VENGATESAN GOVINDARAJU

Male, 32, Indian (Singapore PR)
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EDUCATION

Doctor of Philosophy, **(Jan 2013 - April 2017)**
National University of Singapore **CAP: 4.67 / 5**
Supervisor: Assoc. Prof. Gerard Leng Siew Bing

***Thesis Title**: Path Planning Strategies for Visibility Enhancement with Unmanned Aerial Vehicles in Cluttered Environments*
(Please visit website for abstract/videos.)

***Modules undertaken**:* Advanced Robotics · Machine Vision · Visual Computing · Evolutionary Computation · Soft Robotics · Discrete Events Systems

Bachelor of Technology, Mechanical Engineering **(July 2007 - May 2011)**
National Institute of Technology - Trichy **CAP: 8.97 / 10**

Master of Business Administration (Online) **(May 2018 - Feb 2019)**
Quantic School of Business and Technology, Washington, D.C.

PROFESSIONAL EXPERIENCE

Senior Staff Engineer at '**Panasonic Research & Development Center Singapore**', **(July 2019 - Present)**
Visual SLAM technologies:
- Developed techniques to improve localization for autonomous vehicles, delivery robots and wheelchairs by more than **20%**.
- Worked on parallelizing data collection and mapping to demonstrate real-time auto-parking system resulted in squeezing the total time required by more than **40%**.
- Worked on Mobile App using Flutter framework to demonstrate Visual Positioning System for personal navigation assistance with **AR** in indoor environments.
Robotics technologies:
- Implemented ROS1 Websocket based communications to implement Visual localization for multiple autonomous wheelchairs.
- Collaborated with OSRC to develop ROS2 adapter for Robotics Middleware Framework (RMF) for integrating our robots with smart building infrastructure.
Technical Leadership:
- Introduced automation tools to the team such as tmux, docker to speed-up robot bringup, thereby improving efficiency in development and testing
- Took initiatives to write proposal grants for several successful fundings.
- **Certified Scrum Product Owner** and utilize agile project management to manage many members and multiple projects at a time.

Senior Engineer (Navigation) at '**Aitech Robotics and Automation Pte. Ltd.**' (Singapore), **(July 2017 - June 2019)**
- Developed reflector-based mapping and localization, sensor-fusion (IMU, Lidar) and control algorithms, for several medium/heavy-duty autonomous mobile-robots (differential, ackermann, tricycle, omni-directional), for intra-logistics applications.
- Worked on design, selection, procurement, fabrication, testing and deployment at customer site and led a team of engineers from robotics, IT and operations to successfully complete projects on time.

Aviation Officer, at Mumbai International Airport, **(Sept 2011 - Nov 2012)**
Indian Oil Corporation Ltd.
- Maintenance in-charge of fuel pumping equipments, vehicles. Also, proactively developed a software application for efficient scheduling of Aircraft Refuelling Operations

TEACHING EXPERIENCE

Teaching Assistant at NUS for modules EG1109 - Statics and Mechanics of Materials and ME3112 - Mechanics of machines. (Spring 2014, Fall 2015 resp.)

PUBLICATIONS

Conferences

1. Vengatesan G, Gerard Leng, Zhang Qian, *Visibility-based UAV path planning for surveillance in cluttered environments* , 12th IEEE International Symposium on Safety, Security, and Rescue Robotics, Toyako - Japan (Oct - 2014)
2. Vengatesan G, Gerard Leng, Zhang Qian, *Visibility Maximization for Multi-UAV Surveillance over Urban Regions*, Singapore Airforce Technology Exhibition and Conference, Singapore (April - 2014)

Journals

1. Vengatesan G, Gerard Leng, Zhang Qian, *Multi-UAV Surveillance over Forested Regions* , Photogrammetric Engineering and Remote Sensing, No. 12, pp. 1129-1137(9) (Dec - 2014)

ACADEMIC ACHIEVEMENTS

Image Processing Robotics:

- Won the **Second Prize** in **IIT-Bombay TechFest - 09** in the GOAL Event for building an autonomous Image Processing Soccer playing robot. Won prizes for similar events in **IIT Madras Shaastra - 09**, PSG College of Technology, Coimbatore and SRM University, Chennai.

BAJA - SAE All Asia: Participated in **SAE-Baja** All Asia 2010 - All terrain vehicle design and fabrication competition held at NATRIP facility, Pithampur, Indore.

PROJECT WORKS

- Final Year Project on **Simulation of Stewart Gough Platform** using MATLAB, SimMechanics and SimHydraulics at **NIT Trichy**, (Jan - May 2011)
- **Stereo Camera Calibration and 3D coordinate measurement using Stereovision** at Engineering Design Dept., **IIT Madras** (May 17th - July 17th 2010)
- **Optimization of Magnetic Abrasive Finishing Process using Breeding Swarm Optimization** at Mechanical Engg Dept, **IIT Kanpur** (May 5th - July 5th, 2009)

COMPUTER SKILLS

- *Operating Systems :* **Linux**, Windows
- *Languages :* **C++, Python**
- *Packages :* **ROS1 & ROS2, Gazebo, MATLAB, Simulink**, AutoCAD, Solidworks, 3D Printing, Blender, OpenCV, OpenPCL, LaTeX.

EXTRA-CURRICULAR ACTIVITIES

Positions of Responsibility :

- Manager of a hands-on robotics workshop for building an autonomous 'Sumo-Robot's which had around 250 participants. Event Manager of an Image Processing Robotics event 'Snakes and Ladders' in a national level technical festival.
- Organized a science exhibition for students from rural schools and exhibited an Image Processing Robot to motivate the students to continue their studies.

Sports / Other relevant informations:

- Parade Commander and Second Best Cadet at the inter-college NCC drill competition. Awarded the 'Best Firer' in the rifle firing competition.
- Hobbies: Swimming, Badminton, Guitar.
- *Languages:* Fluent in English, Tamil and conversational Hindi