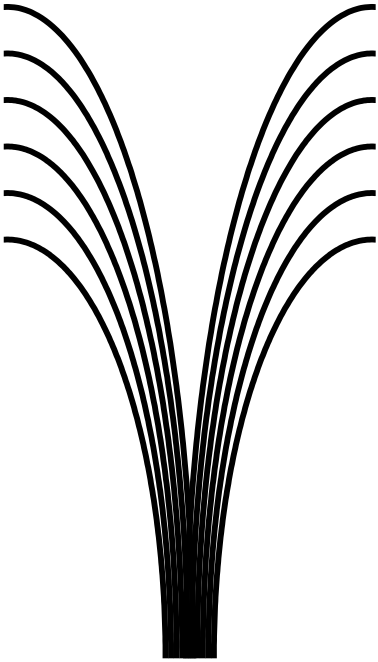
Euro-Par 2018

24th International European Conference on
Parallel and Distributed Computing

August 27 – 31, 2018, Turin, Italy



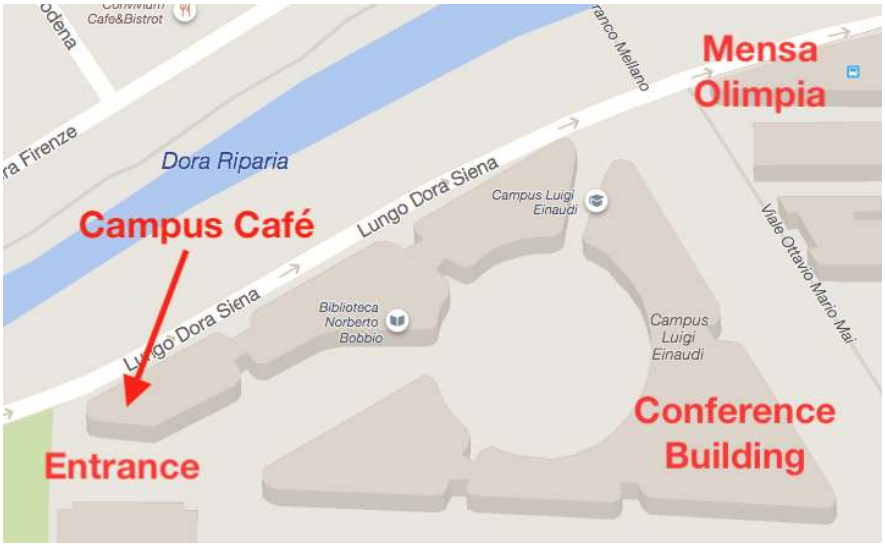
UNIVERSITÀ
DEGLI STUDI
DI TORINO

Contents

1 General Information

Euro-Par 2018 takes place in Torino from August 27 to August 31. It is organized by the Computer Science Department of the University of Torino and is hosted in the **Luigi Einaudi University Campus**, an arrangment of buildings at the northern edge of the city center along the Dora river, a few minutes walk away from Turin's city center. **Bus line 68** provides an easy connection from the city center to the campus. In the central hours of the day there are rides every 10-15 minutes. The bus stop is on the opposite side of the river, just in front of a pedestrian bridge.

Conference building. All conference rooms are located in building D2 of the Campus, which is the wedge-shaped building in the bottom-right corner of the map below (North is up).



Registration desk. Located in the main hall of the Conference Building, is open every day **from 8:30** to the end of the activities scheduled for the day.

Badges. Please wear your conference badge **at all times** during conference and social events, making sure it is clearly visible. Organizers and supporting staff have **orange badges and lanyards**.

WIFI. Internet access is provided through EDUROAM. If your home institution is not part of the EDUROAM consortium, please ask for a guest account at the registration desk.

Campus Cafè. All coffee breaks will be served at the Campus Cafè located in the left-most building of the Campus map above, next to one of the Campus entrances. Make sure you leave the Campus Cafè at least **5 minutes** before the next session begins. Taking food and beverages from the cafeteria to the Campus buildings is **not allowed**.

Mensa Olimpia. All **lunches** will be served at the Mensa Olimpia, a university canteen located right next to the Campus along the Dora river. To reach the Mensa you can walk through the north-west passage of the Campus, which is guarded by a **bull** (image below).

Speakers. If you're giving a talk, please introduce yourself to the chair of your session as early as possible and allocate some time to test your laptop and equipment.

Session chairs. If you're chairing a session, please make sure that the session you are chairing stays on schedule. Sessions starting after a coffee break are particularly critical, as it takes a few minutes for speakers and participants to walk from the Campus Cafè back to the Conference Building. In this case, the session chair (or a trusted collaborator) should invite participants to leave the Campus Cafè with sufficient time in advance.

Chess-timer talks. An experimental feature of this year's Euro-Par inspired by the Curry On conference is that a few talks – indicated as **chess-timer** talks in the program – have been selected for a **more interactive** form of presentation. These talks are allocated a slightly longer slot (approx. 40 minutes) of which 20 are reserved for the presenter and 20 for questions and comments from the audience. The audience is encouraged to comment and ask questions during the talk (but not sooner than **5 minutes** from the beginning of the talk) and the session chair (or a collaborator) will make sure that the presentation is balanced by tracking the time used by the speaker and the time taken for answering questions asked by the audience using a (virtual) chess timer.

Proceedings. As usual for Euro-Par, proceedings have been published by Springer. Participants of the conference are granted free access to the electronic version of the proceedings for a limited period of **4 weeks** from the conference. The link for accessing the proceedings is available in the PROCEEDINGS section of the Euro-Par 2018 home page

`https://europar2018.org/proceedings`

through the credentials found in the physical copy of this booklet.

2 Social Events

Welcome Cocktail

The welcome cocktail will take place on August 28 starting from 18:30 at **Circolo dei lettori** ("Readers' circle"). Circolo dei lettori is a public space supported by the Regional Department for Culture entirely dedicated to reading. It is located in the magnificent **Palazzo Graneri della Roccia** with its evocative blend of baroque and contemporary architecture and beautiful rooms.

Circolo dei lettori is located in Via Giambattista Bogino, 9, in the very heart of the city center and at walking distance from the Campus Luigi Einaudi. The welcome cocktail will be served in **Sala Grande** (shown above) and **Sala Gioco**.

