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NEWS RELEASE

Contact: Jim Ormond
212-626-0505
ormond@hq.acm.org

2018 ACM SIGMOD/PODS CONFERENCE EXPLORES IMPACT OF NEW TECHNOLOGIES ON DATA MANAGEMENT FIELD

*Conference Will Feature Ethics Panel Examining Role Database Community Should Play
in Fairness, Accountability and Transparency Movement*

NEW YORK, June 7, 2018 – The field of database management is mature, but not immune to the effects of emerging technologies such as container storage and machine learning. In order to explore the interrelation among various technologies and the management of data, and to exchange techniques, tools, and experiences, the Association for Computing Machinery (ACM) Special Interest Group on Management of Data (SIGMOD), together with PODS, the premier international conference on the theoretical aspects of database systems, will host the annual [SIGMOD/PODS 2018](#) conference in Houston, June 10-15, 2018.

The annual SIGMOD/PODS conference is a leading international forum on database management and is one of the most important and selective in the field. Approximately 900 researchers, practitioners and developers are expected to attend.

Conference highlights include:

- Keynote address by Google’s Eric Brewer, discussing the effects of container technology on cloud computing
- Keynote address by the University of Washington’s Pedro Domingos on new theory and practice of machine learning, which promises to make it easier and more effective for data management
- An ethics panel that will examine core data management issues relating to fairness, accountability and transparency in algorithmic decision making and the role the database community can and/or should play

“Database research and management continues to grow in importance as the foundation and beneficiary of a range of applications and technologies, including AI and cloud computing” said Phil Bernstein, SIGMOD Program Chair. “These new technologies, while not core to database engineering, have the potential to affect the way database professionals work.”

2018 ACM SIGMOD/PODS HIGHLIGHTS

SIGMOD Keynote Talk: June 12
“Kubernetes and the New Cloud”

Eric Brewer, VP of Infrastructure at Google, Professor at UC Berkeley, and Recipient of the ACM Prize in Computing

We are in the midst of shifting the notion of “Cloud” to a higher level of abstraction than virtual machines—one based on services, processes and application programming interface (APIs). Kubernetes, an open source container orchestration system, epitomizes this shift and has rapidly become the de facto way to manage this new era of container-based applications. It aims to simplify the deployment and management of services, including the construction of applications as sets of interacting but independent services. This keynote will explain some of the key concepts in Kubernetes and Istio, an open source platform to connect, manage and secure microsystems, and show how they work together to simplify evolution, scaling and operations.

SIGMOD Keynote Talk: June 13
“Machine Learning for Data Management: Problems and Solutions”

Pedro Domingos, Professor at University of Washington and Recipient of the ACM SIGKDD Innovation Award

Machine learning has made great strides in recent years, and its applications are spreading rapidly. Unfortunately, the standard machine learning formulation does not match well with data management problems and leads to a proliferation of ad hoc solutions, slow development, and suboptimal results. This talk will discuss the body of machine learning theory and practice being developed that dispenses with such assumptions, and promises to make machine learning for data management much easier and more effective. In particular, representations like Markov logic, which includes many types of deep networks as special cases, allow us to define very rich probability distributions over non-i.i.d., multi-relational data. With these foundations in place, we expect the pace of machine learning applications in data management to continue to accelerate in coming years.

PODS Keynote Talk: June 11
“How Can Reasoners Simplify Database Querying (And Why Haven't They Done It Yet)?”

Michael Benedikt, Oxford University

Benedikt will reflect on the state of tools and algorithms for applying reasoning to simplify database querying. What's been done, and how well did it work? One motivation for this comes from within database theory, where a huge amount of research has been devoted to reasoning problems. A second motivation comes from outside of database management, where there has been enormous progress in the development of reasoning systems. Benedikt will also consider how the increasing maturity of reasoning systems could be harnessed to solve database querying problems.

PODS Invited Tutorial: June 12
“Blockchains: Past, Present and Future”

Arvind Narayanan, Princeton University

Narayanan will begin by summarizing blockchain components such as linked timestamping, consensus, and proof-of-work and explain how these components fit together in Bitcoin's blockchain design. He will then present abstract models of blockchains in order to help tutorial attendees understand and reason

about the similarities and differences between the numerous proposed blockchain designs in a succinct way.

Special Session: June 14

“A Technical Research Agenda in Data Ethics and Responsible Data Management”

Moderator: Julia Stoyanovich, Drexel University; Speakers: Krishna Gummadi, MPI Software Systems; Bill Howe, University of Washington; HV Jagadish, University of Michigan; and Alexandra Meliou, University of Massachusetts Amherst

Recently a movement has begun to ensure fairness, accountability, and transparency in algorithmic decision making, and in data science more broadly. The database community has not been significantly involved in this movement, despite “owning” the models, languages, and systems that produce the input to the machine learning applications that are often the focus in data science. This panel will explore the core data management issues to which the objectives of fairness, accountability and transparency give rise as well as discuss the role the database community should play in this movement. The goal of this session is to outline a technical research agenda in data management foundations and systems around data ethics and responsible data management.

SIGMOD Best Paper Award

“SuRF: Practical Range Query Filtering with Fast Succinct Tries”

Huanchen Zhang, Carnegie Mellon University; Hyeontaek Lim, Carnegie Mellon University; Viktor Leis, TUM; David G. Andersen, Carnegie Mellon University; Michael Kaminsky, Intel Labs; Kimberly Keeton, Hewlett Packard Labs; and Andrew Pavlo, Carnegie Mellon University

This paper presents the Succinct Range Filter (SuRF), a fast and compact data structure for approximate membership tests. Unlike traditional Bloom filters, SuRF supports both single-key lookups and common range queries: open-range queries, closed-range queries, and range counts. SuRF is based on a new data structure called the Fast Succinct Trie (FST) that matches the point and range query performance of state-of-the-art order-preserving indexes, while consuming only 10 bits per trie node.

PODS Best Paper Award

“Entity Matching with Active Monotone Classification”

Yufei Tao, Chinese University of Hong Kong

This paper explores Entity Matching and informs the design of an algorithm that asks humans to look at only some pairs, and renders the verdicts on the other pairs automatically with good accuracy, eliminating the expense of human experts to inspect every (x,y) pair. This paper describes algorithms with non-trivial guarantees on the cost and accuracy simultaneously.

Additional papers, tutorials, research sessions and in-depth expositions will be presented throughout the multi-day conference. For a complete list of papers and a full schedule of activities, please visit:

<http://sigmod2018.org/>

About SIGMOD

The ACM Special Interest Group on Management of Data (SIGMOD) is concerned with the principles, techniques and applications of database management systems and data management technology. Our members include

software developers, academic and industrial researchers, practitioners, users, and students. SIGMOD sponsors the annual SIGMOD/PODS conference, one of the most important and selective in the field.

About ACM

ACM, the Association for Computing Machinery (www.acm.org), is the world's largest educational and scientific computing society, uniting computing educators, researchers and professionals to inspire dialogue, share resources and address the field's challenges. ACM strengthens the computing profession's collective voice through strong leadership, promotion of the highest standards, and recognition of technical excellence. ACM supports the professional growth of its members by providing opportunities for life-long learning, career development, and professional networking.

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