

# SHRIKANT GIRIDHAR

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## EDUCATION

### Vellore Institute of Technology

2010 – 2014

- Bachelor of Technology in Electrical and Electronics Engineering
- Cumulative Grade Point Average: **8.98** (scale of 10.0)
- Ranked third in a class of 96 students

### St. Anselm's Senior Secondary School

2008 – 2010

- All India Senior School Certificate (Grade 12)
- Score: 89%

## EXPERIENCE

### Fiat-Chrysler Automobiles

Nov 2014 - Present

#### *Software Modelling Engineer, Instrument Cluster*

- Developed and maintained cluster software for **2016 Maserati Ghibli** and **2017 RAM 1500 Midline** vehicles.
- Modelled behavior for key vehicle features: Start/Stop, Parking Assistance and Passive Entry.
- Tested and validated upto **15** vehicle features using software-in-loop and network simulation tools.
- Created software and hardware tools for test automation and validation.
  - Helper scripts for automating ECU network simulation.
  - FPGA-based high-bandwidth framegrabber to capture and validate cluster screens.

### Vellore Institute of Technology

Jan 2014 - Apr 2014

#### *Teaching Assistant*

- Conducted lab sessions and additional classes twice a week for classes of 80+ students.
- Created and graded lab assignments. Assisted with setting up weekly lab sessions.
- Took sessions on using C for embedded development (startup and linker scripts, memory management).

## ACHIEVEMENTS

### Department Honors

2011 – 2014

#### *School of Electrical Engineering, VIT*

- Ranked among the top 3 in the Electrical Engineering department among 96 students

### Texas Instruments Analog Design Contest

2013

- Project: *Universal Device Controller*; an ARM Cortex-M3 based Bluetooth LE (4.0) dashboard for IoT devices.
- Qualified for the final phase of the nation-wide contest.
- Shortlisted among 30 teams from all over the country.

## SKILLS

LANGUAGES	C, Python, VHDL, Assembly (Thumb-2, AArch32, x51), CAPL, SPICE
TOOLS	MATLAB, Statemate, Vector CANoe, Altia Design, EagleCAD
UTILITIES	make, git, L <sup>A</sup> T <sub>E</sub> X, linker scripts (GNU ld)
ARCHITECTURES	ARM (v4T, v7-M), AVR, PIC16F
PROTOCOLS	CAN, USB, SPI, I2C, USART
PLATFORMS	Linux, FreeRTOS

## PROJECTS

### SoS: A realtime scheduler for memory-constrained embedded systems

2015

- Fixed priority, preemptive rate-monotonic executive for small embedded systems.
- Supports MPU-based task protection, software timers, separate stacks for interrupts and threads.
- Basic support for mutexes and counting semaphores (using ARMv7 bit-banding).
- Architectures supported: ARM Cortex-M3, M4; ARM7TDMI.

## Faraday: A flexible measurement toolbox

Jan 2014 – Apr 2014

Advisor: Prof Sasipriya P

- Low cost and modular logic analyzer (4 channel) and low-sampling rate (38 kHz) oscilloscope.
- Built on LPC2148, an ARM7TDMI processor with 10-bit 500 kHz ADC and USB DMA for data transfer.
- Graphical visualization desktop front-end implemented in Python with PyQt4 and pyqtgraph.
- Supports basic protocol detection (serial, I2C, SPI) and signal analysis (FFT) functions.

## AudioSynth: An audio effects synthesizer

Jan 2013 – Mar 2013

Advisor: Prof Venkatasubramanian K

- Entirely software-based realtime audio effects (echo, flange, reverb) generation.
- Based on LPC2148 (ARM7TDMI); condensor microphone feeds into ADC and uses DAC to play the sound.
- Designed the signal conditioning circuitry (filtering, smoothing and noise removal) for microphone input.

## Porting RIOT OS to Stellaris EVK-LM3S811

May 2014 – Dec 2014

- Ported RIOT OS, an open-source RTOS for IoT applications to TI's EVK-LM3S811, an ARM Cortex-M3 platform.
- Added considerable board-specific code in addition to modifications in makefiles and linker scripts.
- Patch submitted to mainline for review.

## TALKS

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- Introduction to Git. *ChennaiPy*. October 2015.
- `for i in iterable`: iterator framework in Python 2 and 3. *ChennaiPy*. September 2015.
- Build your own CPU: FPGAs, HDL and Python. *ChennaiPy*. April 2015.

## COMMUNITY CONTRIBUTIONS

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- **FreeRTOS**: Contributed bugfix patches to mainline kernel for the EVK-LM3S811 board.
- **ChennaiPy**: Mentored several members of Chennai's Python User Group in workshop sessions.
- **PeerLearning**: Organized a decentralized teaching program along the lines under VIT IEEE Student Chapter.
- **VIT Vibes**: Co-editor of VIT Chennai's cultural magazine.
- **Freescale ARM Design Contest**: Scheduled to mentor sophomore students for embedded design contest.

## REFERENCES

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R SRIMATHI	VENKATASUBRAMANIAN K	P SASIPRIYA
Professor	Assistant Professor	Assistant Professor
School of Electrical Engineering	School of Electrical Engineering	School of Electrical Engineering
Vellore Institute of Technology	Vellore Institute of Technology	Vellore Institute of Technology