Gala Dinner

The gala dinner will begin on August 30 at 20:30 at **Palazzo della Luce** ("Palace of Light"). This palace was designed and built in the early 20th century and takes its name from the fact that it hosted the headquarters of Sip, one of the major Italian industries involved in the production and distribution of electricity, in telecommunications and radio broadcasting. The first public radio transmissions in Italy were broadcast from this building.

Palazzo della Luce is located in Via Antonio Bertola, 40, within the city center and at walking distance from Piazza Castello, the city's main square. Going from Piazza Castello, it might be a good occasion to walk along **Via Giuseppe Barbaroux**, one of the narrowest and most atmospheric streets in the city center.

3 Keynotes

Keynote 1: ALGORAND: A Better Distributed Ledger

Silvio Micali has received his Laurea in Mathematics from the University of Rome, and his PhD in Computer Science from the University of California at Berkeley. Since 1983 he has been on the MIT faculty, in Electrical Engineering and Computer Science Department, where he is Ford Professor of Engineering. Silvio's research interests are cryptography, zero knowledge, pseudo-random generation, secure protocols, and mechanism design. Silvio is the recipient of the Turing Award (in computer science), of the Goedel Prize (in theoretical computer science) and the RSA prize (in cryptography). He is a member of the National Academy of Sciences, the National Academy of Engineering, and the American Academy of Arts and Sciences.

Abstract A distributed ledger is a tamperproof sequence of data that can be read and augmented by everyone. Distributed ledgers stand to revolutionize the way a democratic society operates. They secure all kinds of traditional transactions – such as payments, asset transfers, titling – in the exact order in which they occur; and enable totally new transactions – such as cryptocurrencies and smart contracts. They can remove intermediaries and usher in a new paradigm for trust. As currently implemented, however, distributed ledgers cannot achieve their enormous potential. Algorand is an alternative, democratic, and efficient distributed ledger. Unlike prior ledgers based on "proof of work", it dispenses with "miners". Indeed, Algorand requires only a negligible amount of computation. Moreover, its transaction history does not "fork" with overwhelming probability: i.e., Algorand guarantees the finality of all transactions.

Keynote 2: Algorithmic Adaptations to Extreme Scale Computing

David Keyes is the director of the Extreme Computing Research Center at King Abdullah University of Science and Technology, where he was a founding dean in 2009, and an adjunct professor of applied mathematics at Columbia University. Keyes earned his BSE in Aerospace and Mechanical Engineering from Princeton and his PhD in Applied Mathematics from Harvard. He works at the algorithmic interface between parallel computing and the numerical analysis of partial differential equations. He is a Fellow of SIAM and AMS and has received the AMC Gordon Bell Prize, the IEEE Sidney Fernbach Award and the SIAM Prize for Distinguished Service to the Profession.

Abstract Algorithmic adaptations to use next-generation computers close to their potential are underway. Instead of squeezing out flops – the traditional goal of algorithmic optimality, which once served as a reasonable proxy for all associated costs – algorithms must now squeeze synchronizations, memory, and data transfers, while extra flops on locally cached data represent only small costs in time and energy. After decades of programming model stability with bulk synchronous processing, new programming models and new algorithmic capabilities (to make forays into, e.g., data assimilation, inverse problems, and uncertainty quantification) must be co-designed

with the hardware. We briefly recap the architectural constraints and application opportunities. We then concentrate on two types of tasks each of occupies a large portion of all scientific computing cycles: large dense symmetric/Hermitian linear systems (covariances, Hamiltonians, Hessians, Schur complements) and large sparse Poisson/Helmholtz systems (solids, fluids, electromagnetism, radiation diffusion, gravitation). We examine progress in porting "exact" and hierarchically rank-reduced solvers for these tasks to the hybrid distributed-shared programming environment, including the GPU and the MIC architectures that make up the cores of the top scientific computers "on the floor" and "on the books."

Keynote 3: Datacenters for the Post-Moore Era

Babak Falsafi is a Professor in the School of Computer and Communication Sciences and the founding director of the EcoCloud research center at EPFL. He has made numerous contributions to computer system design and evaluation including multiprocessor architecture for the WildCat/WildFire severs by Sun Microsystems (now Oracle), memory prefetching technologies in IBM BlueGene and ARM cores, and server evaluation methodologies used by AMD, HPE and Google PerfKit. His recent work on workload-optimized server processors lays the foundation for Cavium ThunderX. He is a recipient of a number of distinctions including a Sloan Research Fellowship. He is a fellow of ACM and IEEE.

Abstract Datacenters are growing at unprecedented speeds fueled by the demand on global IT services, investments in massive data analytics and economies of scale. Worldwide data by some accounts (e.g., IDC) grows at much higher rates than server capability and capacity. Conventional silicon technologies laying the foundation for server platforms, however, have dramatically slowed down in efficiency and density scaling in recent years. The latter, now referred to as the post-Moore era, has given rise to a plethora of emerging logic and memory technologies presenting exciting new challenges and abundant opportunities from algorithms to platforms for server designers. In this talk, I will first motivate the post-Moore era for server architecture and present avenues to pave the path forward for server design.

4 Workshops Overview

All workshops take place in rooms F1–F4 on the first floor of the Conference Building.

EduPar	Monday August 27	full day	F1
HeteroPar	Monday August 27	full day	F2
LSDVE	Monday August 27	morning	F3
COLOC	Monday August 27	morning	F4
Med-HPC	Monday August 27	afternoon	F3
CBDP	Monday August 27	afternoon	F4
Resilience	Tuesday August 28	morning	F1
FPDAPP	Tuesday August 28	full day	F2
F2C-DP	Tuesday August 28	full day	F3
Auto-DaSP	Tuesday August 28	morning	F4
PCDLifeS	Tuesday August 28	afternoon	F1
Repara	Tuesday August 28	afternoon	F4

Monday August 27

	Room F1	Room F2	Room F3	Room F4
09:00 – 10:30	EduPar	HeteroPar	LSDVE	COLOC
10:30 – 11:00	Coffee Break at Campus Cafè			
11:00 – 12:30	EduPar	HeteroPar	LSDVE	COLOC
12:30 – 14:00	Lunch at Mensa Olimpia			
14:00 – 15:30	EduPar	HeteroPar	Med-HPC	CBDP
15:30 – 16:00	Coffee Break at Campus Cafè			
16:00 – 17:30	EduPar	HeteroPar	Med-HPC	CBDP

Tuesday August 28

	Room F1	Room F2	Room F3	Room F4
09:00 – 10:30	Resilience	FPDAPP	F2C-DP	Auto-DaSP
10:30 – 11:00	Coffee Break at Campus Cafè			
11:00 – 12:30	Resilience	FPDAPP	F2C-DP	Auto-DaSP
12:30 – 14:00	Lunch at Mensa Olimpia			
14:00 – 15:30	PCDLifeS	FPDAPP	F2C-DP	Repara
15:30 – 16:00	Coffee Break at Campus Cafè			
16:00 – 17:30	PCDLifeS	FPDAPP	F2C-DP	Repara

5 Tutorials Overview

All tutorials take place in room F5 on the first floor of the Conference Building.

