

# Preface

The International Workshop on Algorithmic Aspects of Cloud Computing (ALGO-CLOUD) is an annual event aiming to tackle the diverse new topics in the emerging area of algorithmic aspects of computing and data management in the cloud. The increasing adoption of cloud computing introduces a variety of parallel and distributed algorithmic models and architectures. To leverage elastic cloud resources, scalability has to be a fundamental architectural design trait of new cloud databases. This challenge is manifested in new data models (“NoSQL”), replication, caching and partitioning schemes, relaxed consistency, and transaction guarantees as well as new protocols, APIs, indexing and storage services.

The aim of the workshop is to bring together researchers and practitioners in cloud computing algorithms, service design, and data architectures to exchange ideas and contribute to the development of this exciting and emerging new field.

ALGO-CLOUD welcomes theoretical, experimental, methodological and application papers. Demonstration papers and high-quality survey papers are also welcome. As such, contributions are expected to span a wide range of algorithms for modeling, constructing, and evaluating operations and services in a variety of systems, including (but not limited to) virtualized infrastructures, cloud platforms, data centers, mobile ad hoc networks, peer-to-peer and grid systems, HPC architectures, etc.

Topics of interest addressed by this workshop include, but are not limited to:

- Algorithmic aspects of elasticity and scalability for distributed, large-scale data stores (e.g., NoSQL and columnar databases)
- Search and retrieval algorithms for cloud infrastructures
- Monitoring and analysis of elasticity for virtualized environments
- NoSQL, schemaless data modeling, integration
- Caching and load-balancing
- Storage structures and indexing for cloud databases
- New algorithmic aspects of parallel and distributed computing for cloud applications
- Scalable machine learning, analytics and data science
- High availability, reliability, failover
- Transactional models and algorithms for cloud databases
- Query languages and processing, programming models
- Consistency, replication and partitioning CAP, data structures and algorithms for eventually consistent stores

ALGO-CLOUD 2016 took place on August 22, 2016, at the Lakeside Lecture Theatres (Søauditorierne) at Aarhus University, Denmark. It was collocated and was part of ALGO 2016 (August 22–26, 2016), the major annual congress that combines the premier algorithmic conference European Symposium on Algorithms (ESA) and a number of other specialized conferences and workshops, all related to algorithms and

their applications, making ALGO the major European event for researchers, students, and practitioners in algorithms.

ALGO CLOUD 2016 was hosted by Aarhus University and sponsored by the Danish National Research Foundation Center MADALGO affiliated with the Department of Computer Science, and was organized in cooperation with the European Association for Theoretical Computer Science (EATCS).

The Program Committee (PC) of ALGO CLOUD 2016 was delighted by the positive response to the call for papers. The diverse nature of papers submitted demonstrated the vitality of the algorithmic aspects of cloud computing. All submissions underwent the standard peer-review process and were reviewed by at least three PC members, sometimes assisted by external referees. The PC decided to accept 11 original research papers that were presented at the workshop.

The program of ALGO CLOUD 2016 was complemented with a highly interesting tutorial, entitled “Big Data Management and Scalable Data Science: Key Challenges and (Some) Solutions,” which was delivered by Prof. Volker Markl (Technische Universität Berlin, Germany). We wish to express our sincere gratitude to this distinguished scientist for the excellent tutorial he provided.

We hope that these proceedings will help researchers to understand and be aware of state-of-the-art algorithmic aspects of cloud computing, and that they will stimulate further research in the domain of algorithmic approaches in cloud computing in general.

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