

Megha Kalia

Mobile: (604)-417-6467 ◇ mkalia@ece.ubc.ca

Robotics and Control Lab, Electrical and Computer Engineering, The University of British Columbia
5500 - 2332 Main Mall, Vancouver BC V6T 1Z4

EDUCATION

The University of British Columbia (UBC) Ph.D., Electrical and Computer Engineering Thesis: "Mechanics of polymer brush based soft active materials" Advisors: Prof. S.E. Salcudean & Nassir Navab	Vancouver, Canada 2017 – 2021
Indian Institute of Technology Kharagpur (IIT) M.Tech., Medical Imaging and Informatics Thesis: "Vibration mode localization in coupled microelectromechanical resonators" Advisors: Prof. Chandan Chakraborty & Nassir Navab	Kharagpur, India 2014 – 2016
Guru Gobind Singh Indraprastha University (GGSIPU) B.Tech., Biotechnology	New Delhi, India 2005-2009

RESEARCH INTERESTS

Human Computer Interaction, Attentive Cognitive Interface Design, Medical Augmented Reality, Depth Perception, Computer Vision

PEER-REVIEWED JOURNALS

1. **Megha Kalia**, Apeksha Avinash, Nassir Navab and Septimiu Salcudean. "**Preclinical Evaluation of a Marker-less, Real-time, Augmented Reality Guidance System for Robot Assisted Radical Prostatectomy**". (Submitted), 2021.
2. **Megha Kalia**, Prateek Mathur, Keith Tsang, Peter Black, Nassir Navab and Septimiu Salcudean. "**Evaluation of a Marker-Less, Intra-Operative, Augmented Reality Guidance System for Robot-Assisted Laparoscopic Radical Prostatectomy**". International Journal of Computer Assisted Radiology and Surgery (IJCARS), 2020.
3. (**Outstanding Paper Award**) **Megha Kalia**, Prateek Mathur, Nassir Navab, and Tim Salcudean. "**A Marker-less Real Time Intra-operative Camera and Hand-eye Calibration Procedure for Surgical Augmented Reality**". Special Issue IET Health Technology Letters, 2019.
4. Alaa Eldin Abdelaal, Apeksha Avinash, Megha Kalia, Gregory D. Hager, SeptimiuE. Salcudean. "A multi-camera, multi-view system for training and skill assessment for robot-assisted surgery". In the International Journal of Computer Assisted Radiology and Surgery, vol. 15, pp. 1369-1377, 2020.

PEER-REVIEWED CONFERENCES

1. **Megha Kalia**, Apeksha Avinash, Nassir Navab and Septimiu Salcudean. "**Real-Time, Intra-Operative, Camera Projection Matrix Estimation for Augmented Reality in Surgical Robotics**". (Submitted), 2021.
2. **Megha Kalia**, Nassir Navab, and Tim Salcudean. "**A Real-Time Interactive Augmented Reality Depth Estimation Technique for Surgical Robotics.**" In 2019 International Conference on Robotics and Automation (ICRA), pp. 8291-8297. IEEE, 2019.

3. **Megha Kalia**, Nassir Navab, Sidney Fels, and Tim Salcudean. "**A Method to Introduce & Evaluate Motion Parallax with Stereo for Medical AR/MR.**" In 2019 IEEE Conference on Virtual Reality and 3D User Interfaces (VR), pp. 1755-1759. IEEE, 2019.
4. **Megha Kalia**, Christian Schulte zu Berge, Hessam Roodaki, Chandan Chakraborty, and Nassir Navab. "**Interactive depth of focus for improved depth perception.**" In International Conference on Medical Imaging and Augmented Reality, pp. 221-232. Springer, Cham, 2016.

AWARDS AND SCHOLARSHIPS

-Public Scholars Initiative, UBC	Aug '20
-Teaching as Research, UBC	May '20
- Outstanding Paper Award , Computer Aided Intervention Workshop, MICCAI Conference (The Medical Image Computing and Computer Assisted Intervention)	Oct '19
-Graduate Student Initiative Award, UBC	Sept '19
-International Tuition Award, UBC	May '17 – April '20
Travel Award, Hamlyn Winter School, Imperial College London, UK	Dec '17
- DAAD (Deutscher Akademischer Austausch Dienst) (German Academic Exchange Service) Scholarship for completion of Master's project at The Chair for Computer Aided Medical Procedures & Augmented Reality, Technical University of Munich, Germany.	Sept '15 – Mar '16
- BOSCH Women Inventor of the Year (India)	2015
- Govt. of India, AICTE–GATE post graduate scholarship For the duration of Master's program	2014

LEADERSHIP & TEAMWORK

Steering Committee Member, Biomedical Imaging and Artificial Intelligence Research Cluster	2018-19
Graduate Council Student Caucus, UBC	2018-Current
Grant Writer, Kaleidoscope UBC Mental Health Awareness Club	2018-19
Executive Committee Member, Women in Engineering, UBC	2017
Co-founder, Ambar-IIT Kharagpur, An LGBTQ support group	2015

PATENTS

A microscope imaging system (pending)	India 4592/CHE/2015
Meibomian gland diagnostic device (pending)	India 5742/CHE/2015

ADDITIONAL TRAINING

Medical Augmented Reality Summer School, University of Balgrist, Zurich	Aug '19
Hamlyn Winter School on Surgical Imaging and Vision, Imperial College London, United Kingdom	Dec '17
Suicide Prevention Training (QPR-Question, Persuade, Refer), UBC	Dec '19

RESEARCH EXPERIENCE

Graduate Research Assistant , Electrical and Computer Engineering, University of British Columbia, Canada	Dec 2017-Mar 2018
Project: Augmented Reality for Robot Assisted Surgery	
Advisor: Prof. Septimiu E. Salcudean	
Graduate Research Assistant , Computer Aided Medical Procedures and Augmented Reality, Technical University of Munich, Germany	Sep '15 – Mar '16
Project: "Vibration mode localization in coupled microelectromechanical resonators"	
Advisors: Prof. Nassir Navab	

INDUSTRIAL EXPERIENCE

Summer Intern

Jun '15 – Jul '15

BOSCH Engineering and Business Solutions, Bengaluru, India

Proposed a first ever metric for quantification of the medical condition, Meibomian Gland Dysfunction, using wavelet based features and image processing techniques. The algorithm is in a clinical product. Filed two patents.

TEACHING AND MENTORING

Teaching Assistant, The University of British Columbia

Human Computer Interaction, CPEN 441 (Undergraduate course)

Jan '18 – April '18

Instructional Skills Workshop, The University of British Columbia

Center for Teaching, Learning and Technology

2013

Mentor of Research Projects, The University of British Columbia

Diana Sofia Nino Sua (3rd year undergraduate intern)

Summer 2016