

Call for Paper



**ACM Transactions on Multimedia Computing,
Communication and Applications (TOMM)**

Special Issue on Deep Learning for Mobile Multimedia

Deep Learning has become a crucial technology in the field of multimedia computing. It offers a powerful instrument to automatically produce high-level abstractions of complex multimedia data, which can be exploited in a number of applications including object detection and recognition, speech-to-text, media retrieval, multimodal data analysis, and so on. The availability of affordable large-scale parallel processing architectures, and the sharing of effective open-source codes implementing the basic learning algorithms, caused a rapid diffusion of deep learning methodologies within the research community, bringing to the development of a number of new technologies and applications, outperforming in most cases the results achieved by traditional machine learning technologies.

In recent years, the possibility of implementing deep learning technologies on mobile devices has gained significant attention. Smartphones, but more in general any mobile component that holds some sensing and processing capability, may potentially become a smart object able to learn and act, either stand-alone or interconnected with other intelligent objects. In this context, deep learning not only can boost the performance of mobile multimedia applications available nowadays, but could also pave the way towards more sophisticated uses of mobile devices.

The path towards these exciting future scenarios, however, entangles a number of important research challenges. The fundamental deep learning technologies, including deep neural network architectures, training and inference methods, and so on, are hardly adapted to the requirements of the mobile and wireless multimedia environments. Therefore, new generations of mobile processors and chipsets will be required to support intensive and parallel computation, small footprint learning algorithms have to be developed to fit lower computation and lower power consumption requirements, new models of collaborative and distributed processing will be

needed to deal with higher complexity tasks, and a number of other fundamental issues will have to be solved to ensure reliable, efficient and real-time deep learning technologies for mobile multimedia computing, communications and applications.

The goal of this special issue is to seek original articles examining the state of the art, open research challenges, new solutions and applications for deep learning in mobile multimedia computing, processing and analytics.

All submissions should contain substantial tutorial contents and be accessible to a general audience of researchers and practitioners. Topics of interest include, but are not limited to:

- Hardware architectures for deep learning in the mobile
- Deep network architectures for mobile environments
- Recourse- and energy-efficient deep learning methods
- Efficient inference methods for mobile multimedia deep networks
- Real-time methods and applications of deep learning for mobile multimedia
- Emerging applications of deep learning in mobile multimedia analysis, search, retrieval and management
- Emerging applications of deep learning in self-driving cars, drones and other robotic platforms
- Deep learning performance analysis in mobile multimedia

Submission Instructions

Papers will be evaluated based on their originality, presentation, relevance and contributions, as well as their suitability to the special issue. The submitted papers must be written in excellent English and describe original research that has not been published nor currently under review by other venues. Previously published conference papers should be clearly identified by the authors at the submission stage and an explanation should be provided about how such papers have been extended to be considered for this special issue. Extended conference contributions must have at least 70% difference from the original works (the authors must indicate the conference name and make a reference to the base conference paper). Guest editors will make an initial determination on the suitability and scope of all submissions. Papers

that either lack originality, clarity in presentation or fall outside the scope of the special issue will not be sent for review and the authors will be promptly informed in such cases.

The submitted papers will be reviewed by at least three independent reviewers. Final acceptance will be based on their qualities and their relevance to the theme of this special issue and should be approved by the journal editors. Manuscripts must be prepared for publication according to the journal's Author Guidelines available at: <http://tomm.acm.org/>. Submissions must conform to the layout, format and page limit in the guidelines. The authors must select "SI: Deep Learning Mobile" when they reach the "Article Type" step in the submission process.

Important Dates

Paper submission due:	October 15, 2016 November 21, 2016
Decision notification:	December 30, 2016
Revision due:	February 15, 2017
Acceptance notification:	March 15, 2017
Camera ready version due:	March 31, 2017
Publication date:	August 2017

Guest Editors

Kaoru Ota

Muroran Institute of Technology,
Japan ota@csse.muroran-it.ac.jp

Minh-Son Dao

Universiti Teknologi Brunei, Brunei
dao.minh@eledia.org

Vasileios Mezaris

Centre for Research of Technology Hellas, Greece
bmezaris@iti.gr

Francesco G.B. De Natale

University of Trento, Italy
denatale@ing.unitn.it