- Tutorial 1: Developing with Model-driven Big Data Analytics-as-a-Service: the Toreador Approach
- Tutorial 2: Lossy Compression for Scientific Data
- Tutorial 3: Application-driven Fault-Tolerance for High Performance Distributed Computing
- Tutorial 4: Enabling your code for vector execution on multi-core architectures

Monday August 27

	Room F5
09:00 – 10:30	Tutorial 1
10:30 – 11:00	Coffee Break at Campus Cafè
11:00 – 12:30	Tutorial 1
12:30 – 14:00	Lunch at Mensa Olimpia
14:00 – 15:30	Tutorial 2
15:30 – 16:00	Coffee Break at Campus Cafè
16:00 – 17:30	Tutorial 2

Tuesday August 28

	Room F5
09:00 – 10:30	Tutorial 3
10:30 – 11:00	Coffee Break at Campus Cafè
11:00 – 12:30	Tutorial 3
12:30 – 14:00	Lunch at Mensa Olimpia
14:00 – 15:30	Tutorial 4
15:30 – 16:00	Coffee Break at Campus Cafè
16:00 – 17:30	Tutorial 4

6 Schedule

Monday August 27

09:00 - 10:30 Tutorial 1 (Room F5)

- **Developing with Model-driven Big Data Analytics-as-a-Service: the Toreador Approach**
  Claudio Agostino Ardagna, Valerio Bellandi, Paolo Ceravolo, Ernesto Damiani and Jonatan Maggesi

09:00 – 10:30 HeteroPar (Room F2)

- **Opening remarks**
  Ravi Reddy Manumachu

- **(Keynote) Parallel Biological Sequence Comparison in Platforms Composed of GPUs, Intel Phis and Multicores: Strategies and Challenges**
  Alba Alves de Melo (Univ. of Brasilia)

- **Evaluation through Realistic Simulations of File Replication Strategies for Large Heterogeneous Distributed Systems**
  Anchen Chai, Sorina Camarasu-Pop, Tristan Glatard, Hugues Benoit-Cattin and Frédéric Suter

09:00 – 10:30 EduPar (Room F1)

- **Opening remarks**
  Workshop chairs

- **(Keynote) Thinking about Parallelism and Programming**
  Bill Gropp (Univ. of Illinois Urbana-Champaign)

- **(Special talk) Update on the CDER guidelines**
  Arnold Rosenberg

09:00 – 10:30 LSDVE (Room F3)

- **Opening remarks**
  Laura Ricci

- **ComeHere: exploiting Ethereum for secure sharing of health-data**
  M.Franceschi, D.Morelli, A. Brown, J. Collomosse, L. Coutts, L. Ricci

- **The drivers behind Blockchain Adoption: the Rationality of Irrational Choices**
  T. Koens, E. Poll

09:00 – 10:30 COLOC (Room F4)

- **Opening remarks**
  Workshop chairs
- **(Keynote) Why don't we have data close to the computation? Let's understand and optimize data locality problem**
  Fabio Baruffa (Intel)
- **A Methodology for Handling Data Movements by Anticipation (Position Paper)**
  Raphael Bleuse, Giorgio Lucarelli and Denis Trystram

10:30 – 11:00 Coffee Break (Campus Cafè)

11:00 - 12:30 Tutorial 1 (Room F5)

- **Developing with Model-driven Big Data Analytics-as-a-Service: the Toreador Approach**
  Claudio Agostino Ardagna, Valerio Bellandi, Paolo Ceravolo, Ernesto Damiani and Jonatan Maggesi

11:00 – 12:30 HeteroPar (Room F2)

- **SiL: An Approach for Adjusting Applications to Heterogeneous Systems Under Perturbations**
  Ali Mohammed and Florina M. Ciorba
- **Modeling and Optimizing data transfer in GPU-Accelerated Optical Coherence Tomography**
  Tobias Schrödter, David Pallasch, Sandra Wienke, Robert Schmitt and Matthias S. Müller
- **Merging the Publish-Subscribe Pattern with the Shared Memory Paradigm**
  Loïc Cudennec

11:00 – 12:30 EduPar (Room F1)

- **Studying the Structure of Parallel Algorithms as a Key Element of High-Performance Computing Education**
  Vladimir Voevodin, Alexander Antonov and Popova Nina
- **Integrating Parallel Computing in the Curriculum of the University Politehnica of Bucharest**
  Mihai Carabas, Adriana Draghici, Grigore Lupescu, Cosmin-Gabriel Samoila and Emil-Ioan Slusanschi
- **Getting Started with CAPI SNAP: Hardware Development for Software Engineers**
  Max Plauth, Felix Eberhardt, Lukas Wenzel, Robert Schmid, Balthasar Martin and Andreas Polze

11:00 – 12:30 LSDVE (Room F3)

- **Distributed computation of mobility patterns in a smart city environment**
  E. Cesario, F. Cicirelli, C. Mastroianni
- **Field Experiment on the Performance of an Android-based Oportunistic Network**
  A. Ippsich, P. Bruhn, K. Graffi
- **Exploiting Community detection to recommend privacy policies in Decentralized Online Social Networks**
  A. De Salve, B. Guidi, A. Michienzi

11:00 – 12:30 COLOC (Room F4)

