Curriculum Vitae – Alessandro Fogli

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RESEARCH INTERESTS

My research interests lie within the broad area of systems including large-scale distributed systems, systems support for data analytics in the cloud environment, cluster resource management and distributed query processing with emphasis on modern hardware.

EDUCATION

Ph.D., Computer Science   **01/2019 - 01/2025**

Large-Scale Data and Systems Group, Department of Computing, Imperial College London, UK.

Specialisation: Distributed Data Processing Systems on Modern Hardware.

Supervisors: Prof. Peter Pietzuch.

Visiting Ph.D. Student, Computer Science   **11/2023 - 07/2024**

Chair for Database Systems, Department of Computing, Technische Universität München, Germany.

Project: Enhancing Data Processing on Chiplet-Based Processors.

Supervisor: Prof. Dr. Jana Giceva.

M.Sc., Computer Science   **09/2015 - 12/2017**

Department of Computer Science, Roma Tre University, Italy.

Honours: Summa Cum Laude distinction.

B.Sc., Computer Science   **09/2012 - 07/2015**

Department of Computer Science, Roma Tre University, Italy.

PROFESSIONAL EXPERIENCE

Meta, London, United Kingdom
Software Engineer Intern   **06/2023 - 10/2023**
Part of the Workrooms VC Media Engineering team, developing an efficient cross-platform media communication prototype. Conducted comparative analyses of media IPC across operating systems and executed performance benchmarking assessments to gauge the prototype's impact on real-time media processing within Meta's proprietary framework.

Oracle Labs, Zürich, Switzerland
Research and Software Engineer Intern   **04/2019 - 12/2019**
Part of the research team involved in the development of HeatWave, an in-memory analytics accelerator for MySQL. Implemented primitives (low-level operations in HeatWave) to increase query offloads to HeatWave. Investigated various OCI (Oracle Cloud) storage services for supporting high availability and elasticity. Defined and evaluated a new NUMA-aware deployment strategy for the HeatWave execution engine.

Nokia Bell Labs, Cambridge, United Kingdom
Research Intern   **03/2018 - 09/2018**
Built a system for quantitative analysis of the content of people's dreams in textual form from scratch. The system automatically scores dream reports by operationalizing the widely used dream analysis scale by Hall and Van de Castle. The system quantifies important aspects of dreams, making it possible to build technologies that bridge the current gap between real life and dreaming.

AI Group, Roma Tre University, Rome, Italy
Undergraduate Research Assistant   **03/2017 - 12/2017**
Developed a context-aware route recommendation system from Linked Open Data, extracting user-relevant points of interest via SPARQL queries. Created a polystore system on PostgreSQL, MongoDB and Neo4j, enabling users query all databases via SQL and gather unified JSON results.

Com.Tel S.p.A, Rome, Italy
System Software Engineer Intern   **07/2015 - 01/2016**
Built a cloud infrastructure using open source technologies (Openstack and Docker) with subsequent migration of business applications. Improved the performance of the IT business department in terms of scalability, provisioning time and service delivery speed.

UNDER REVIEW PUBLICATIONS

[1] **Fogli A.**, Zhao B., Pietzuch P. and Giceva J. CHARM : Chiplet Heterogeneity-Aware Runtime Mapping System. *ACM EuroSys*, 2026.

SELECTED PUBLICATIONS

[2] **Fogli A.**, Zhao B., Pietzuch P., Bandle M. and Giceva J. OLAP on Modern Chiplet-Based Processors. *Proc. VLDB Endow. 17, 11 (July 2024)*, 3428-3441. DOI: https://doi.org/10.14778/3681954.3682011

[3] **Fogli A.**, Pietzuch P. and Giceva J. Optimizing Sorting for Chiplet-Based CPUs. *ADMS @ VLDB 2024*. DOI: https://vldb.org/workshops/2024/proceedings/ADMS/ADMS24_03.pdf

[4] **Fogli A.**, Aiello L. M. and Quercia D. Our dreams, our selves: automatic analysis of dream reports. *Royal Society Open Science*, 7:192080, 2020. DOI: https://doi.org/10.1098/rsos.192080

[5] **Fogli A.** and Sansonetti G. Exploiting semantics for context-aware itinerary recommendation. *Personal and Ubiquitous Computing*, 23:215–231, 2019. DOI: https://doi.org/10.1007/s00779-018-01189-7

[6] **Fogli A.**, Micarelli A. and Sansonetti G. Enhancing Itinerary Recommendation with Linked Open Data. In: *HCI International 2018 - Posters' Extended Abstracts. Communications in Computer and Information Science, vol 850. Springer*, Las Vegas, Nevada, 2018. DOI: https://doi.org/10.1007/978-3-319-92270-6_5

TECHNICAL SKILLS

Programming Languages : Proficient with **C/C++**, with experience in low-level optimizations, performance engineering and multi-threaded programming. Hands-on experience with **Python** and strong **Bash** scripting skills for rapid development and automation. Familiar with **Java** and **OCaml**.

Databases & Data Processing : Deep understanding of **SQL** and **database architectures**, with hands-on work in query optimization, execution engine internals and workload-aware performance tuning. Practical experience with **distributed query engines** and relational databases (e.g., Presto, HeatWave, Velox, Greenplum, SingleStore, MySQL and PostgreSQL). Experience with **NoSQL** databases (e.g., Neo4j and MongoDB).

Machine Learning & Big Data : Hands-on experience with machine learning frameworks (e.g., **LightGBM**) and research prototypes (e.g., **DimmWitted**). Focus on hardware-aware optimizations through data locality, task scheduling and resource management to improve training efficiency on modern multi-core architectures. Experience with Hadoop-related technologies, including **MapReduce**, **Hive** and **Spark**.

Systems & Cloud : Hands-on experience in high-performance networking and modern communication protocols (**RDMA**, **DPDK**). Experience with AWS and Oracle Cloud. Over 10 years of daily **GNU/Linux** usage. Skilled in **Git** (with experience in large-scale production environments) and **Mercurial**. Extensive use of **VTune**, **AMDuProf** and **perf** for low-level performance tuning and bottleneck analysis. Fluent in technical writing with LaTeX.

TEACHING EXPERIENCE

Teaching Assistant at **Imperial College London**   **09/2020 - 05/2023**

Scalable Systems and Data

Advanced Databases

Operating Systems

OS Laboratory

OS Advanced Laboratory

AWARDS AND FUNDING

Doctoral Scholarship   **awarded in 2019**

Scholarship to cover funding for PhD studies,

Imperial College London

ERASMUS+ Traineeship   **awarded in 2017**

Winner of one of 5 grants for the ERASMUS+ program: Student Mobility for Traineeship,

Roma Tre University