

TAIMOOR TARIQ | Curriculum Vitae

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ABOUT ME

Scientist/Engineer interested in the perceived quality of real-time visual experiences. More specifically, I work on understanding, quantifying and maximizing perceptual realism, accurate reproduction, and quality (with constituents such as spatial quality, dynamic range, depth, motion and color) for real-time image/video capture (computational photography), synthesis (rendering/graphics) and display (computational display).

The long term goals I aim to push towards are:

- Perceived Photon-to-Photon consistency: Image/Video capture, editing, encoding and display pipelines that can capture, preserve and maintain visual authenticity and artistic intent regardless of viewing modalities and conditions.
- Real-time spectacle form-factor immersive displays (VR/AR) that are perceptually indistinguishable from the real-world.
- Real-time smartphone camera experiences as good as high-end professional cameras.

EDUCATION

UNIVERSITÀ DELLA SVIZZERA ITALIANA (USI)

PhD in Computer Science

Concentration: Vision Science and Computer Graphics

Mentor: [Piotr Didyk](#)

2020 - 2024

Lugano, Switzerland

KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY (KAIST)

MS in Electrical Engineering

Concentration: Visual Computing and Machine Learning

CGPA: 4.0/4.3

[KAIST Graduate Fellowship Awardee](#)

2017 - 2019

Daejeon, South Korea

NATIONAL UNIVERSITY OF SCIENCES AND TECHNOLOGY (NUST)

BS in Electrical Engineering

Concentration: Digital Systems and Signal Processing

CGPA: 3.83/4.0 (Top 3% of class)

[Merit Scholarship Awardee \(ranked 36th out of ~80,000 applicants for admission\)](#)

2013 - 2017

Islamabad, Pakistan

EXPERIENCE

CAMERA ALGORITHMS SCIENTIST

Apple 🍏

Research and Development of real-time computational photography/videography algorithms to maximize visual quality for capture and display.

2024 -

Cambridge, UK

RESEARCH SCIENTIST INTERN - VISION SCIENCE AND DISPLAY ALGORITHMS

Meta 🦋

Mentors: [Alex Chapiro*](#), [Ajit Ninan](#), [Nathan Matsuda](#), [Douglas Lanman](#)

Worked with the Applied Perception Science and Display Systems Research teams on perceptually optimized computational display algorithms for real-time VR. Designed an ultra-fast automatic/adaptive tone mapper (that optimally maintains perceptual appearance of HDR content after mapping) for standalone VR displays.

10/2022 - 6/2023

Sunnyvale, California, USA

DOCTORAL RESEARCHER - VISION SCIENCE AND AR/VR GRAPHICS

2020 - 2024

Perception, Display and Fabrication Group - USI

Lugano, Switzerland

Mentor: Piotr Didyk

Under the mentorship of Piotr Didyk, I worked towards realizing the dream of real-time AR/VR that is perceptually indistinguishable from the visual world. After carefully understanding and investigating the many intricacies of human vision, I designed real-time rendering algorithms to preserve the perception of spatial realism, dynamic range, motion, and depth/distance in AR/VR.

GRADUATE RESEARCHER - IMAGE/VIDEO QUALITY AND ENHANCEMENT

2017 - 2019

Video and Image Computing Lab - KAIST

Daejeon, South Korea

Mentor: Munchurl Kim

Worked on teaching neural networks to perceive image/video quality the same way humans do, with a specific focus on maximizing perceptual quality for Video Restoration/Enhancement.

UNDERGRADUATE RESEARCHER

2016 - 2017

Neuro-informatics Research Group - NUST SEECS

Islamabad, Pakistan

Mentor: Awais Kambh

Designed real-time unsupervised signal processing algorithms, and their corresponding digital architectures (using VHDL and FPGAs) for future implantable neural chips (primarily for neuro-prosthetics)

INTERESTS & EXPERTISE

Human Visual Perception, Perceptual Imaging, Color Science, Image/Video Processing, Image/Video Quality, HDR Capture and Display, Computational Photography, Camera ISPs

SELECTED PUBLICATIONS

Human Vision Constrained Super Resolution

ICCV Workshops, 2025

Volodymyr Karpenko, Taimoor Tariq, Jorge Condor, Piotr Didyk

Towards Understanding Depth Perception in Foveated Rendering

SIGGRAPH 2025

Sophie Kergassner, Taimoor Tariq, Piotr Didyk

Towards Motion Metamers for Foveated Rendering

SIGGRAPH 2024 [[journal](#)]

Taimoor Tariq, Piotr Didyk

Perceptually Adaptive Real-Time Tone Mapping

SIGGRAPH Asia 2023

Taimoor Tariq, Nathan Matsuda, Eric Penner, Jerry Jia, Douglas Lanman, Ajit Ninan, Alexandre Chapiro

Noise-based Enhancement for Foveated Rendering

SIGGRAPH 2022 [[journal](#)]

Taimoor Tariq, Cara Tursun and Piotr Didyk

Why are Deep Representations Good Perceptual Quality Features?

ECCV 2020

Taimoor Tariq, Okan Tarhan Tursun, Munchurl Kim and Piotr Didyk

Apple iPhone 18 series:

Video Stability and Smoothness - Deliver a smooth and stable visual experience

The iPhone 18 Pro has become DXOMARK's best smartphone for video

The iPhone 18 Pro scored 176 points for video – at the time of testing, this was the best result in the DXOMARK ranking. For comparison, the iPhone 17 Pro scored 172 points. Experts particularly praised the stabilization: the footage remains smooth even when shooting while running, and recording at 60 frames per second helps convey motion more naturally.

[HTTPS://MOBIDEVICES.COM/EN/IPHONE-18-PRO-DXOMARK](https://mobidevices.com/en/iphone-18-pro-dxomark)

Variable Aperture Camera - Brightness and tonal consistency