- **NUMAPROF, A NUMA Memory Profiler**
  Sébastien Valat and Othman Bouizi
- **Scalable Work-Stealing Load-Balancer for HPC Distributed Memory Systems**
  Clement Fontenaille, Eric Petit, Pablo de Oliveira Castro, Seijilo Uemura, Devan Sohier, Piotr Lesnicki, Ghislain Lartigue and Vincent Moureau
- **ASPEN: An Efficient Algorithm for Data Redistribution Between Producer and Consumer Grids**
  Clément Foyer, Adrian Tate and Simon McIntosh-Smith
- **Progress Thread Placement for Overlapping MPI Non-Blocking Collectives using Simultaneous Multi-Threading**
  Hugo Taboada, Alexandre Denis and Julien Jaeger
- **Discussion and closing**
  Workshop chairs

12:30 – 14:00 Lunch (Mensa Olimpia)

14:00 – 15:30 Tutorial 2 (Room F5)

- **Lossy Compression for Scientific Data**
  Franck Cappello and Peter Lindstrom

14:00 – 15:30 HeteroPar (Room F2)

- **OS-ELM-FPGA: An FPGA-Based Online Sequential Unsupervised Anomaly Detector**
  Mineto Tsukada, Masaaki Kondo and Hiroki Matsutani
- **A Modular Precision Format for decoupling Arithmetic Format and Storage Format**
  Thomas Grützmacher and Hartwig Anzt
- **Fast Heuristic-Based GPU Compiler Sequence Specialization**
  Ricardo Nobre, Luís Reis and Joao Cardoso

14:00 – 15:30 EduPar (Room F1)

- **From Mathematical Model to Parallel Execution to Performance Improvement: Introducing Students to a Workflow for Scientific Computing**
  Franziska Kasielke and Ronny Tschueter
- **Panel**

14:00 – 15:30 Med-HPC (Room F3)

- **BaaS - Bioinformatics as a Service**
  Ritesh Krishna, Vadim Elisseev and Samuel Antao
- **Disaggregating Non-Volatile Memory for a Throughput-Oriented Genomics Workloads**
  Aaron Call, Jordà Polo, David Carrera, Francesc Guim and Sujoy Sen
- **Cross-Environment Comparison of a Bioinformatics Pipeline: Perspectives for Hybrid Computations**
  Nico Curti, Enrico Giampieri, Andrea Ferraro, Maria Cristina Vistoli, Elisabetta Ronchieri, Daniele Cesini, Barbara Martelli, Doina Cristina Duma and Gastone Castellani

14:00 – 15:30 CBDP (Room F4)

- **Keynote**
  TBA
- **Towards Vertically Scalable Spark Applications**
  G. Quattrocchi, L. Baresi

15:30 – 16:00 Coffee Break (Campus Cafè)

16:00 – 17:30 Tutorial 2 (Room F5)

- **Lossy Compression for Scientific Data**
  Franck Cappello and Peter Lindstrom

16:00 – 17:30 HeteroPar (Room F2)

- **Towards Application-Centric Parallel Memories**
  Giulio Stramondo, Catalin Bogdan Ciobanu, Ana Lucia Varbanescu and Cees De Laat
- **Accelerating Online Change-Point Detection Algorithm Using 10GbE FPGA NIC**
  Takuma Iwata, Kohei Nakamura, Yuta Tokusashi and Hiroki Matsutani
- **Benchmarking the NVIDIA V100 GPU and Tensor Cores**
  Matthew Martineau, Patrick Atkinson and Simon McIntosh-Smith

16:00 – 17:30 Med-HPC (Room F3)

- **GPU Accelerated Analysis of Treg-Teff Cross Regulation in Relapsing-Remitting Multiple Sclerosis**
  Marco Beccuti, Paolo Cazzaniga, Marzio Pennis, Daniela Besozzi, Marco S. Nobile, Simone Perince, Giulia Russo, Andrea Tangherloni and Francesco Pappalardo

- **High Performance Computing for Haplotyping: Models and Platforms**
  Andrea Tangherloni, Leonardo Rundo, Simone Spolaor, Marco S. Nobile, Ivan Merelli, Daniela Besozzi, Giancarlo Mauri, Paolo Cazzaniga and Pietro Liò

16:00 – 17:30 CBDP (Room F4)

- **A Resource Allocation Framework with Qualitative and Quantitative SLA Classes**
  C. Cerin, T. Menouer, W. Saad and X. Shi

- **The Impact of the Storage Tier: A Baseline Performance Analysis of Containerized DBMS**
  Daniel Seybold, Christopher B. Hauser, Georg Eisenhart, Simon Volpert and Jorg Domaschka

- **Automated Multi-Swarm Networking with Open Baton NFV MANO Framework**
  J-S. Shin, M. Santos de Brito, T. Magedanz and J. Kim

Tuesday August 28

09:00 – 10:30 Tutorial 3 (Room F5)

- **Application-driven Fault-Tolerance for High Performance Distributed Computing**
  George Bosilca and Bogdan Nicolae

09:00 – 10:30 FPDAPP (Room F2)

- **Opening remarks**
  Workshop chairs

- **(Keynote) Decentralized Financial Markets**
  Massimo Morini (IMI Bank)

- **On and Off-Blockchain Enforcement Of Smart Contracts**
  Carlos Molina-Jimenez, Ellis Solaiman, Ioannis Sfyrakis, Irene Ng and Jon Crowcroft

09:00 – 10:30 F2C-DP (Room F3)

- **Opening remarks**
  Workshop chairs

- **(Keynote) The Fog as the glue that connects Cloud and IoT in Smart Cities: research challenges**
  Giovanni Frattini (Engineering R&D)

- **Enhancing Service Management Systems with Machine Learning in Fog-to-Cloud Networks**
  Jasenka Dizdarevic, Francisco Carpio, Mounir Bensalem and Admela Jukan

08:45 – 10:30 Auto-DaSP (Room F4)

- **Opening remarks**
  Workshop chairs

- **(Keynote) The Long Road Towards Elastic Distributed Stream Processing**
  Dr. Leonardo Querzoni (Univ. of Rome "La Sapienza")

- **TPICDS: A Two-phase Parallel Approach for Incremental Clustering of Data Streams**
  Ammar Al Abd Alazeez, Sabah Jassim and Hongbo Du

- **Consistency of the Fittest: Towards Dynamic Staleness Control for Edge Data Analytics**
  Atakan Aral and Ivona Brandic

09:00 – 10:30 Resilience (Room F1)

