Yu Feng

Ph.D. Candidate

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Motivation

I am a Ph.D. candidate in Imaging Systems at Shizuoka University (expected graduation: September 2026), with 5+ years of experience in CMOS image sensor design and advanced imaging system development for biomedical and HDR applications. My research focuses on the development of a novel CMOS image sensor for multispectral skin tissue imaging, as well as the development of robust, motion- and ambient light–resistant imaging systems based on spatial frequency domain imaging (SFDI). I have also developed a single-frame HDR imaging system that effectively mitigates LED flicker and motion artifacts for automotive applications. I am the first author of two high-impact, peer-reviewed publications and have presented my work at multiple international and Japanese conferences. As a trilingual researcher (English, Japanese, Chinese), I thrive in global, interdisciplinary environments. I am currently seeking an R&D role where I can contribute to the development of next-generation imaging technologies.

Education

Ph.D. **Shizuoka University** | Hamamatsu, Japan — 2023.10 – 2026.09 (Expected)
Nanovision Technology
Advisor: Prof. Kagawa Keiichiro
Research: Multi-tap CMOS Image Sensors for Biomedical Imaging

M.Eng. **Shizuoka University** | Hamamatsu, Japan — 2021.10 – 2023.09
Electronics Engineering
Thesis: Performance Enhancement of SFDI with Multi-Tap Multi-Aperture CMOS Image Sensors

B.Eng. **Shizuoka University** | Hamamatsu, Japan — 2016.04 – 2020.03
Electronics Engineering

Skills

Programming Languages: MATLAB, C/C++, Python, Verilog HDL

Hardware & Tools: CMOS Image Sensor architecture, VLSI Design (Cadence Virtuoso), FPGA (Quartus, ModelSim)

Languages: English (Fluent, TOEIC 990/990, 2018), Japanese (Fluent, JLPT N1 passed, 2019), Chinese (Native)

Research Projects

Ambient-Light-Robust 3-Wavelength Biomedical Imaging System — 2024 – Present

- Developing a non-invasive quantitative skin measurement system robust to high ambient light environments (e.g. in hospital examination rooms) using pulsed illumination and an 8-tap CMOS image sensor, contributing to an anticipated >10x improvement in ambient light tolerance

HDR Imaging System with LED Flicker and Motion Artifact Mitigation — 2023 – 2024

- Developed a programmable dynamic range (56–110 dB) imaging system with LED flicker and motion artifact mitigation using a 4-tap CMOS image sensor with the charge-splitting method for automotive and biomedical applications
- Published in *IEEE Sensors Journal* (2025.03)

Motion-Artifact-Robust 3-Wavelength Biomedical Imaging System — 2022 – 2023

- Collaborated with University of California, Irvine to develop a non-invasive quantitative skin imag-

ing system using an 8-tap CMOS image sensor designed to be robust against motion artifacts
- Designed hardware/software integration and conducted in vivo measurements
- Published in *Journal of Biomedical Optics* (2024.01)

Multi-Aperture Multi-Tap CMOS Image Sensor for Biomedical Imaging 2021 – 2022

- Led VLSI design for a multi-aperture, multi-tap CMOS image sensor tailored for non-invasive multi-band biomedical imaging
- Fabricated in 2024, measurement in progress

Publications

1. **Programmable Dynamic Range HDR Imaging with LED-Flicker and Motion Artifact Mitigation Using a Four-Tap CMOS Image Sensor** 2025.03
Yu Feng, et al., *IEEE Sensors Journal*, (2025). DOI: 10.1109/JSEN.2025.3557801.

2. **Motion-Resistant Three-Wavelength Spatial Frequency Domain Imaging System with Ambient Light Suppression Using an 8-Tap CMOS Image Sensor** 2024.01
Yu Feng, et al., *Journal of Biomedical Optics* 29.1 (2024): 016006. DOI: 10.1117/1.JBO.29.1.016006.

3. **Spatial Frequency Domain Imaging System Using a Scanning Micro-Mirror** 2025.03
Kenta Nakazawa, Yu Feng, et al., *Sensors and Actuators A: Physical*, 387(2025): 116421.
DOI: 10.1016/j.sna.2025.116421.

4. **Resolving Multi-Path Interference in Compressive Time-of-Flight Depth Imaging with a Multi-Tap Macro-Pixel Computational CMOS Image Sensor** 2022.03
Horio Masaya, Yu Feng, et al., *Sensors* 22.7 (2022): 2442. DOI: 10.3390/s22072442.

Conference Presentations (Selected)

1. **Room-Light Operation of a Three-Wavelength Spatial Frequency Domain Imaging System Using Pulsed Illumination and an 8-Tap CMOS Image Sensor** 2025.06 (Expected)
Yu Feng, et al., *European Conference on Biomedical Optics 2025*, Munich, Germany

2. **Programmable Dynamic Range Extension up to 110 dB Based on Charge-Splitting Method with 4-Tap CMOS Image Sensor** 2025.06
Yu Feng, et al., *International Image Sensor Workshop 2025*, Hyogo, Japan

3. **Multi-Tap CMOS Image Sensor with Programmable Functional Exposure: Application to Structured Light Based Quantitative Tissue Imaging** 2024.07
Yu Feng, et al., *Optica Imaging Congress 2024*, Toulouse, France

Professional Experience

Research and Teaching Assistant, Shizuoka University | Hamamatsu, Japan 2021.10 – Present

- Conducting R&D on multi-tap CMOS image sensors for biomedical/HDR imaging, focusing on digital design and system integration
- Supporting undergraduate programming courses (Python and Verilog HDL), assisting with lectures, assignments, and student queries

QA Engineer, Meidensha | Nagoya, Japan 2020.04 – 2021.09

- Conducted quality assurance for electric vehicle motors

Awards & Honors

- **Graduate School Scholarship**, Amano Foundation 2023.09 – 2026.09
- **Outstanding Academic Records**, Shizuoka University 2024.04 – 2025.09