

# PEDRAM MOHAMMADI

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## PROFESSIONAL SUMMARY

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- Innovative and results-driven expert in the development of image and video processing algorithms, with a specialization in visual quality enhancement across SDR/HDR formats, tone mapping, color processing, and video encoding. Demonstrated success in delivering patented, production-ready solutions across academic and commercial domains. Proven ability to translate perceptual principles into hardware-efficient designs using Python, MATLAB, C/C++, OpenCV, and FFMPEG.

## EDUCATION

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### Ph.D. in Electrical and Computer Engineering

2015 - 2020

*University of British Columbia, Canada*

- Thesis: High Dynamic Range (HDR) video processing
- Awards: Full graduate scholarship, International Tuition Award

### M.A.Sc. in Electrical Engineering

2012 - 2014

*Ferdowsi University of Mashhad, Iran*

- Thesis: Subjective and Objective Image and Video Quality Assessment
- Published a widely cited survey paper (300+ citations) on image/video quality evaluation

## PROFESSIONAL EXPERIENCE

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### Senior Video Quality Engineer

2021 - Present

*NETINT Technologies Inc., Canada*

- Deep Learning for Video Compression Quality Enhancement
  - Designed DNNs to predict perceptual video quality using dual-path 3D CNNs with temporal attention and multi-objective training
  - Developed proxy models capable of estimating frame-level quality metrics and distortion characteristics from large-scale YouTube UGC datasets
  - Built a scalable PyTorch pipeline with automated video pre-processing, frame-level quality metric computation, and balanced dataset generation across quality ranges
  - Implemented advanced training strategies including perceptual loss, auxiliary supervision, and multi-loss scheduling; currently finalizing large-scale training and validation
- Designed and implemented advanced algorithms to maximize perceptual visual quality for streaming and real-time applications, achieving consistent improvements of up to 15% in objective quality metrics (PSNR, SSIM, VMAF).
- Designed and optimized SDR $\longleftrightarrow$ HDR tone mapping suite, outperforming state-of-the-art by 5 - 8% in objective quality metrics, integrated directly into hardware
- Partnered closely with RTL/hardware teams to translate algorithms into hardware-efficient implementations, including fixed-point adaptations and logic simplifications
- Led end-to-end pipeline tuning and validation across VPU blocks, identifying quality bottlenecks and coordinating targeted improvements with cross-functional teams resulting in an average 4% increase in visual quality (PSNR, SSIM, VMAF) across multiple processing stages

## Scientific R&D Consultant

2020 - 2021

*KPMG LLP, Canada*

- Evaluated clients' advanced R&D efforts in algorithm design, image/video processing, and related technologies to determine CRA R&D tax relief eligibility
- Helped clients maximize R&D tax credits, achieving 20 - 30% increases (totaling \$500k - \$2M), enabling continued investment in innovation
- Managed concurrent client engagements under tight deadlines, developing technical reports and justifications aligned with both financial and scientific rigor

## Application Developer

2018 - 2019

*TELUS Communications Inc., Canada*

- Transitioned PhD research into a real-time SDR-to-HDR video conversion system used in content delivery pipeline for 1080p broadcast
- Collaborated with CTO, directors, and engineers to define visual quality goals and meet real-time constraints, verified through objective and subjective testing
- Delivered successful technology transfer and product deployment impacting subscriber-facing video quality

## Research Scientist

2015 - 2020

*The University of British Columbia, Canada*

- Conducted PhD research on perceptual SDR-to-HDR video enhancement, modeling contrast/brightness trade-offs and color fidelity in the perceptual domain
- Developed adaptive segmentation, tone mapping, color adjustment and flicker mitigation algorithms using visual system models and information theory
- Conducted extensive subjective studies and applied objective quality metrics (HDR-VDP, PUSSIM) to validate 70 - 80% improvements over state-of-the-art
- Work led to multiple IEEE publications and a patented conversion pipeline now licensed in industry

## PATENTS

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- **P. Mohammadi**, J. Li, E. Andrade Neto, and J. Lou "Methods and Apparatus for Video Rate Control," Patent filed, filing date: January 2024.
- **P. Mohammadi**, E. Andrade Neto, and J. Lou "Image processing methods, devices, electronic devices and storage media," China Patent Office, Application No. CN116167950B, Publication date: April 2023.
- P. Nasiopoulos, S. Ploumis, M. T. Pourazad, R. Boitar, and **P. Mohammadi**, "Methods and Apparatuses for Tone Mapping and Inverse Tone Mapping," U.S. Patent, Application No. US11100888B2, Publication date: January 2019.

## PUBLICATIONS

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For a complete list of my publications please click [here](#)

## WORK AUTHORIZATION

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Currently holding a Canadian citizenship