PRAJAKTA BELEKAR

Education

PhD in Medical Physics (ongoing)
Medical University of Vienna, Austria
MSc Bioscience (A+)
University of Skövde, Sweden
Integrated Master's in Biotechnology (B.Tech + M.Tech)
Dr. D. Y. Patil University, India
🏅 Gold Medalist | GPA: 9.8/10
Merit scholarship | 2015-2020

Research profile/Work

- ➔ Biomedical Imaging Researcher specializing in **medical physics, quantitative imaging, and AI-driven image analysis**, with international research experience in Austria and Sweden.
- ➔ At the Medical University of Vienna, I worked on advanced OCTA-based pipelines for retinal vessel analysis, 3D angiogram reconstruction, and functional hemodynamics, combining Fourier-domain signal processing, deep learning (PyTorch), and OCT system integration (SLO, flicker stimulation), with additional work on Doppler holography for blood flow analysis.
- ➔ At the University of Innsbruck, I worked on the EU SWIMMOT project, designing imaging and analysis workflows for nanoparticle-based contrast agents using photoacoustic and confocal imaging, while contributing to project coordination, interdisciplinary collaboration, and mentoring (Best Poster Award – CMBI Meeting).
- ➔ Previously, at the University of Gothenburg, I developed fluorescence microscopy workflows and quantitative image analysis pipelines for vesicle tracking, supporting experimental design and contributing to peer-reviewed publications.
- ➔ My work focuses on building end-to-end imaging pipelines that integrate hardware, signal processing, and AI to translate complex biomedical data into clinically meaningful insights.

Core Expertise

Tech Focus: Quantitative imaging, disease biomarkers, multimodal integration
Medical Imaging: MRI, OCT/OCTA, Confocal, TIRF, Photoacoustic imaging
Image Processing: Segmentation, motion correction, vessel tracking, reconstruction
Signal Processing: Fourier-domain (k-space), spectral analysis, noise modeling
AI & Programming: Python (PyTorch, NumPy, OpenCV), MATLAB, C++, R
Systems & Tools: LabVIEW (basic), ImageJ, Git, scientific data pipelines

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Selected outreach events

- Oral presentations at **Photonics West 2024** and **Women in Photonics (Jena)**
- **MICCAI 2024, International Bio-Photonics summer school (Denmark)**
- International research collaborations (EU consortium projects)
- Leadership: President, **SPIE/OPTICA Student Chapter (Vienna),** Organized academic events, outreach, and industry collaborations