# 鲁 国

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## 研究方向

视频压缩, 视频增强和深度学习

——研究智能的视频压缩和视频增强系统与算法，提出第一个基于深度学习的视频压缩编码器，并成功应用到华为的研究系统中；探索面向未来新媒体的数据压缩，研究基于深度学习的视频分析和视频压缩的统一框架与联合应用。

## 教育经历

**上海交通大学，博士** **上海，中国**

电子系，信息与通信工程专业，导师: 高志勇 *2014.9 - 2020.6*

**悉尼大学，CSC 联合培养博士** **悉尼，澳大利亚**

导师： *Dong Xu, Wanli Ouyang* *2017.9 - 2019.3*

**中国海洋大学，本科** **青岛，中国**

电子系，电子信息科学与技术，*GPA:3.75/4, 1/51* *2010.8 - 2014.6*

## 论文发表

1. Zhihao Hu*, Zhenghao Chen*, Dong Xu, **Guo Lu**, Wanli Ouyang, Shuhang Gu.Improving Deep Video Compression by Resolution-adaptive Flow Coding in Proceedings of the European Conference on Computer Vision (ECCV), 2020.**(CCF-B,Oral, 接受率 2%)**
2. **Guo Lu***, Chunlei Cai*, Xiaoyun Zhang, Li Chen, Wanli Ouyang, Dong Xu, Zhiyong Gao. Content Adaptive and Error Propagation Aware Deep Video Compression in Proceedings of the European Conference on Computer Vision (ECCV), 2020.**(CCF-B,Oral, 接受率 2%)**
3. **Guo Lu**, Xiaoyun Zhang, Wanli Ouyang, Li Chen, Zhiyong Gao, Dong Xu. An End-to-End Learning Framework for Video Compression. in IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2020. **(CCF-A, 影响因子:17.7)**
4. **Guo Lu**, Xiaoyun Zhang, Wanli Ouyang, Dong Xu, Li Chen, Zhiyong Gao. Deep Non-local Kalman Network for Video Compression Artifact Reduction. in IEEE Transactions on Image Processing (TIP), 2019. **(CCF-A, 影响因子:9.3)**
5. **Guo Lu**, Wanli Ouyang, Dong Xu, Xiaoyun Zhang, Chunlei Cai, Zhiyong Gao. DVC: An End-to-end Deep Video Compression Framework. in IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Long Beach, 2019. **(CCF-A,Oral, 接受率 5%)**
6. Hongwen Zhang, Jie Cao, **Guo Lu**, Wanli Ouyang and Zhenan Sun. DaNet: Decompose-and-

aggregate Network for 3D Human Shape and Pose Estimation, in ACM Multimedia (ACM MM), 2019. **(CCF-A)**

7. **Guo Lu**, Wanli Ouyang, Dong Xu, Xiaoyun Zhang, Zhiyong Gao, Ming-Ting Sun. Deep Kalman Filtering Network for Video Compression Artifact Reduction in Proceedings of the European Conference on Computer Vision (ECCV), 2018.**(CCF-B)**
8. **Guo Lu**, Xiaoyun Zhang, Li Chen, Zhiyong Gao. Novel Integration of Frame Rate Up Conversion and HEVC Coding based on Rate-Distortion Optimization in IEEE Transactions on Image Processing (TIP), 2018. **(CCF-A, 影响因子:9.3)**
9. Chunlei Cai, Li Chen, Xiaoyun Zhang, **Guo Lu**, Zhiyong Gao, A Novel Deep Progressive Image Compression Framework, in Picture Coding Symposium (PCS), 2019.
10. Chunlei Cai, **Guo Lu**, Qiang Hu, Li Chen, Zhiyong Gao. Efficient Learning Based Sub-pixel Image Compression, in CVPRW, 2019.
11. **Guo Lu**, Xiaoyun Zhang, Li Chen, Zhiyong Gao. A Novel Frame Rate Up Conversion Using Iterative Non-local Means Interpolation in International Symposium on Broadband Multimedia Systems and Broadcasting (BMSB), 2017.

## 科研项目

- 基于深度学习的视频压缩，与华为合作，2019.9-2020.5
- 帧率提升与压缩编码的联合优化方法研究, 国家自然科学基金, 2018.1- 2020.6
- 帧率上变技术开发，与阿里云合作，2016.3-2016.9
- 高品质电视图像显示处理芯片研发及小批量应用, 国家科技重大专项, 2014.10-2015.12

## 获奖

- Challenge on Learned Image Compression (CVPR), ***2nd Place***, 2019
- 科磊奖学金, 2019
- 国家留学基金委奖学金, 2017
- 山东省优秀毕业生, 2014
- 一等学业奖学金, 2011,2012
- 国家奖学金, 2012
- 企业奖学金, 2011

## 部分已授权专利及软件著作权

- 一种多信息融合的帧率上变换运动估计方法及系统, CN201610657029.6A
- 一种智能提升运动流畅性的视频帧率上变换方法及系统, CN201610656968.9A
- 一种基于深度学习的可变码率图像编码系统及方法, CN201910240535.9A
- 基于深度学习的感兴趣区域图像编码、解码系统及方法, CN201910240106.1A
- 视频帧率上变换软件, V1.0, 软著登字第 1464730 号, 登记号：2016SR286113, 分类号：30200–0000, 2016.10.10

## 学术服务

### 审稿人

- IEEE Transactions on Image Processing
- IEEE Transactions on Multimedia
- IEEE Transactions on Circuits and Systems for Video Technology
- IEEE Transactions on Intelligent Transportation Systems
- IEEE Signal Processing Letter
- Computer Vision and Image Understanding
- Multimedia Tools and Applications
- AAAI-2020
- NeurIPS

### 学术汇报

- IEEE International Conference on Advanced Video and Signal-based Surveillance, Tutorial on ***Deep Learning for Video Compression and Understanding***, Taipei, 2019.
- IEEE Conference on Computer Vision and Pattern Recognition, Oral Presentation on ***DVC: An end-to-end deep video compression framework***, LA, USA, 2019.
- VALSE(视觉与学习青年学者研讨会), Spotlight Presentation on ***DVC: An end-to-end deep video compression framework***, Hefei, China, 2019.

## 学术合作

- **Dong Xu**, 教授,IEEE Fellow, 悉尼大学, dong.xu@sydney.edu.au
- **Wanli Ouyang**, 副教授，悉尼大学, wanli.ouyang@sydney.edu.au
- **Ming-Ting Sun**, 教授, IEEE Fellow, 华盛顿大学, mts@uw.edu
- **高志勇**, 教授, 上海交通大学, zhiyong.gao@sjtu.edu.cn