

# Xin Deng

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- CONTACT INFORMATION** Room 805, Communication and Signal Processing Group  
Dept. of Electrical and Electronic Engineering  
Imperial College London  
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Email: x.deng16@imperial.ac.uk
- RESEARCH INTERESTS** Sparse coding, Inverse problems, Image Super-resolution, Multimodal signal processing, Machine Learning
- EDUCATION**
- Imperial College London, London, UK** *Aug 2016-Present*  
Dept. of Electronic and Electronic Engineering
- **PhD** in Multi-modal signal processing and Machine learning, supervised by Prof. Pier Luigi Dragotti
- Beihang University, Beijing, China** *Sep 2013-Jun 2016*  
School of Electronic and Information Engineering
- **MSc** in Complexity control of video encoding, supervised by Dr. Mai Xu  
GPA: 3.53/4 (overall) Ranking: 9/102
- Beihang University, Beijing, China** *Sep 2009-Jun 2013*  
School of Electronic and Information Engineering
- **BSc** in Electronic Communication  
GPA: 3.73/4 (overall) 3.75/4 (major) Ranking: 18/297
- PROJECT EXPERIENCE**
- Complexity Reduction of HEVC Encoding (National Science Foundation of China (NSFC) under Grant 61202139)** *Oct 2013-May 2014*  
Studied on main factors contributing to encoding complexity of HEVC  
Proposed a novel hierarchical perception (HP) model of face  
Developed an adaptive CTU partition structure based on HP model to reduce encoding complexity of HEVC
- Subjective-driven Complexity Control Approach for HEVC (China 973 program under Grant 2013CB329006)** *Jun 2014-July 2015*  
Proposed an optimization formulation with a constraint on subject quality to model the complexity control problem of HEVC encoder  
Developed a frame-level complexity budget scheme to improve control accuracy  
Achieved high-accuracy complexity control of HEVC encoder with less than 5% bias
- PUBLICATIONS**
- Journal articles (Published)**
1. **X. Deng**, P. Song, R. Miguel, and P. L. Dragotti, "RADAR: Robust Algorithm for Depth Image Super-Resolution Based on FRI Theory and Multimodal Dictionary Learning", IEEE Transactions on Circuits and Systems for Video Technology, 2019, to appear.
  2. **X. Deng**, M. Xu, L. Jiang, X. Sun and Z. Wang, "Subjective-driven Complexity Control Approach for HEVC", IEEE Transactions on Circuits and Systems for Video Technology, vol. 26, no. 1, pp. 1-16, 2016.
  3. **X. Deng** and M. Xu, "Hierarchical Complexity Control of HEVC for Live Video Encoding", IEEE Access, vol.4, pp. 7014-7027, 2016.
  4. P. Song, **X. Deng**, P. L. Dragotti, and R. Miguel, "Multimodal Image Super-resolution via Joint Sparse Representations induced by Coupled Dictionaries", IEEE Transactions on

Computational Imaging, to appear, 2019. (**Equal contribution** of the first two authors)

5. M. Xu, **X. Deng**, S. Li, and Z. Wang, “Region-of-Interest Based Conversational HEVC Coding with Hierarchical Perception Model of Face”, Selected Topics in Signal Processing, IEEE Journal of, vol. 8, no. 3, 2014.
6. S. Li, M. Xu, **X. Deng**, and Z. Wang, “Weight-based  $r$ - $\lambda$  rate control for perceptual HEVC coding on conversational videos,” Signal Processing: Image Communication, 2015.
7. M. Xu, T. Li, Z. Wang, **X. Deng**, R. Yang and Z. Guan, “Reducing Complexity of HEVC: A Deep Learning Approach”, IEEE Transactions on Image Processing, vo.27, pp. 5044-5059, 2018.

**Papers (In submission)**

8. **X. Deng** and P. L. Dragotti, “Deep coupled ISTA network for Multimodal Image Super-resolution”, IEEE Transactions on Image Processing, second round review.

**Conference papers (Published)**

1. **X. Deng**, R. Yang, M. Xu, and P. L. Dragotti, “Wavelet Domain Style Transfer for an Effective Perception-distortion Trade-off in Single Image Super-Resolution”, ICCV 2019, oral presentation.
2. **X. Deng** and P. L. Dragotti, “Coupled ISTA network for Multimodal Image Super-resolution”, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2019.
3. **X. Deng**, J. Huang, M. Liu, and P. L. Dragotti, “An FRI-based Single Image Super-Resolution Algorithm and an Application in Image Compression”, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2018.
4. **X. Deng**, and M. Xu, “Complexity Control of HEVC for Video Conferencing”, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2017.
5. **X. Deng**, M. Xu, S. Li and Z. Wang, “Complexity Control of HEVC Based on Region-of-Interest Attention Model”, Visual Communications and Image Processing Conference (VCIP), 2014 IEEE, pp. 225-228 (oral)
6. **X. Deng**, M. Xu, and Z. Wang, “A ROI-based Bit Allocation Scheme for HEVC towards Perceptual Conversational Video Coding”, Advanced Computational Intelligence (ICACI), 2013 Sixth International Conference on, pp. 206-211 (oral)
7. S. Li, M. Xu, **X. Deng**, and Z. Wang, “A novel weight-based URQ scheme for perceptual video coding of conversational video in HEVC”, Multimedia and Expo (ICME), 2014 IEEE International Conference on, pp. 1-6 (oral)
8. T. Li, M. Xu and **X. Deng**, “A Deep Convolutional Neural Network Approach for Complexity Reduction on intra-mode HEVC”, IEEE International Conference on Multimedia and Expo (ICME), 2017. (oral)

PATENT

一种基于二叉树编码分割的 HEVC 复杂度控制方法, 徐迈, **邓欣**, 王祖林, 授权公告号 CN105120295B, 2018 年 5 月 18 号。

TEACHING  
EXPERIENCE

**Graduate Teaching Assistant**, Imperial College London

HONORS  
&AWARDS

- Imperial College London and CSC Joint Scholarship
- **TOP 10 Graduate Students Award**, Beihang University (Highest honor for graduate, 10/3300)
- **Student Travel Award** (VCIP 2014), IEEE Circuits and Systems Society
- **National Scholarship for Postgraduates**, Chinese Ministry of Education (TOP 2%)
- **Outstanding Graduate Award**, Beihang University

REVIEWER

**Journals:** IEEE Journal of Selected Topics in Single Processing (JSTSP), IEEE Transactions on

Computational Imaging (TCI), IEEE Transactions on Circuit and Systems for Video Technology (TCSVT), IEEE Transactions on Industrial Electronics (TIE), IEEE Internet of Things Journal, IEEE Access.

**Conferences:** IEEE Data Compression Conference (DCC), ISCAS, ICASSP, ICIP.

Personal website: <http://www.commsp.ee.ic.ac.uk/~xindeng/>