

Prashant Pandey

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EDUCATION

University of British Columbia <i>Doctorate (PhD) in Biomedical Engineering</i>	Dec 2018 – Aug 2023 Vancouver, BC, Canada
University of British Columbia <i>Master's of Applied Science (MASC) in Biomedical Engineering</i>	Aug 2016 – Dec 2018 Vancouver, BC, Canada
Stanford University <i>Sophomore College, Great Ideas in Computer Science</i>	2013 Stanford, CA, United States
University of Oxford <i>Master's of Engineering (MEng) Undergraduate in Engineering Science</i>	Oct 2012 – July 2016 Oxford, United Kingdom

EXPERIENCE

Senior Staff Engineer <i>Stryker (MOLLI Surgical Acquisition)</i>	Sept 2024 – Present Toronto, Canada
- Developing computer vision and machine learning systems for integrating the MOLLI system with Stryker open-field and endoscopic cameras - Continuing leading development of next generation breast tumor localization devices from MOLLI Surgical's portfolio, including using ultrasound-based sensing technologies - Software, machine learning, and operating systems development for the next generation of the MOLLI localization system	
Engineering Scientist <i>MOLLI Surgical</i>	Nov 2021 – Sept 2024 Toronto, Canada
- Inventor of 'MOLLI 2': an FDA-approved breast tumor localization device for intraoperative use - Developed a machine learning pipeline for localizing magnetic markers based on high-dimensional sensor data - Raised > \$2M of competitive funding for an ultrasound-based surgical navigation system for locating tumors - Currently published patents on Google Patents	
Engineering Lead <i>Retinographer</i>	May 2020 – Sept 2023 Toronto, Canada
- Developed deep learning model to detect disease from retinal fundus images more accurately than expert ophthalmologists - Developing hardware and algorithms to automate retinal screening using smartphone cameras - Prototype published on retinographer.com and published associated journal study	
PhD Research <i>Surgical Technologies Laboratory, University of British Columbia</i>	Dec 2018 – Aug 2023 Vancouver, Canada
Thesis: 'An Integrated System for Ultrasound-based Surgical Navigation of Iliosacral Screw Insertions' - Developed surgical navigation system for orthopaedic fracture fixations based on ultrasound imaging - Developed machine learning components for automated medical image analysis - Validated the integrated system through human cadaver trial	
MASC Research <i>Surgical Technologies Laboratory, University of British Columbia</i>	Aug 2016 – Dec 2018 Vancouver, Canada
Thesis: 'Real-time Ultrasound Bone Segmentation and Robust US-CT Registration for Surgical Navigation of Pelvic Fractures' - Developed automated medical image segmentation and rigid registration algorithms for ultrasound and CT volumetric images	
MEng Research <i>BUBBL Group, Institute of Biomedical Engineering, University of Oxford</i>	Sept 2015 – June 2016 Oxford, United Kingdom
Thesis: 'Injectable Bubbles for Physiological Pressure Measurements' - Investigated using ultrasound and gas microbubbles for non-invasive blood pressure measurement	

GRANTS (LEAD OR CO-APPLICANT)

INOVAIT Focus Fund \$2,000,000	January 2024 – Dec 2026
Three-year commercialization grant to develop a tumor localization system using ultrasound imaging and machine learning	
INOVAIT Pilot Fund \$125,000	April 2023 – March 2024
Industrial research and development grant to fund a prototype tumor localization system using ultrasound imaging and machine learning	
Joule Innovation Grant, Canadian Medical Association \$10,000	2021
Grant to support development of Retinographer , an AI powered handheld camera for visualizing and diagnosing patient retinal images	
Orthopaedic Trauma Association Research Grant USD \$48,000	2021 – 2023
Competitive research grant which funded two years of research activity associated with my PhD thesis	
WorkSafeBC Research Grant \$45,000	2019 – 2021
Competitive research grant providing two years of support for doctoral research	

SELECT AWARDS AND HONOURS

Vanier Graduate Scholarship (NSERC) \$150,000	2020 – 2023
Governor General's Gold Medal - Finalist Shortlisted as one of the top graduating PhDs at UBC	2024
Four Year Fellowship (UBC)	2020 – 2023
Oxford to Canada Scholarship (Canadian Rhodes Scholars Foundation) \$50,000	2016 – 2018
Award of Distinction (Medical Device Development Centre) \$2,500	2017
IT Innovation Grant (University of Oxford) \$12,300	2015

SELECT PUBLICATIONS - SEE ALL [HERE](#)

- Pandey PU**, Micieli JA, Ong Tone S, Eng KE, Kertes PJ, Wong JCY Realistic fundus photograph generation for improving automated disease classification British Journal of Ophthalmology 2025;109:791-798
- Pandey PU**, Guy P, Bliven EK, Lefaiivre KA, Hodgson AJ. An Integrated System Using Ultrasound-Based Registration for Surgical Navigation of Iliosacral Screw Insertions. IEEE Transactions on Biomedical Engineering. 2024; doi:10.1109/TBME.2024.3428340
- Pandey PU**, Ballios BG, Christakis PG, et al. An ensemble of deep convolutional neural networks is more accurate and reliable than board-certified ophthalmologists at detecting multiple diseases in retinal fundus photographs. Br J Ophthalmol. 2023; doi:10.1136/bjo-2022-322183
- Pandey PU**, Guy P, Hodgson AJ. Can uncertainty estimation predict segmentation performance in ultrasound bone imaging? Int J Comput Assist Radiol Surg. 2022;17(5):825-832. doi:10.1007/s11548-022-02597-0
- Hu R, Fan KY, **Pandey P**, et al. Insights from teaching artificial intelligence to medical students in Canada. Commun Med (Lond). 2022;2:63. doi:10.1038/s43856-022-00125-4
- Pandey PU**, Guy P, Lefaiivre KA, Hodgson AJ. What are the optimal targeting visualizations for performing surgical navigation of iliosacral screws? A user study. Arch Orthop Trauma Surg. 2023;143(2):677-690. doi:10.1007/s00402-021-04120-7
- Pandey PU**, Quader N, Guy P, Garbi R, Hodgson AJ. Ultrasound Bone Segmentation: A Scoping Review of Techniques and Validation Practices. Ultrasound Med Biol. 2020;46(4):921-935. doi:10.1016/j.ultrasmedbio.2019.12.014
- Pandey P**, Guy P, Hodgson AJ, Abugharbieh R. Fast and automatic bone segmentation and registration of 3D ultrasound to CT for the full pelvic anatomy: a comparative study. Int J Comput Assist Radiol Surg. 2018;13(10):1515-1524. doi:10.1007/s11548-018-1788-5

TECHNICAL SKILLS AND EXPERTISE

Concepts: Biomedical Engineering, Medical Imaging, Image Analysis, Computer Vision, Machine Learning / Deep Learning & Artificial Intelligence, Generative Models (GANs, DDPMs), High Performance Computing (HPC)

Programming languages and tools: Python, Matlab, C, C++, HTML/CSS, git, Docker, wandb, tmux, ssh

Software: 3D Slicer, PLUS Toolkit, Blender, Autodesk Fusion 360, Solidworks, L^AT_EX, and more

Libraries & Frameworks: PyTorch, OpenCV, scikit-learn, pandas, NumPy, Matplotlib, Flask, and more