Vishnu Vardhan Dhanabalan

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Education

Syracuse University

M.S. in Electrical Engineering
Dec 2015 | Syracuse, NY

Anna University

B.E. in Electrical and Electronics Engineering
May 2013 | Chennai, India

Skills

Programming

C/C++ • Python • Java • Assembly DSP kit coding • LaTeX• familiar with JavaScript

Software Tools

MATLAB • Simulink • MS Visual Studio • Eclipse • Xcode • various DAWs • Perforce • GIT

Hardware

Motorola DSP563xx family • Raspberry Pi • BeagleBone XM and Black • Arduino

OS

Windows • Mac OS • Ubuntu • Rasbian

Coursework

Graduate

Digital Audio Signal Processing
Real-time Signal Processing
Embedded System Design
Control of Robots
Modern Radar Tracking

Undergraduate

Electronic Circuit Design
Object Oriented Programming
Data Structures
Micro controllers and processors

Presentations

Guitar Distortion using VST plugins

shortlisted for final round of International Student Design competition at Audio Engineering Society Convention, New York City, 2015.

Experience

Euphony Inc. | Speech Processing Software Developer intern

Sep 2015 - Dec 2015 | Syracuse, NY

- Developed a prototype for assisting people with speech disorders like Dysprosody.
- Created MATLAB System objects for implementing preprocessing techniques on recorded voice samples.
- Worked with mobile and web application developers to transform the prototype into a working model.

The MathWorks Inc. | DSP System Toolbox Development intern

May 2015 - Aug 2015 | Natick, MA

- Developed and tested demo examples for beta release of a new upcoming System Toolbox.
- Worked closely with user experience specialist to evaluate feedback from usability sessions on various features in the System Toolbox.
- Created System objects and Simulink blocks for echo, flanger, chorus effects and delay filter. Programmed in C++ and MATLAB to support interpreted execution and code-gen in Simulink.

Projects

Distortion effect VST Plugin in C++ using RackAFX Oct 2015

Created VST audio plugins for guitar distortion effect, by digitally modeling the analog circuit. Programmed the plugin in C++ by utilizing open source VST plugin API, RackAFX and Visual Studio in Windows platform. Tested the plugin with in-built RackAFX frequency analyzers and in several Digital Audio Workstations.

Short Time Fourier Transform of speech signal in C Sep 2014

Designed an optimized STFT algorithm for analyzing the spectral behavior of speech signal. Applied strong programming skills in C as well as improvised the application by allowing users to choose window type, size and shifting length. Emphasized the representation of the STFT output by plotting time and frequency data.

Variable fractional delay System Object in MATLAB and C++ May 2015 – Aug 2015

Developed the algorithm for variable fractional delaying with feedback using linear interpolation technique and circular buffering. Coded in C++ (MEX) and MATLAB (Codegen) and optimized the System object to run at 32 samples per frame without dropping any samples.

Acoustic Echo Cancellation using NLMS in MATLAB Sep 2014

Engineered a prototype model for AEC using normalized least mean square adaptive filtering in MATLAB. Used dry voice signal as far end and echoed far end convoluted with another dry voice signal as near end signal. Implemented NLMS algorithm to update adaptive filter coefficient. Verified the functionality by comparing output and the near end signal.

Real-time compressor in audio DSP56300 using assembly language April – May 2014

Implemented the audio compressor algorithm, which comprises of RMS filtering, threshold detecting, attack and release mechanisms in MATLAB to check numeric accuracy and performance. Optimized the algorithm and coded it in PPC block of Motorola audio DSP56300 using assembly language. Evaluated the real-time performance of the process using DVD and microphone input and speaker output.

The COP Robot April – May 2015

Engineered an autonomous object-tracking robot that runs in open source computer vision tool OpenCV. Customized DFRobot Turtle 2WD mobile robot to design a robot with Raspberry Pi, Arduino and L293D bridge motor controller. Programmed the code in Python using OpenCV library for object detection and Arduino board serial communication.