

# 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

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

## 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

<b>Ambient-Light-Robust 3-Wavelength Biomedical Imaging System</b> <ul style="list-style-type: none"><li>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 &gt;10x improvement in ambient light tolerance</li></ul>	2024 – Present
<b>HDR Imaging System with LED Flicker and Motion Artifact Mitigation</b> <ul style="list-style-type: none"><li>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</li><li>Published in <i>IEEE Sensors Journal</i> (2025.03)</li></ul>	2023 – 2024
<b>Motion-Artifact-Robust 3-Wavelength Biomedical Imaging System</b> <ul style="list-style-type: none"><li>Collaborated with University of California, Irvine to develop a non-invasive quantitative skin imag-</li></ul>	2022 – 2023

- 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)

<b>Multi-Aperture Multi-Tap CMOS Image Sensor for Biomedical Imaging</b>	2021 – 2022
<ul style="list-style-type: none"> <li>• Led VLSI design for a multi-aperture, multi-tap CMOS image sensor tailored for non-invasive multi-band biomedical imaging</li> <li>• Fabricated in 2024, measurement in progress</li> </ul>	

### Publications

<b>1. Programmable Dynamic Range HDR Imaging with LED-Flicker and Motion Artifact Mitigation Using a Four-Tap CMOS Image Sensor</b> Yu Feng, et al., <i>IEEE Sensors Journal</i> , (2025). DOI: <a href="https://doi.org/10.1109/JSEN.2025.3557801">10.1109/JSEN.2025.3557801</a>	2025.03
<b>2. Motion-Resistant Three-Wavelength Spatial Frequency Domain Imaging System with Ambient Light Suppression Using an 8-Tap CMOS Image Sensor</b> Yu Feng, et al., <i>Journal of Biomedical Optics</i> 29.1 (2024): 016006. DOI: <a href="https://doi.org/10.1117/1.JBO.29.1.016006">10.1117/1.JBO.29.1.016006</a>	2024.01
<b>3. Spatial Frequency Domain Imaging System Using a Scanning Micro-Mirror</b> Kenta Nakazawa, Yu Feng, et al., <i>Sensors and Actuators A: Physical</i> , 387(2025): 116421. DOI: <a href="https://doi.org/10.1016/j.sna.2025.116421">10.1016/j.sna.2025.116421</a>	2025.03
<b>4. Resolving Multi-Path Interference in Compressive Time-of-Flight Depth Imaging with a Multi-Tap Macro-Pixel Computational CMOS Image Sensor</b> Horio Masaya, Yu Feng, et al., <i>Sensors</i> 22.7 (2022): 2442. DOI: <a href="https://doi.org/10.3390/s22072442">10.3390/s22072442</a>	2022.03

### Conference Presentations (Selected)

<b>1. Room-Light Operation of a Three-Wavelength Spatial Frequency Domain Imaging System Using Pulsed Illumination and an 8-Tap CMOS Image Sensor</b> Yu Feng, et al., <i>European Conference on Biomedical Optics 2025</i> , Munich, Germany	2025.06 (Expected)
<b>2. Programmable Dynamic Range Extension up to 110 dB Based on Charge-Splitting Method with 4-Tap CMOS Image Sensor</b> Yu Feng, et al., <i>International Image Sensor Workshop 2025</i> , Hyogo, Japan	2025.06
<b>3. Multi-Tap CMOS Image Sensor with Programmable Functional Exposure: Application to Structured Light Based Quantitative Tissue Imaging</b> Yu Feng, et al., <i>Optica Imaging Congress 2024</i> , Toulouse, France	2024.07

### Professional Experience

<b>Research and Teaching Assistant</b> , Shizuoka University   Hamamatsu, Japan	2021.10 – Present
<ul style="list-style-type: none"> <li>• Conducting R&amp;D on multi-tap CMOS image sensors for biomedical/HDR imaging, focusing on digital design and system integration</li> <li>• Supporting undergraduate programming courses (Python and Verilog HDL), assisting with lectures, assignments, and student queries</li> </ul>	
<b>QA Engineer</b> , Meidensha   Nagoya, Japan	2020.04 – 2021.09
<ul style="list-style-type: none"> <li>• Conducted quality assurance for electric vehicle motors</li> </ul>	

### Awards & Honors

• <b>Graduate School Scholarship</b> , Amano Foundation	2023.09 – 2026.09
• <b>Outstanding Academic Records</b> , Shizuoka University	2024.04 – 2025.09