VARUN NALAM

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EDUCATION

Arizona State University *August 2015 - May 2020*
PhD in Mechanical Engineering
Indian Institute of Technology, Madras *July 2009 - May 2014*
B.Tech and M.Tech in Mechanical Engineering. CGPA: 7.89/10.00

RESEARCH EXPERIENCE

Neuromuscular modeling of human ankle *August 2015 - May 2020*

- Developed a multi-axial robotic platform to facilitate neuromuscular analysis of human ankle.
- Developed a neuromuscular model of the ankle to facilitate rehabilitation of patients affected by neurodegenerative disorders such as Stroke and Multiple Sclerosis.

Flexible robotic endoscope for cardiac surgery *October 2014 - July 2015*

- Developed the embedded system and control algorithm of a novel flexible endoscope designed for cardiac surgeries.
- The device is expected to reduce the recovery time and complexity of micro invasive cardiac surgeries.

Development of Motion Adaptation Device *May 2013 - May 2014*

- Developing a device that can analyze, record and adapt human hand motion to different robotic systems.
- Demonstrated the utility of the system by successfully controlling a 6 DoF Robotic Arm.

Portable Gait analysis and rehabilitation system *May 2013 - May 2014*

- Developed the Embedded system,software and intelligence for an economic portable Gait analysis system
- The patented device is targeted to be used in low income countries for rehabilitation and is designed to be produced under $40.

FIRA Robosoccer *May 2011 - May 2013*

- Represented the country and Led a Team of 11 members at FIRA, an International Robosoccer competition.
- Contributed to various aspects of the team including decision making in multi agent systems, vision, embedded systems and Control.

TECHNICAL EXPERTISE

Embedded Systems	STM32,ATMEL,Simulink Real Time Systems,RTOS
Software	Solidworks, EAGLE, SIMULINK, MATLAB
Languages	C,C++,Python

PUBLICATIONS AND PATENTS

[1] Hennington L., Nalam V., Eikenberry M. C., Kinney C. L., Lee H., 2019, IEEE Transactions on Medical Robotics and Bionics, 1, 237

[2] Li Z., Zin Oo M., Nalam V., Duc Thang V., Ren H., Kofidis T., Yu H., 2016, Journal of Mechanisms and Robotics, 8

[3] Nalam V., Lee H., 2017, in 2017 IEEE International Conference on Robotics and Automation (ICRA). pp 511–516

[4] Nalam V., Lee H., 2018, Systems and methods for a multi-axis robotic platform for studying neuromechanics of an ankle joint (Patent)

[5] Nalam V., Lee H., 2019, IEEE/ASME Transactions on Mechatronics, 24, 459

LEADERSHIP ROLES

Co-founder, SOL Robotics *October 2019 - May 2020*

- Co-Founder and technical lead for an early stage robotic venture incubated at Intel
- Part of a 4 member team which was selected into the final 8 out of 600 potential ventures

GPSA Assembly member and Engineering Committee Chair *April 2018 - February 2020*

- Elected to represent IRA Fulton Schools of Engineering as an assembly member in the graduate student government at ASU.
- Founded Engineering committee to better serve graduate engineering students and advocate for mental wellness initiatives for PhD students.

Research Engineer at SINAPSE, National University of Singapore *October 2014- July 2015*

- The lead controls engineer for multiple robotic surgical devices in a team comprising of surgeons, engineers and designers.
- Developed a novel control mechanism that can be intuitively learned by surgeons with minimal training while mentoring 4 undergraduate interns.

CFI Administration and Student Relations Core *2011 - 2014*

- CFI is a student run initiative which nurtures technical creativity and provides the necessary guidance and resources for the students of IIT Madras to pursue their endeavors in engineering.
- Coordinated a 3 phase strategy which increased the number of successful student driven innovative projects from 5 to12 in 2014.

Team leader for ROBOCON 2011 IIT Madras team *2011 - 2014*

- Led a team of 22 members in a national level robotic competition held by Asia-Pacific Broadcasting Union and placed 5^{th} out of a group of 56 teams.

EXTRACURRICULAR ACTIVITIES

Awarded the best student paper at Ubiquitous Robotics Conference, Hawaii. (2018)

Volunteered at ASU Rehabilitation Robotics Workshop and ASU Southwest Robotics Symposium, which is a platform for showcasing robotics research at ASU. (2016-2018)

Volunteered at the Carnival for MS, organized in Tempe for spreading awareness about Multiple Sclerosis.(2017)