor Networking
- ✓ Context Awareness and Proactive Services
- ✓ Software Design, Innovative Applications
- ✓ Artificial Intelligence, Robotics and Automation
- ✓ Computer Vision, Image and Video Processing
- ✓ Smart Systems and Embedded Networks
- ✓ Crowdsourcing and Collective Intelligence
- ✓ Intelligence, Social Mining and Web

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 pages, max 12 pages) **OR** 2. **Short paper** (min 200 words, max 5 pages)

Submission deadline: 9 February 2018 **Early bird submission: 15 January 2018**

Notification of acceptance: **26 February 2018** Camera-ready deadline: **2 March 2018**

3. **Poster / Demo proposal:** submission deadline: **2 April 2018** (it also can be an extension to the paper)

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). We wait for approval that all accepted Full Papers will be included into **IEEE Xplore**, and indexed by **Scopus** and **DBLP**. Selected papers will be recommended for CPCI indexing (**Web of Science**) and to **IJERTCS** journal. The Full Papers proceedings will be included to **Scimago Journal Rank** http://scimagojr.com/journalsearch.php?q=21100305223&tip=sid. FRUCT is recognized as a high quality scientific event that is confirmed by many national ratings, e.g., Danish BFI ID 8782540.

Contacts

Paper templates, conference news and other relevant details are available at http://www.fruct.org/conference22. If you get some questions that are not covered at the conference web page, feel free to send email to info@fruct.org.