# Yu Feng

## Ph.D. Candidate

📍 Hamamatsu, Japan

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## Professional Summary

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 programmable HDR imaging system that effectively mitigates LED flicker and motion artifacts for automotive applications. I am the first author of three 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.

## 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, 2019), Chinese (Native)

## Education

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|---|---|---|
| **Ph.D.** | **Shizuoka University** \| Hamamatsu, Japan<br>Nanovision Technology<br>Advisor: Prof. Kagawa Keiichiro<br>Research: Multi-tap CMOS Image Sensors for Biomedical and HDR Imaging | 2023.10 – 2026.09<br>(Expected) |
| **M.Eng.** | **Shizuoka University** \| Hamamatsu, Japan<br>Electronics Engineering<br>Advisor: Prof. Kagawa Keiichiro<br>Thesis: "Performance Enhancement of SFDI with Multi-Tap Multi-Aperture CMOS Image Sensors" | 2021.10 – 2023.09 |
| **B.Eng.** | **Shizuoka University** \| Hamamatsu, Japan<br>Electronics Engineering | 2016.04 – 2020.03 |

## 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 (56–126 dB) imaging system with LED flicker and motion artifact mitigation using a 4-tap CMOS image sensor with the charge-splitting method for automotive or biomedical applications
- Published in *IEEE Sensors Journal* (2025.03) and *Sensors IISW 2025* special issue (2025.11)

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

- Collaborated with University of California, Irvine to develop a non-invasive quantitative skin imaging system using an 8-tap CMOS image sensor designed to be robust against motion artifacts
- Designed and implemented 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
- Chip fabricated in 2024, measurement in progress

## Recent Publications

1. **Performance Characterization and Tuning of a Charge-Splitting High Dynamic Range 4-Tap CMOS Image Sensor**　　　　　2025.11
Yu Feng, et al., *Sensors*. DOI: 10.3390/s25226953 ↗.

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*. 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*. 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*.
DOI: 10.1016/j.sna.2025.116421 ↗.

## Recent Conference Presentations

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
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 Assistant**, Shizuoka University | Hamamatsu, Japan　　　　　2021.10 – Present

- Conducting R&D on multi-tap CMOS image sensors for biomedical/HDR imaging, specializing in digital design and system integration

**QA Engineer**, Meidensha | Nagoya, Japan　　　　　2020.04 – 2021.09

- Conducted quality assurance for electric vehicle motors

## Awards & Honors

- **Graduate School Scholarship**, Amano Foundation　　　　　2023 – 2026
- **Outstanding Academic Records**, Shizuoka University　　　　　2024 – 2026