

# VENGATESAN GOVINDARAJU

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EDUCATION	<p><b>PhD Candidate</b>, Mechanical Engineering (Jan 2013 - April 2017) National University of Singapore Supervisor: Assoc. Prof. Gerard Leng Siew Bing</p> <p><i>Thesis Title:</i> Path Planning Strategies for Visibility Enhancement with Unmanned Aerial Vehicles in Cluttered Environments</p> <p><i>Abstract:</i> Developed path planning strategies for S-UAVs for effective surveillance in urban/forested regions using - parallelized fast marching methods for visibility computation, particle filters for tracking moving targets, sampling based path planners incorporating collision avoidance and kinodynamic constraints. Simulation studies were conducted on synthetic and reconstructed terrains from satellite data on ROS and Gazebo. (Please visit website for more details/videos.)</p> <p><i>Modules completed during PhD:</i> Advanced Robotics · Machine Vision · Visual Computing · Evolutionary Computation · Soft Robotics · Discrete Events Systems</p> <p><b>Bachelor of Technology</b>, Mechanical Engineering (July 2007 - May 2011) National Institute of Technology - Trichy National level School Board Exams:</p> <table><tr><td>Class XII (CBSE)</td><td>2007</td><td>R.S.K. Hr. Sec. School, Trichy, India</td><td>95.4%</td></tr><tr><td>Class X (CBSE)</td><td>2005</td><td>R.S.K. Hr. Sec. School, Trichy, India</td><td>91.8%</td></tr></table> <p><b>Graduate Certificate in Management-of-Technology</b> (Aug 2015 - May 2016) Dept. of Engg. Technology and Management, National University of Singapore.</p>	Class XII (CBSE)	2007	R.S.K. Hr. Sec. School, Trichy, India	95.4%	Class X (CBSE)	2005	R.S.K. Hr. Sec. School, Trichy, India	91.8%
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PROFESSIONAL EXPERIENCE	<p><b>Aviation Officer</b>, at Mumbai International Airport, (Sept 2011 - Nov 2012) <b>Indian Oil Corporation Ltd.</b> <i>Developed a software application for efficient scheduling of Aircraft Refuelling Operations, Maintenance in-charge of fuel pumping equipments, vehicles.</i></p>								
TEACHING EXPERIENCE	<p><b>Teaching Assistant</b> for modules EG1109 - Statics and Mechanics of Materials and ME3112 - Mechanics of machines. (Spring 2014, Fall 2015 resp.) <i>Lab Demonstrator</i> for Vibration Measurement experiment for Mechanics of machines.</p>								
PUBLICATIONS	<p><b>Conferences</b></p> <ol style="list-style-type: none"><li>Vengatesan G, Gerard Leng, Zhang Qian, <i>Visibility-based UAV path planning for surveillance in cluttered environments</i> , 12th IEEE International Symposium on Safety, Security, and Rescue Robotics, Toyako - Japan (Oct - 2014)</li><li>Vengatesan G, Gerard Leng, Zhang Qian, <i>Visibility Maximization for Multi-UAV Surveillance over Urban Regions</i>, Singapore Airforce Technology Exhibition and Conference, Singapore (April - 2014)</li></ol> <p><b>Journals</b></p> <ol style="list-style-type: none"><li>Vengatesan G, Gerard Leng, Zhang Qian, <i>Multi-UAV Surveillance over Forested Regions</i> , Photogrammetric Engineering and Remote Sensing, No. 12, pp. 1129-1137(9) (Dec - 2014)</li></ol>								

**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 the Second prize in an obstacles avoiding IP robot competition in **IIT Madras Shaastra - 09**. Won prizes for similar events in 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 and achieved 17th position out of 80 teams.

**PROJECT  
WORKS**

- Final Year Project on **Design and Control 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)

**AWARDS/  
SCHOLARSHIPS**

NUS Research Scholarship for PhD at NUS, Singapore (Jan 2013 to Dec 2016)  
Summer Fellowship Programme at IIT Madras (May to July, 2010)  
Summer Undergraduate Research Grant for Excellence (SURGE)  
at IIT Kanpur (May to July, 2009)

**TRAINING**

- Remote internship with '**The Construct**' (Barcelona), online robotics simulation platform (Jan 2017 - Present). Developing repositories using ROS, OpenAI-Gym.
- Attended a one week **Summer School on Multi-Robot Systems** (June 2016) conducted by IEEE Robotics & Automation Society and also presented a poster.
- Attended a workshop on **Digital Radiography** during Non Destructive Evaluation Conference (NDE-2009).
- Attended a workshop on **Heat Treatment Processes** and **Welding Technology** conducted by the Indian Welding Society and Indian Institute of Metals, Trichy.

**COMPUTER  
SKILLS**

- *Operating Systems* : **Linux**, Windows
- *Languages* : **C++**, **Python**
- *Packages* : **Robot Operating System (ROS)**, **Gazebo**, **MATLAB**, **Simulink**, **AutoCAD**, **Solidworks**, **Blender**, **OMPL**, **CImg/OpenCV**, **L<sup>A</sup>T<sub>E</sub>X**.

**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