- **Opening remarks**
  Workshop chairs

- **A Lightweight Approach to GPU Resilience**
  Max Baird, Christian Fensch, Sven-Bodo Scholz and Artjoms Sinkarovs

- **Performance Efficient Multiresilience using Checkpoint Recovery in Iterative Algorithms**
  Rizwan Ashraf and Christian Engelmann

10:30 – 11:00 Coffee Break (Campus Cafè)

11:00 – 12:30 Tutorial 3 (Room F5)

- **Application-driven Fault-Tolerance for High Performance Distributed Computing**
  George Bosilca and Bogdan Nicolae

11:00 – 12:30 FPDAPP (Room F2)

- **Selecting Effective Blockchain Solutions**
  Carsten Maple and Jack Jackson

- **MaRSChain: Framework for a Fair Manuscript Review System Based on Permissioned Blockchain**
  Nitesh Emmadi, Lakshmipadmaja Maddali and Sumanta Sarkar

- **A Suite of Tools for the Forensic Analysis of Bitcoin Transactions: Preliminary Report**
  Stefano Bistarelli, Ivan Mercanti and Francesco Santini

11:00 – 12:30 F2C-DP (Room F3)

- **A knowledge-based IoT Security Checker**
  Marco Anisetti, Claudio Agostino Ardagna, Lorenzo Comi, Ernesto Damiani, Filippo Gaudenzi and Rasool Asal

- **A Review of Mobility Prediction Models Applied in Cloud/Fog Environments**
  David Lima, Andre Lins and Marilia Curado

- **An Architecture for Resources Management in a Fog-to-Cloud Framework**
  Souvik Sengupta, Jordi Garcia and Xavi Masip-Bruin

11:00 – 12:30 Auto-DaSP (Room F4)

- **Cost of Fault-tolerance on Data Stream Processing**
  Valerio Vianello, Marta Patiño Martínez, Ainhoa Azqueta-Alzúaz and Ricardo Jimenez Péris

- **A Multi-level Elasticity Framework for Distributed Data Stream Processing**
  Matteo Nardelli, Gabriele Russo, Valeria Cardellini and Francesco Lo Presti

- **Autonomic and Latency-Aware Degree of Parallelism Management in SPar**
  Adriano Vogel, Dalvan Griebler, Daniele De Sensi, Marco Danelutto and Luiz Gustavo Fernandes

11:00 – 12:30 Resilience (Room F1)

- **FINJ: A Fault Injection Tool for HPC Systems**
  Alessio Netti, Zeynep Kiziltan, Ozalp Babaoglu, Alina Sirbu, Andrea Bartolini and Andrea Borghesi

- **Do moldable applications perform better on failure-prone HPC platforms?**
  Valentin Le Fèvre, George Bosilca, Aurelien Bouteiller, Thomas Herault, Atsushi Hori, Yves Robert and Jack Dongarra

- **Discussion and closing**
  Workshop chairs

12:30 – 14:00 Lunch (Mensa Olimpia)

14:00 – 15:30 Tutorial 4 (Room F5)

- **Enabling Your Code for Vector Execution on Multi-Core Architectures**
  Fabio Baruffa

14:00 – 15:30 FPDAPP (Room F2)

- **(Keynote) TBA**
  TBA

- **Networking session**

14:00 – 15:30 F2C-DP (Room F3)

- **Benefits of a Fog-to-Cloud Approach in Proximity Marketing**
  Antonio Salis, Glauco Mancini, Roberto Bulla, Paolo Cocco and Daniele Lezzi

- **Multi-tenant Pub/Sub Processing for Real-time Data Streams**
  Alvaro Villalba and David Carrera

- **MAD-C: Multi-stage Approximate Distributed Cluster-Combining for Obstacle Detection and Localization**
  Amir Keramatian, Vincenzo Gulisano, Marina Papatriantafilou, Philippas Tsigas and Yiannis Nikolakopoulos

14:00 – 15:30 Repara (Room F4)

- **Programmable HSA Accelerators for Zynq UltraScale+ MPSoC Systems**
  Wolfgang Bauer, Philipp Holzinger, Marc Reichenbach, Steffen Vaas, Paul Hartke and Dietmar Fey

- **InKS, a Programming Model to Decouple Performance from Semantics in HPC Codes**
  Ksander Ejjaaouani, Olivier Aumage, Julien Bigot, Michel Mehrenberger, Hitoshi Murai, Masahiro Nakao and Mitsuhisa Sato

- **(Keynote) Towards data intensive aware programming models for Exascale systems**
  Jose Garcia-Blas, University Carlos III de Madrid

14:00 – 15:30 PCDLifeS (Room F1)

- **(Keynote) Data-intensive Knowledge Discovery from Brain Imaging of Alzheimer's Disease Patients**
  Giuseppe di Fatta (Univ. of Reading)

- **Understanding Chromatin Structure: Efficient Computational Implementation of Polymer Physics Models**
  Andrea Maria Chiariello, Simona Bianco, Carlo Annunziatella, Andrea Esposito, Luca Fiorillo, Mattia Conte and Raffaele Campanile

- **A Parallel Cellular Automaton Model For Adenocarcinomas in Situ with Java: Study of One Case**
  Antonio J. Tomeu-Hardasmal, Alberto G. Salguero-Hidalgo and Manuel I. Capel-Tuñon

15:30 – 16:00 Coffee Break (Campus Cafè)

16:00 – 17:30 Tutorial 4 (Room F5)

- **Enabling Your Code for Vector Execution on Multi-Core Architectures**
  Fabio Baruffa

16:00 – 17:30 FPDAPP (Room F2)

- **Tamper-Proof Volume Tracking in Supply Chains with Smart Contracts**
  Ulrich Gallersdörfer and Florian Matthes

- **A Blockchain Based System to Ensure Transparency and Reliability in Food Supply Chain**
  Gavina Baralla, Simona Ibba, Michele Marchesi, Roberto Tonelli and Sebastiano Missineo

- **Panel: The Interplay Between Consensus Mechanisms and Decentralized Governance in Blockchain Technologies**
  Silvio Micali (MIT), Nadia Fabrizio (Cafriel), Massimo Morini (Banca IMI), Andrea Bracciali (Univ. of Stirling), Claudio Schifanella (Univ. of Turin)

16:00 – 17:30 F2C-DP (Room F3)

