Chen Feng

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Research Interests

Deep Video Quality Assessment, Subjective Video Quality Assessment, Deep Video Compression

Education

University of Bristol   *Bristol, UK*
Ph.D in Electrical and Electronic Engineering   Dec. 2020 - Present
Supervisor: Professor David Bull and Doctor Fan Zhang

University of Bristol   *Bristol, UK*
MSc in Electrical and Electronic Engineering   Sep. 2018 - Sep. 2019
Distinction (Top 2) in Image and Video Communications and Signal Processing

University of Science and Technology Beijing (Project 211 University)   *Beijing, China*
BSc in Automation and Electrical Engineering (Top 10%)   Sep. 2014 - Jul. 2018

Professional Experience

Amazon   *Seattle, US*
Applied Scientist Intern - Amazon Prime Video (6 months)   Jul. 2024 - Present
– Video Coding Standards Research Team - Research on Deep Video Compression

Research Projects

Deep Video Quality Assessment (sponsored by Amazon Prime Video)

2022-2023 | **RankDVQA: Deep VQA based on Ranking-inspired Hybrid Training (WACV 2024)** [2]
– A two-stage ranking-inspired training methodology for deep video quality assessment.
– A large-scale VQA training database without performing costly subjective tests.
– The first full reference deep VQA method consistently outperforms VMAF.
– NR RankDVQA won the **First Prize** in HDR VQM Grand Challenge of IEEE/CVF WACV 2023.
– NR RankDVQA won the **First Place** in the Video Perception track of 6th CLIC in DCC 2024.

2023-2024 | **RMT-BVQA: Recurrent Memory Transformer BVQA for Enhanced Video (ECCVW 2024)** [4]
– Proposed a new contrastive learning based blind VQA method for enhanced video content.
– Designed a novel Recurrent Memory Vision Transformer (RMViT) module specifically for blind VQA.
– Assess the quality of enhanced videos including deblured, deshaked, super-resolution content.

2023-2024 | **RankDVQA-mini: Knowledge Distillation-Driven Deep VQA (PCS 2024 Oral Session)** [6]
– The first lightweight deep VQA network to achieve competitive performance.
– A two-phase workflow with model compression and multi-level knowledge distillation.

2023-2024 | **MVAD: A Multiple Visual Artifact Detector for Video Streaming** [1]
– A new artifact detection method for detecting multiple visual artifacts in streamed video content.
– This model achieves consistent and improved prediction results for ten target visual artifacts.

Subjective Video Quality Assessment

2023-2024 | **BVI-Artefact: An Artefact Detection Benchmark Dataset for Streamed Videos (PCS 2024)** [5]
– The first comprehensive benchmark for detecting artefacts within streamed PGC video.
– A large database considering ten artefact types with associated artefact labels.
– Performed a lab-based single-stimulus continuous quality scale (SSCQS) Subjective test.
– Subjective score collection: More than 9600 subjective scores were collected from 80 participants.

2023-2024	**BVI-UGC: A Video Quality Database for User-Generated Content Transcoding** [7]
	– A new UGC video quality database for user-generated content transcoding.
	– Contains 60 non-pristine reference videos (uploaded to UGC platforms) and 1,080 test sequences.
	– A crowdsourced subjective study was conducted involving more than 3,500 human participants.

Image Super-Resolution

2023-2024	**MTKD: Multi-Teacher Knowledge Distillation for Image Super-Resolution (ECCV 2024)** [3]
	– Developed A novel multi-teacher knowledge distillation framework for image super-resolution.
	– The proposed method achieves evident improvements (up to 0.46dB) over SOTA KD approaches.

Perceptual Video Coding

2021-2022	**ViSTRA3: Video Coding with Deep Parameter Adaptation&Post-Processing (ISCAS 2022)** [9]
	– Developed a parameter-adaptation framework for learning-based video compression.
	– Integrated spatial resolution adaptation, effective bit-depth adaptation and post-processing.
	– **2nd Place** in the Grand Challenge on Neural Network-based Video Coding in IEEE ISCAS 2022.
2019-2020	**Video Compression with CNN-based Post-Processing (ICME 2020 and MultiMedia Magazine)**
	– The first CNN-based post-processing approach for deep video compression.
	– Improved HDR video compression by multi-frame effective bit depth adaptation [10].
	– Proposed a multiple frame-based post-processing framework [11] for enhancing VVC.
	– Ranks **Top Six** in Challenge on Learned Image Compression in IEEE/CVF CVPR 2022.
	– Papers have been published by IEEE MultiMedia Magazine [12] and IEEE ICME 2020 [13].

