

Stanford



Alaa Eldin Abdelaal

Postdoctoral Scholar, Mechanical Engineering

Bio

BIO

Alaa Eldin Abdelaal is a postdoctoral scholar at the Collaborative Haptics and Robotics in Medicine Lab at Stanford University, working with Prof. Allison Okamura and Prof. Jeannette Bohg. He received his PhD in Electrical and Computer Engineering from the University of British Columbia (UBC) in December 2022. He was also a visiting graduate scholar at the Computational Interaction and Robotics Lab at Johns Hopkins University. During his PhD, he was co-advised by Prof. Tim Salcudean and Prof. Gregory Hager. He holds a M.Sc. in Computing Science from Simon Fraser University and a B.Sc. in Computer and Systems Engineering from Mansoura University in Egypt. His research interests are at the intersection of automation and human-robot interaction for human skill augmentation and decision support with application to surgical robotics. His research has been recognized with the Best Bench-to-Bedside Paper Award at the International Conference on Information Processing in Computer-Assisted Interventions (IPCAI) 2019. His research has been funded by a Vanier Canada Graduate Scholarship, an NSERC Postdoctoral Fellowship, Intuitive Surgical Inc., and the Institute for Human-Centered Artificial Intelligence (HAI) at Stanford University.

HONORS AND AWARDS

- RSS Pioneer, Robotics: Science and Systems (RSS) Conference (2023)
- Stanford Emerging Technology Review Fellow, Stanford University (2023)
- NSERC Postdoctoral Fellowship, Natural Sciences and Engineering Research Council of Canada (2023-2024)
- Canada Graduate Scholarships – Michael Smith Foreign Study Supplements, Natural Sciences and Engineering Research Council of Canada (2022)
- Vanier Canada Graduate Scholarship, Natural Sciences and Engineering Research Council of Canada (2019-2022)
- HRI Pioneer, The ACM/IEEE International Conference on Human-Robot Interaction (2020)
- Best Bench-to-Bedside Paper Award, The International Conference on Information Processing in Computer-Assisted Interventions (IPCAI) (2019)

PROFESSIONAL EDUCATION

- PhD, University of British Columbia , Electrical and Computer Engineering (2022)
- MSc, Simon Fraser University , Computing Science (2017)
- BSc, Mansoura University , Computer and Control Systems Engineering (2012)

STANFORD ADVISORS

- Allison Okamura, Postdoctoral Faculty Sponsor

LINKS

- <https://stanford.edu/~abdelaal/>: <https://stanford.edu/~abdelaal/>

Publications

PUBLICATIONS

- **Parallelism in Autonomous Robotic Surgery** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Abdelaal, A., Liu, J., Hong, N., Hager, G. D., Salcudean, S. E.
2021; 6 (2): 1824-1831
- **Robotics In Vivo: A Perspective on Human-Robot Interaction in Surgical Robotics** *ANNUAL REVIEW OF CONTROL, ROBOTICS, AND AUTONOMOUS SYSTEMS, VOL 3, 2020*
Abdelaal, A., Mathur, P., Salcudean, S. E., Leonard, N. E.
2020; 3: 221-242
- **A "pickup" stereoscopic camera with visual-motor aligned control for the da Vinci surgical system: a preliminary study**
Avinash, A., Abdelaal, A., Mathur, P., Salcudean, S. E.
SPRINGER HEIDELBERG.2019: 1197-1206
- **Play Me Back: A Unified Training Platform for Robotic and Laparoscopic Surgery** *IEEE ROBOTICS AND AUTOMATION LETTERS*
Abdelaal, A., Sakr, M., Avinash, A., Mohammed, S. K., Bajwa, A., Sahni, M., Hor, S., Fels, S., Salcudean, S. E.
2019; 4 (2): 554-61
- **Orientation Matters: 6-DoF Autonomous Camera Movement for Video-based Skill Assessment in Robot-Assisted Surgery**
Abdelaal, A., Hong, N., Avinash, A., Budihal, D., Sakr, M., Hager, G. D., Salcudean, S. E., IEEE
IEEE.2022
- **A multi-camera, multi-view system for training and skill assessment for robot-assisted surgery** *INTERNATIONAL JOURNAL OF COMPUTER ASSISTED RADIOLOGY AND SURGERY*
Abdelaal, A., Avinash, A., Kalia, M., Hager, G. D., Salcudean, S. E.
2020; 15 (8): 1369-1377
- **Evaluation of Increasing Camera Baseline on Depth Perception in Surgical Robotics**
Avinash, A., Abdelaal, A., Salcudean, S. E., IEEE
IEEE.2020: 5509-5515
- **Multimodal Training by Demonstration for Robot-Assisted Surgery**
Abdelaal, A., Hager, G. D., Salcudean, S. E., Assoc Comp Machinery
ASSOC COMPUTING MACHINERY.2020: 549-551
- **Event-based Control as a Cloud Service**
Abdelaal, A., Hegazy, T., Hefeeda, M., IEEE
IEEE.2017: 1017-1023
- **LOST Highway: a Multiple-Lane Ant-Trail Algorithm to Reduce Congestion in Large-Population Multi-Robot Systems**
Abdelaal, A., Sakr, M., Vaughan, R., IEEE
IEEE.2017: 161-167