- **(Panel) Technology Requirements and Challenges Towards a Fog to Cloud Architecture, Its Impact in Business Models and Emerging Business Scenarios**
  Antonio Salis (ENG), Rosa M. Badia (BSC), Massimo Coppola (CNR), Alvaro Villalba (BSC)

16:00 – 17:30 Repara (Room F4)

- **Refactoring Loops with Nested IFs for SIMD Extensions without Masked Instructions**
  Huihui Sun, Sergei Gorlatch and Rongcai Zhao

- **Service Level Objectives via C++11 Attributes**
  Dalvan Griebler, Daniele De Sensi, Adriano Vogel, Marco Danelutto and Luiz Fernandes

16:00 – 17:30 PCDLifeS (Room F1)

- **Performance Evaluation for a PETSc Parallel-in-Time Solver Based on MGRIT Algorithm**
  Valeria Mele, Emil Costantinescu, Luisa Carracciuolo and Luisa D'Amore
- **Towards Heterogeneous Network Alignment: Design and Implementation of a Large-Scale Data Processing Framework**
  Pietro Hiram Guzzi, Marianna Milano, Pierangelo Veltri and Mario Cannataro
- **Effect of Spatial Decomposition on the Efficiency of k-Nearest Neighbors Search in Spatial Interpolation**
  Naijie Fan, Gang Mei, Zengyu Ding, Salvatore Cuomo and Nengxiong Xu
- **Discussion and closing**
  Workshop chairs

Wednesday August 29

09:00 – 09:30 Opening (Aula Magna)

09:30 – 10:30 Plenary Session 1 (Aula Magna)

- **Keynote 1: ALGORAND: A Better Distributed Ledger**
  Silvio Micali

10:30 – 11:00 Coffee Break (Campus Cafè)

11:00 – 12:30 Session 2A (Room D3) Theory (Topics 3, 7, 10)

- **Early Termination of Failed HPC Jobs Through Machine and Deep Learning**
  Michał Zasadziński, Victor Muntés-Mulero, Marc Solé, David Carrera and Thomas Ludwig
- **High-Quality Shared-Memory Graph Partitioning**
  Yaroslav Akhremtsev, Peter Sanders and Christian Schulz
- **Nobody Cares if You Liked Star Wars: KNN Graph Construction on the Cheap**
  Anne-Marie Kermarrec, Olivier Ruas and François Taïani

11:00 – 12:30 Session 2B (Room D1) Applications (Topics 6, 11)

- **Exploiting Data Sparsity for Large-Scale Matrix Computations *(ARTIFACT EVALUATED)***
  Kadir Akbudak, Hatem Ltaief, Aleksandr Mikhalev, Ali Charara, Aniello Esposito and David Keyes
- **Adaptive Bandwidth-Efficient Recovery Techniques in Erasure-Coded Cloud Storage Systems**
  Rekha Nachiappan, Bahman Javadi, Rodrigo N. Calheiros, and Kenan M. Matawie

- **IT Optimization for Datacenters Under Renewable Power Constraint**
  Stephane Caux, Paul Renaud-Goud, Gustavo Rostirolla and Patricia Stolf

11:00 – 12:30 Session 2C (Room E1) Programming (Topics 8, 9)

- **Snapshot-based Synchronization: A Fast Replacement for Hand-over-Hand Locking**
  Eran Gilad, Trevor Brown, Mark Oskin and Yoav Etsion

- **NUMA Optimizations for Algorithmic Skeletons**
  Paul Metzger, Murray Cole and Christian Fensch

- **Measuring Multithreaded Message Matching Misery**
  Whit Schonbein, Matthew G. F. Dosanjh, Ryan E. Grant and Patrick G. Bridges

12:30 – 14:00 Lunch (Mensa Olimpia)

14:00 – 15:30 Session 3A (Room D1) Tools (Topic 2)

- **Reducing GPU Register File Energy**
  Vishwesh Jatala, Jayvant Anantpur and Amey Karkare

- **Taxonomist: Application Detection through Rich Monitoring Data *(ARTIFACT EVALUATED)***
  Emre Ates, Ozan Tuncer, Ata Turk, Vitus J. Leung, Jim Brandt, Manuel Egele and Ayse K. Coskun

- **Diagnosing Highly-Parallel OpenMP Programs With Aggregated Grain Graphs**
  Nico Reissmann and Ananya Muddukrishna

14:00 – 15:30 Session 3B (Room E1) Programming (Topics 4, 8, 9)

- **Global-Local View: Scalable Consistency for Concurrent Data Types *(ARTIFACT EVALUATED)***
  Deepthi Devaki Akkoorath, José Brandão, Annette Bieniusa and Carlos Baquero

- **Improving GPU Cache Hierarchy Performance with a Fetch and Replacement Cache**
  Francisco Candel, Salvador Petit, Alejandro Valero and Julio Sahuquillo

- **Improving System Turnaround Time with Intel CAT by Identifying LLC Critical Applications**
  Lucía Pons, Vicent Selfa, Julio Sahuquillo, Salvador Petit and Julio Pons

14:00 – 15:30 Session 3C (Room D3) Theory (Topics 3, 7)

- **One-Sided Communications for more Efficient Parallel State Space Exploration over RDMA Clusters**
  Camille Coti, Sami Evangelista and Laure Petrucci

- **Peacock: Probe-Based Scheduling of Jobs by Rotating Between Elastic Queues**
  Mansour Khelghatdoust and Vincent Gramoli

- **Online Scheduling of Task Graphs on Hybrid Platforms**
  (ARTIFACT EVALUATED)
  Louis-Claude Canon, Loris Marchal, Bertrand Simon and Frédéric Vivien

15:30 – 16:00 Coffee Break (Campus Cafè)

16:00 – 18:00 Session 4A (Room D1) Applications (Topics 5, 6, 11)

- **Privacy-Preserving Top-k Query Processing in Distributed Systems**
  Sakina Mahboubi, Reza Akbarinia and Patrick Valduriez

- **Hybrid Parallelization and Performance Optimization of the FLEUR Code: New Possibilities for All-Electron Density Functional Theory**
  Uliana Alekseeva, Gregor Michalicek, Daniel Wortmann, and Stefan Blügel