Awards and Honours

1st Place in the Video Perception at 6th Challenge on Learned Image Compression DCC 2024	2024
1st Winner in the 3rd practical end-to-end image/video compression challenge in IEEE MMSP 2024	2024
3rd Place in the 5th AIM Challenge in Efficient Video Super-Resolution in ECCV 2024	2024
1st Prize in HDR VQM Grand Challenge in IEEE/CVF WACV 2023 (Host by Amazon Prime Video)	2023
Top Six at the 5th Challenge on Learned Image Compression in IEEE/CVF CVPR 2022	2022
2nd Prize in the Grand Challenge on NN-based Video Coding in IEEE ISCAS 2022	2021
PhD is funded by the **Amazon Research Awards**	2022

Professional Activities

Thirty-Eighth Annual Conference on Neural Information Processing Systems (NeurIPS) 2024	Reviewer
International Conference on Learning Representations (ICLR) 2025	Reviewer
European Conference on Computer Vision (ECCV) 2024	Reviewer
Picture Coding Symposium (PCS) 2024	Reviewer
IEEE Transactions on Image Processing (TIP)	Reviewer
IEEE Transactions on Circuits and Systems for Video Technology (T-CSVT)	Reviewer
IEEE Transactions on Broadcasting	Reviewer

Mentorship Experience

University of Bristol *Bristol, UK*

Teaching Assistant Feb. 2021 - Present

- Image Processing and Computer Vision: supported lectures and independently delivered tutorial sessions
- Immersive Interaction and Audio Design (VR Development): designed and supported lab sessions (Unity)
- Augmenting the Real World (AR Development): designed and supported lab sessions (C#,Unity).

Technical Skills

Programming	Python, Matlab, C++, C#, Java, Assembly, Statistical Analysis
Machine Learning	PyTorch, Tensorflow, Generative Models, CNNs, GAN, Transformer, Autoencoders
Tools	Unity(VR&AR Development), Git, Docker, IDEs, LaTeX, Raspberry Pi, LabVIEW

Publications (Google Scholar)

[1] **MVAD: A Multiple Visual Artifact Detector for Video Streaming**
C. Feng, D. Danier, F. Zhang and D. Bull. *arXiv: 2406.00212, 2024*.

[2] **RankDVQA: Deep VQA based on Ranking-inspired Hybrid Training**
C. Feng, D. Danier, F. Zhang and D. Bull. *IEEE/CVF WACV 2024*.

[3] **MTKD: Multi-Teacher Knowledge Distillation for Image Super-Resolution**
Y. Jiang, C. Feng, F. Zhang and D. Bull. *IEEE/CVF ECCV 2024*.

[4] **RMT-BVQA: Recurrent Memory Transformer-based Blind VQA for Enhanced Video Content**
Tianhao Peng*, C. Feng*, D. Danier, F. Zhang and D. Bull. *ECCV Workshop in AIM 2024*.

[5] **BVI-Artefact: An Artefact Detection Benchmark Dataset for Streamed Videos**
C. Feng, D. Danier, F. Zhang and D. Bull. *Picture Coding Symposium PCS 2024 Oral Session*.

[6] **RankDVQA-mini: Knowledge Distillation-Driven Deep Video Quality Assessment**
C. Feng, D. Danier, H. Wang, F. Zhang and D. Bull. *Picture Coding Symposium PCS 2024 Oral Session*.

[7] **BVI-UGC: A Video Quality Database for User-Generated Content Transcoding**
Z. Qi, C. Feng, F. Zhang, X. Xu, S. Liu, and D. Bull. *arXiv:2408.07171, 2024*.

[8] **Full-reference Video Quality Assessment for User Generated Content Transcoding**
Z. Qi, C. Feng, D. Danier, F. Zhang, X. Xu, S. Liu, and D. Bull. *Picture Coding Symposium PCS 2024 Oral*.

[9] **ViSTRA3: Video Coding with Deep Parameter Adaptation and Post Processing**
C. Feng, D. Danier, C. Tan, F. Zhang and D. Bull. *IEEE ISCAS 2022*.

[10] **Enhancing HDR Video Compression through CNN-based Effective Bit Depth Adaptation**
C. Feng, Z. Qi, D. Danier, F. Zhang, X. Xu, S. Liu, and D. Bull. *arXiv:2207.08634, 2022*.

[11] **Enhancing VVC with Deep Learning based Multi-Frame Post-Processing**
D. Danier, C. Feng, F. Zhang and D. Bull. *CVPR 5th Challenge on Learned Image Compression 2022*.

[12] **Video Compression With CNN-Based Postprocessing**
F. Zhang, D. Ma, C. Feng and D. R. Bull. *IEEE MultiMedia 2021*.

[13] **Enhancing VVC Through CNN-Based Post-Processing**
F. Zhang, C. Feng and D. R. Bull. *IEEE ICME 2020*.