

Sibi Sankar ¹

WORK EXPERIENCE	<ul style="list-style-type: none">● Embedded Software Engineer. <i>Sept 2015 - Present</i> Visteon technical and Services Center, India. [website]● Co-founder @ Chennai Makerspace. <i>June 2015- Present</i> Tambaram, India. [Website]● Research and Development, Intern. <i>July 2015- Aug 2015</i> Mango Ventures LLP, Ahmedabad, India.
EDUCATION	<ul style="list-style-type: none">● Bachelor of Engineering,Electrical and Electronics [website] CGPA: 8.35/10.0 SSN College of Engineering, Kalavakkam, Tamil Nadu, India. <i>June 2011 - May 2015</i>● Senior Year,High school [website] Score: 96.25/100 Union Christian Matriculation HSS, Nungambakkam, Chennai, Tamil Nadu, India. <i>June 2010-April 2011</i>
PUBLICATIONS	Journals <ul style="list-style-type: none">● Sanjay Shreedharan,Sibi Sankar,Senthil Kumaran Mahadevan. MATLAB - System Generator based Feedback Linearization and PID Control of Aero Thrust Pendulum using FPGA. <i>Aust. J. Basic & Appl. Sci</i>, December 2014.[.pdf] Conference Proceedings <ul style="list-style-type: none">● Leo, R.; Milton, R.S.; Sibi, S., Reinforcement learning for optimal energy management of a solar microgrid, Global Humanitarian Technology Conference - South Asia Satellite (GHTC-SAS), 2014 IEEE vol., no., pp.183,188, 26-27 Sept.● Leo Raju, Sibi Sankar, Milton R S.Reinforcement Learning for Optimal Energy Management of a Solar Microgrid. <i>International Conference on Information and Communication Technologies,2014</i> , Elsevier Computer Procedia, Science Direct.[Link]
SKILLS	Libraries : Open-CV, OpenNI 2.2, Nite 2.0, IANYWhere Bluetooth Stack, Socket TCP/UDP, Marlin Firmware. IDE : VIM, Visual Studio, KiCad, Solid Works, Git, Unity 3D, RTC, Matlab/Octave, Final Cut Pro. Controllers : Arduino Series, MSP430, T4C123G, Beaglebone Black, Raspberry Pi series, Spartan 3E Nexys 2, Intel Galileo Gen 2, Freescale MQX Vybrid.
PROJECTS	<ul style="list-style-type: none">● Omnipresence: A Virtual Reality based Telepresence robot. <i>Sept-Dec 2015</i> <i>Team Members: Saipraveen Durairaman, Sibi Sankar, Vijayenthiran S.</i><ul style="list-style-type: none">● Constructed a omni-directional modular robotics platform designed and implemented using rapid prototyping techniques.● Gesture based Manual Control of the robot was established using RGBD camera though hand detection and tracking (Nite 2.0) (Open Ni 2.2).● Head Tracking for Virtual Reality was achieved using on-board sensors on the phone to control the stepper-motor on the omnipresence robot.● High Precision Laser Scanner. <i>July-Aug 2015</i> <i>R&D Intern Mango Ventures LLP</i><ul style="list-style-type: none">● Developed a High Precision laser scanner capable of exporting scanned objects as meshes.● Built on Open-source Horus software stack with geometric dimensions extracted using open-cv python.● Frame was built to be modular and incorporate N number of line lasers to improve precision.● Computer Vision Based Obstacle Avoidance of Differential Drive System using A* Search Algorithm <i>Jan-Feb 2016</i> <i>[Github Repository]</i><ul style="list-style-type: none">● Implemented Localization and Pose estimation based on arbitrary defined color contours detection using OpenCV C++ library.● Implemented A* based search on the image to find the optimal path through a obstacle maze.● Implemented a PID based control system based on the kinematics of the differential driving system.● Semi-Autonomous Control of Quadrotor using FPGA <i>July 2014-Present</i> <i>Mentor: Professor V. Kamaraj</i>

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[Github Repository]

- Responsible for implementation of the three-channel PID controller for roll,pitch and yaw control of a quadcopter on Spartan 3E FPGA using Matlab/Xilinx(ISE).
- Aided in the indigenous construction of the quadcopter frame and interfacing of the 9 degree of freedom inertial measurement unit with the FPGA.
- Aided in the testing and implementation of the control algorithm in arduino microcontroller.

Modelling and Feedback Linearization of Aero-Thrust Pendulum

Apr-June 2014

Mentor: Associate Professor Dr. M.Senthil Kumaran

[Github Repository]

- Responsible for implementation of the single-channel PID controller with anti-reset for aero-thrust pendulum on Spartan 3E FPGA using Matlab/Xilinx(ISE)
- As a part of a team of two, implemented the data logging system on Spartan 3E FPGA interfaced to Matlab through Real time Windows target and aided in feedback-linearization of the non-linear system.
- Facilitated the implementation of the online tuning of PID parameters with on-board switch of the FPGA.

Reinforcement Learning for Optimal Energy Management of a Solar Microgrid

Apr-June 2014

Mentor: Assistant Professor Mr. Leo Raju

[Github Repository]

- Responsible for implementation of the single-channel PID controller with anti-reset for aero-thrust pendulum on Spartan 3E FPGA using Matlab/Xilinx(ISE)
- As a part of a team of two, implemented the data logging system on Spartan 3E FPGA interfaced to Matlab through Real time Windows target and aided in feedback-linearization of the non-linear system.
- Facilitated the implementation of the online tuning of PID parameters with on-board switch of the FPGA.

RELEVANT
COURSEWORK

- **Introduction to Computational Thinking and Data Science** *Mar-May 2014*
(Edx MIT Xseries) [verification link]
- **Embedded Systems Shape the world** *Jan-Mar 2014*
(Edx University of Texas,Austin) [verification link]
- **Autonomous Navigation for Flying Robots** *May-June 2014*
(Edx Technische Universitat Munchen) [verification link]
- **Fundamentals of Digital Image and Video Processing** *Mar-July 2014*
(Coursera North Western University) [verification link]
- **Machine Learning** *Mar-June 2014*
(Coursera Stanford University) [verification link]
- **Robot Mechanics and Control, Part I** *Mar-May 2014*
(Edx Seoul National University) [verification link]
- **Autonomous Mobile Robots** *Feb-June 2014*
(Edx ETH Zurich) [verification link]
- **Artificial Intelligence Planning** *Jan-Mar 2014*
(Coursera University of Edinburgh) [verification link]
- **Control of Mobile Robots** *Jan-Mar 2014*
(Coursera Georgia Tech) [verification link]
- **Introduction to Computer Science and Programming** *Nov 2013-Jan 2014*
(Edx MIT Xseries) [verification link]

MISC
ACHIEVEMENTS

- Won the 1st place as a part of Team ERF in the event Rush Hour, a line follower robotics event organized during PRAGYAN 2015 an international level Tech Fest, conducted by NIT, Trichy.
- Won the 3rd place as a part of Team ERF in the event Apollo 18, an image processing based robotics event organized during PRAGYAN 2015 an international level Tech Fest, conducted by NIT, Trichy.
- Won the 2nd place as part of Team ERF in the event Kronicles of Mars, an image processing based robotics event organized during KURUKSHETRA 2015 conducted by College of Engineering,Anna University, Chennai.