- **GPU Provisioning: The 80 - 20 Rule**
  Eleni Kanellou, Nikolaos Chrysos, Stelios Mavridis, Yannis Sfakianakis and Angelos Bilas

- **Minimizing Network Traffic for Distributed Joins Using Lightweight Locality-Aware Scheduling**
  Long Cheng, John Murphy, Qingzhi Liu, Chunliang Hao and Georgios Theodoropoulos

16:00 – 18:00 Session 4B (Room D3) Tools (Topics 1, 2)

- **Automatic Detection of Synchronization Errors in Codes that Target the Open Community Runtime**
  Jiri Dokulil and Jana Katreniakova

- **A Methodology for Performance Analysis of Applications Using Multi-layer I/O**
  (ARTIFACT EVALUATED)
  Ronny Tschüter, Christian Herold, Bert Wesarg and Matthias Weber

- **Runtime Determinacy Race Detection for OpenMP Tasks**
  (ARTIFACT EVALUATED)
  Hassan Salehe Matar and Didem Unat

- **Characterization of Smartphone Governor Strategies**
  Sarbartha Banerjee and Lizy Kurian John

16:00 – 18:00 Session 4C (Room E1) Programming (Topics 8, 9)

- **Bulk: a Modern C++ Interface for Bulk-Synchronous Parallel Programs**
  Jan-Willem Buurlage, Tom Bannink and Rob H. Bisseling

- **Dynamic Placement of Progress Thread for Overlapping MPI Non-Blocking Collectives on Manycore Processor**
  Alexandre Denis, Julien Jaeger, Emmanuel Jeannot, Marc Pérache and Hugo Taboada

- **Efficient Load Balancing Techniques for Graph Traversal Applications on GPUs**
  Federico Busato and Nicola Bombieri

- **SharP Unified Memory Allocator: An Intent-based Memory Allocator for Extreme-Scale Systems**
  Ferrol Aderholdt, Manjunath Gorentla Venkata and Zachary W. Parchman

Thursday August 30

09:00 – 10:00 Plenary Session 5 (Aula Magna)

- **Keynote 2: Algorithmic Adaptations to Extreme Scale Computing**
  David E. Keyes

10:00 – 10:30 Coffee Break (Campus Cafè)

10:30 – 12:30 Plenary Session 6 (Aula Magna) Distinguished Papers

- **Design Principles for Sparse Matrix Multiplication on the GPU *(ARTIFACT EVALUATED)***
  Carl Yang, Aydın Buluç and John D. Owens

- **VIoLET: A Large-scale Virtual Environment for Internet of Things**
  Shreyas Badiger, Shrey Baheti and Yogesh Simmhan

- **Resource-Efficient Execution of Conditional Parallel Real-Time Tasks**
  Sanjoy Baruah

12:30 – 14:00 Lunch (Mensa Olimpia)

14:00 – 15:30 Session 7A (Room D1) Applications (Topics 6, 11)

- **ECSched: Efficient Container Scheduling on Heterogeneous Clusters**
  Yang Hu, Huan Zhou, Cees de Laat and Zhiming Zhao

- **Efficient Strict-Binning Particle-in-Cell Algorithm for Multi-Core SIMD Processors *(ARTIFACT EVALUATED)***
  Yann Barsamian, Arthur Charguéraud, Sever A. Hirstoaga and Michel Mehrenberger

- **Task-Based Programming on Emerging Parallel Architectures for Finite-Differences Seismic Numerical Kernel**
  (ARTIFACT EVALUATED)
  Salli Moustafa, Wilfried Kirschenmann, Fabrice Dupros and Hideo Aochi

14:00 – 15:30 Session 7B (Room E1) Programming (Topics 8, 9)

- **Abelian: A Compiler and Runtime for Graph Analytics on Distributed, Heterogeneous Platforms**
  Gurbinder Gill, Roshan Dathathri, Loc Hoang, Andrew Lenharth and Keshav Pingali

- **Efficient Communication/Computation Overlap with MPI+OpenMP Runtimes Collaboration**
  Marc Sergent, Mario Dagrada, Patrick Carribault, Julien Jaeger, Marc Pérache and Guillaume Papauré

- **Energy Efficient Stencil Computations on the Low-Power Manycore MPPA-256 Processor**
  Emmanuel Podestá Jr., Bruno Marques do Nascimento and Márcio Castro

14:00 – 15:30 Session 7C (Room D3) Industrial talks

- **Intel Software Development Tools Update for Parallelization/Vectorization and Deep Learning**
  Edmund Preiss, Intel

- **The Convergence of Supercomputing and AI in a Post-Moore's Law World**
  Piero Altoè, NVidia

- **TBA**
  Reiley Jeyapaul, ARM Research

15:30 – 16:00 Coffee Break (Campus Cafè)

16:00 – 18:00 Session 8A (Room D1) Chess-timer talks (Topics 8, 9)

- **Efficient Lock-Free Removing and Compaction for the Cache-Trie Data Structure**
  (ARTIFACT EVALUATED)
  Aleksandar Prokopec

- **Multi-Granularity Locking in Hierarchies with Synergistic Hierarchical and Fine-Grained Locks**
  (ARTIFACT EVALUATED)
  K. Ganesh, Saurabh Kalikar and Rupesh Nasre

- **OpenABL: A Domain-Specific Language for Parallel and Distributed Agent-Based Simulations**
  (ARTIFACT EVALUATED)
  Biagio Cosenza, Nikita Popov, Ben Juurlink, Paul Richmond, Mozhgan Kabiri Chimeh, Carmine Spagnuolo, Gennaro Cordasco, Vittorio Scarano

16:00 – 18:00 Session 8B (Room E1) Chess-timer talks (Topics 4, 10, 12)

- **Using Dynamic Compilation to Achieve Ninja Performance for CNN Training on Many-Core Processors**
  Ankush Mandal, Rajkishore Barik and Vivek Sarkar

- **Stream Processing on Hybrid CPU/Intel Xeon Phi Systems**
  Paulo Ferrão, Hélder Marques and Hervé Paulino

- **Distributed Graph Clustering Using Modularity and Map Equation**
  Michael Hamann, Ben Strasser, Dorothea Wagner and Tim Zeitz

Friday August 31

09:00 – 10:00 Plenary Session 9 (Aula Magna)

- **Keynote 3: Datacenters for the Post-Moore Era**
  Babak Falsafi

10:00 – 10:30 Coffee Break (Campus Cafè)

