SEENIVASAN LALITHKUMAR

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Lalithkumar Seenivasan   R⁶ Lalithkumar Seenivasan   iD 0000-0002-0103-1234
lalithjets   in lalithkumar-seenivasan

EDUCATION

Doctor of Philosophy (PhD), Biomedical Engineering

🗓 2019 – Ongoing   📍 National University of Singapore, Singapore

- AI-assisted scene understanding in robotic surgery.

B.Eng. (Hons) Electrical Engineering

🗓 2016 – 2019   📍 National University of Singapore, Singapore

- Design Centric Programme
- CAP: 3.94 / 5.0
- Student Exchange Programme at **Tampere University of Technology**, Finland.

Diploma in Mechatronics

🗓 2010 – 2013   📍 Temasek Polytechnic, Singapore

- Diploma with Merit
- GPA: 3.91 / 4.0
- Diploma plus in Life Sciences Fundamentals

Secondary School Examination 2010

🗓 2000 – 2010   📍 Vel's Vidyashram, India

- CGPA: 9.2/10

PUBLICATIONS

📄 Key Highlights

- Seenivasan, L., Mitheran, S., Islam, M., & Ren, H. (2022). Global-reasoned multi-task learning model for surgical scene understanding. *IEEE Robotics and Automation Letters*.
- Islam, M., Seenivasan, L., Ren, H., & Glocker, B. (2021). Class-distribution-aware calibration for long-tailed visual recognition. *UDL Workshop, International Conference on Machine Learning*.
- Islam, M., Seenivasan, L., Ming, L. C., & Ren, H. (2020). Learning and reasoning with the graph structure representation in robotic surgery. In *International conference on medical image computing and computer-assisted intervention* (pp. 627–636). Springer.
- Xu, M., Seenivasan, L., Yeo, L. L. L., & Ren, H. (2020). Stent deployment detection using radio frequency-based sensor and convolutional neural networks. *Advanced Intelligent Systems*, 2(10), 2000092.
- Ren, H., Chen, C. X., Cai, C., Ramachandra, K., & Lalithkumar, S. (2017). Pilot study and design conceptualization for a slim single-port surgical manipulator with spring backbones and catheter-size channels. In *2017 ieee international conference on information and automation (icia)* (pp. 499–504). IEEE.

LIFE PHILOSOPHY

"Follow your passion and it's no longer work"

AWARDS

📗 National University of Singapore

- Outstanding Undergraduate Researcher Prize AY2017/2018
- FoE 32nd INNOVATION & RESEARCH AWARD (2018)

📗 Temasek Polytechnic

- Singapore Manufacturing Federation Metal, Machinery & Engineering Industry Group Project Prize 2013
- Commendation Award for Major Project 2013
- CCA Merit Award in Leadership 2013
- Director's List Award 2013
- Director's List Award 2012

🛡 National Service, Singapore Police Force

- Commander's Outstanding Performance Award 2015
- Sword Of Merit, Police Officer Cadet Course 2014

SKILLS

Python   PyTorch   OpenCV
C / C++   Gazebo simulator
Robot Operating System (ROS)

LabVIEW   Verilog
microcontroller programming
CAD Design   Sheet metal design
Mechanical Prototyping

LANGUAGES

English   ●●●●●
Tamil   ●●●●○

👥 Collaborations

- Huaulmé, A., Harada, K., Nguyen, Q.-M., Park, B., Hong, S., Choi, M.-K., … Dou, Q., et al. (2022). Peg transfer workflow recognition challenge report: Does multi-modal data improve recognition? *arXiv preprint arXiv:2202.05821.*

- Nwoye, C. I., Alapatt, D., Yu, T., Vardazaryan, A., Xia, F., Zhao, Z., … Wang, H., et al. (2022). Cholectriplet2021: A benchmark challenge for surgical action triplet recognition. *arXiv preprint arXiv:2204.04746.*

- Lal, R., Swaminathan, R., Seenivasan, L., Qiu, L., & Ren, H. (2021). Scoopnet: 6dof pose estimation pipeline for origami-inspired worm robots. In *2021 ieee international conference on development and learning (icdl)* (pp. 1–6). IEEE.

- Seenivasan, L., Bai, F., Ji, M., Gu, X., Tse, Z. T. H., & Ren, H. (2020). Shape tracking of flexible morphing matters from depth images. *IEEE Sensors Journal*, 21(6), 8234–8244.

EXPERIENCE

Research Engineer
National University of Singapore

📅 Dec 2020 – Ongoing 　　📍 Singapore

- Manage and lead projects with research interns

Engineering Manager
Aitech Robotics And Automation Pte Ltd

📅 Aug 2019 – Jul 2020 　　📍 Singapore

- Technical adviser
- Lead and manage the R&D department
- Design overall system architecture

Software Engineer (Part-time)
Aitech Robotics And Automation Pte Ltd

📅 Jun 2016 – Jul 2019 　　📍 Singapore

Associate Engineer
Aitech Robotics And Automation Pte Ltd

📅 Jan 2016 – Jun 2016 　　📍 Singapore

- Member of the R&D department
- Develop robotic solutions in the Robot Operating System (ROS)
- Develop autonomous navigation stack (robot localization, navigation and obstacle avoidance)

Temp Technical Support Officer
Temasek Polytechnic

📅 Oct 2013 – Jan 2014 　　📍 Singapore

- Involved in a research project in developing an indoor micro-aerial vehicle with autonomous navigation features without the aid of GPS

Lab Assistant (Part-time)
Temasek Polytechnic

📅 Oct 2011 – Sep 2013 　　📍 Singapore

- Assist and support lecturers in teaching the students

NATIONAL SERVICE

Assistant Superintendent of Police
Reservist

📅 2021 – ongoing 　　👥 Singapore Police Force

Inspector
Reservist

📅 2016 – 2021 　　👥 Singapore Police Force

National Service Inspector
Active

📅 2014 – 2016 　　👥 Singapore Police Force

LEADERSHIP

Vice-Captain, Touch Rugby
📅 2018 – 2019 　　🏛 NUS Raffles Hall

Captain, Touch Rugby
📅 2017 – 2018 　　🏛 NUS Raffles Hall

Quartermaster, Temasek Polytechnic International Students Group
📅 2012 – 2013 　　🏛 Temasek Polytechnic

Member, Scouts
📅 2007 – 2009 　　🏛 Vel's Vidyashram

CO-CURRICULAR

Touch Rugby
📅 2016 – 2019 　　🏛 NUS Raffles Hall

Softball
📅 2016 – 2019 　　🏛 NUS Raffles Hall

Board of Photography
📅 2017 – 2018 　　🏛 NUS Raffles Hall

Temasek Polytechnic International Students Group
📅 2010 – 2013 　　🏛 Temasek Polytechnic

PERSONAL INTEREST

Research Scene understanding & NLP · Photography · Sports · National Service · Backpacking · Others