

TAIMOOR TARIQ | Curriculum Vitae

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ABOUT ME

Scientist/Engineer interested in human vision and computer graphics. More specifically, I work on understanding, quantifying and maximizing perceptual realism 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:

- A comprehensive understanding of how the human visual system understands visual realism and aesthetic quality.
- Real-time immersive displays (VR/AR) that are perceptually indistinguishable from the real-world.
- Real-time cameras that can not only capture the world exactly as our eyes are seeing see it, but also subjectively understand and optimize perceived aesthetic attributes associated with the captured scenes.

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 algorithms to maximize perceived image/video quality for camera capture.

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

Perception, Display and Fabrication Group - USI

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.

2020 - 2024
Lugano, Switzerland

GRADUATE RESEARCHER - IMAGE/VIDEO QUALITY AND ENHANCEMENT

Video and Image Computing Lab - KAIST

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.

2017 - 2019
Daejeon, South Korea

UNDERGRADUATE RESEARCHER

Neuro-informatics Research Group - NUST SEECS

Mentor: Awais Kamboh

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)

2016 - 2017
Islamabad, Pakistan

RESEARCH INTERESTS

Visual Perception, Computer Graphics, Computational Displays, Computational Photography, Augmented/Virtual Realities

SELECTED PUBLICATIONS

Representative papers are highlighted

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