10:30 – 12:30 Session 10A (Room D3) Applications & Theory (Topics 3, 6, 7, 10)

- **Cloud Federation Formation in Oligopolistic Markets**
  Yash Khandelwal, Karthik Ganti, Suresh Purini and Puduru V. Reddy

- **Interference-Aware Scheduling using Geometric Constraints**
  Raphaël Bleuse, Konstantinos Dogeas, Giorgio Lucarelli, Grégory Mounié and Denis Trystram

- **Improved Distributed Algorithm for Graph Truss Decomposition**
  Venkatesan T. Chakaravarthy, Aashish Goyal, Prakash Murali, Shivmaran S. Pandian, and Yogish Sabharwal

- **Robust Decentralized Mean Estimation with Limited Communication**
  Gábor Danner and Márk Jelasity

10:30 – 12:30 Session 10B (Room D1) Tools (Topics 1, 2)

- **Estimating the Impact of External Interference on Application Performance**
  Aamer Shah, Matthias Müller and Felix Wolf

- **HPC Benchmarking: Scaling Right and Looking Beyond the Average**
  Milan Radulovic, Kazi Asifuzzaman, Paul Carpenter, Petar Radojković and Eduard Ayguadé

- **GT-Race: Graph Traversal based Data Race Detection for Asynchronous Many-Task Parallelism**
  Lechen Yu and Vivek Sarkar

- **Combined Vertical and Horizontal Autoscaling Through Model Predictive Control**
  Emilio Incerto, Mirco Tribastone and Catia Trubiani

10:30 – 12:30 Session 10C (Room E1) Applications (Topics 6, 12)

- **Combinatorial Auction Algorithm Selection for Cloud Resource Allocation Using Machine Learning**
  Diana Gudu, Marcus Hardt and Achim Streit

- **CEML: a Coordinated Runtime System for Efficient Machine Learning on Heterogeneous Computing Systems**
  Jihoon Hyun, Jinsu Park, Kyu Yeun Kim, Seongdae Yu and Woongki Baek

- **Tile Low-Rank GEMM Using Batched Operations on GPUs *(ARTIFACT EVALUATED)***
  Ali Charara, David Keyes and Hatem Ltaief

- **Improving Cloud Simulation Using the Monte-Carlo Method**
  Luke Bertot, Stéphane Genaud and Julien Gossa

12:30 – 12:45 Closing (Aula Magna)

12:45 – 14:00 Lunch (Mensa Olimpia)

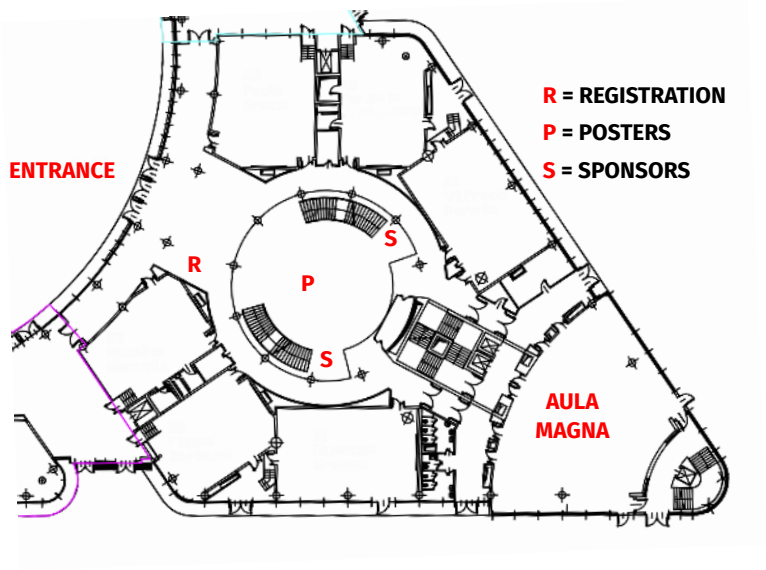
Online Program

Please check the Euro-Par 2018 web site for updates:

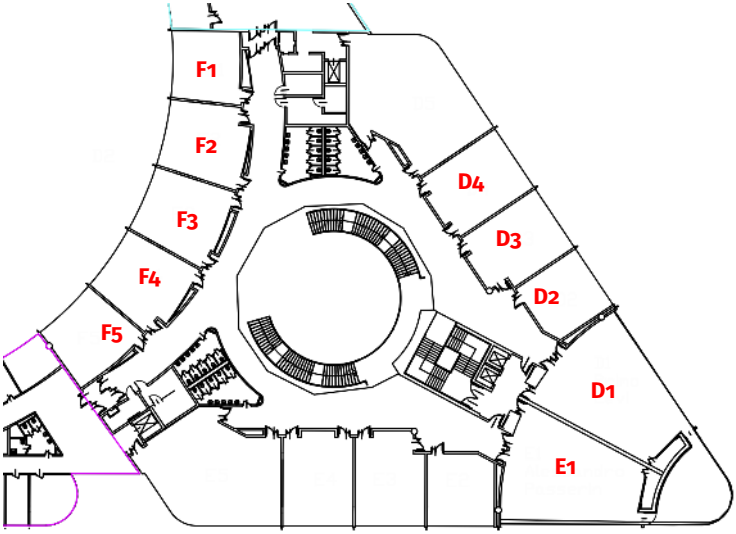
- `https://europar2018.org/program`

7 Maps of Conference Building

Ground Floor



First Floor



8 Address Book

Conference, Workshops and Tutorials

- August 27–31
- **Campus Luigi Einaudi**, Lungo Dora Siena, 100 A, 10153 Torino
- https://goo.gl/maps/bo6XcxQprTs

Welcome Cocktail

- August 28, 18:30
- **Circolo dei Lettori**, Via Giambattista Bogino, 9, 10123 Torino
- https://goo.gl/maps/Rry15Ru3BD92

Social Dinner

- August 30, 20:00
- **Palazzo della Luce**, Via Antonio Bertola, 40, 10122 Torino
- https://goo.gl/maps/WSkb48tg31T2

Twitter Account

- https://twitter.com/europar2018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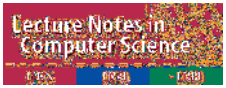
Lecture Notes in
Computer Science