

## Second Data Economy Workshop (DEC)

Georgia Koutrika  
georgia@athenarc.gr  
Athena Research Center  
Greece

Nikolaos Laoutaris  
nikolaos.laoutaris@imdea.org  
IMDEA  
Spain

Martino Trevisan  
martino.trevisan@dia.units.it  
University of Trieste  
Italy

### ABSTRACT

The mission of the Data Economy workshop is to bring together all the CS skills required for helping the Data Economy liftoff by addressing a range of technical challenges.

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### 1 INTRODUCTION

Data-driven decision making through machine learning algorithms (ML) is transforming the way society and the economy work and is having a profound positive impact on our daily lives. With the exception of very large companies that have both the data and the capabilities to develop powerful ML-driven services, the vast majority of demonstrably possible ML services, from e-health to transportation to predictive maintenance, to name a few, still remain at the level of ideas or prototypes for the simple reason that data, the capabilities to manipulate it, and the business models to bring it to market rarely exist under one roof. Data must somehow meet the ML and business skills that can unleash its full power for society and the economy. This has given rise to an extremely dynamic sector around the *Data Economy*, involving Data Providers/Controllers, data Intermediaries, often-times in the form of Data Marketplaces or Personal Information Management Systems for end users to control and even monetize their personal data.

Despite its huge potential and observed initial growth, the Data Economy is still at its nascent phase and, therefore, faces a yet uncertain future and a series of existential challenges. Such challenges include a broad range of technical matters across multiple disciplines of Computer Science including databases, machine learning, distributed systems, security and privacy, and human computer interaction. The mission of the Data Economy workshop is to bring together all the CS skills required for the Data Economy, including:

- Federated data catalogues, heterogeneous and federated DBMS, metadata management and data discovery mechanisms
- Federated and distributed learning in the data economy
- Data management and querying in Data Marketplaces

- Design, architecture, systems and protocols for Data Marketplaces, Data Vendors, and Personal Information Management Systems (PIMS)
- Data representation and exchange in the data economy
- Understanding the value of data in different applications and domains and across the data value chain
- Federation and interoperability standards and protocols in the data economy
- Privacy/data protection, secure data exchange and delivery mechanisms in the data economy
- Consent management and data pricing mechanisms for individual and aggregated data
- NFTs, blockchains, smart contracts in the data economy
- Trusted execution, cloud computing, distributed storage and their role in the data economy
- Measurement studies related to the data economy
- Large-scale experiments and studies for the data economy

#### Workshop Papers.

- The program includes the following papers:
- S. Golob, S. Pentylala, R. Dowsley, B. David, M. Larangeira, M. De Cock, A. Nascimento. *A Decentralized Information Marketplace Preserving Input and Output Privacy*
  - P. Maesen, D. İşler, N. Laoutaris, Z. Erkin. *Image Watermarking for Machine Learning Datasets*
  - T. Hristov, D. İşler, N. Laoutaris, Z. Erkin. *Graph Database Watermarking Using Pseudo-Nodes*.
  - W. Zhang, P. Chen, J. Yang, Y. Tang, J. Su. *A Capability Description Language Design for Data Products*.
  - D. Lunghi, A. Simitsis, O. Caelen, G. Bontempi. *Adversarial Learning in Real-World Fraud Detection: Challenges and Perspectives*.
  - A. Abidin, E. Marquet, J. Moeyersons, X. Limani, E. Pohle, M. Van Kenhove, J. Marquez-Barja, N. Slamnik-Kriještorec, B. Volckaert. *MOZAIK: An End-to-End Secure Data Sharing Platform*.
  - T. Kumar, A. Shah, A. Mishra, S. Bhattacharya, A. Mahendran, T. Dunning, G. Bowden. *From Roots to Fruits: Exploring Lineage for Dataset Recommendations*.
  - M. Fleckenstein, A. Obaidi, N. Tryfona. *Data Valuation: Use Cases, Desiderata, and Approaches*. (invited)

## **TECHNICAL PROGRAM COMMITTEE**

We would like to thank the entire technical program committee for reviewing and selecting papers for the workshop.

Raúl Castro Fernández, University of Chicago

Ruben Cuevas Rumin, UC3M, Spain

Gottfried Vossen, University of Muenster

Zekeriya Erkin, TU Delft

Athina Markopoulou, UC Irvine

Kaitai Liang, TU Delft

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Paraschos Koutris, University of Washington

Zhifeng Bao, RMIT University

Fei Chiang, McMaster University

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Xiaokui XIAO, National University of Singapore

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George Konstantinidis, University of Southampton