

# Digital Media Processing Specialization **is Cool !!**

See what you can do with the knowledge of DMP...



# AudioBeam System (ABS)

- ABS is a directional sound delivery system that can project sound to a targeted spot.
- With this system, we are able to project private message to the targeted listener.
- Students build a portable system shown below. They program the digital algorithm in the FPGA and interface to a power amplifier, before driving the ultrasonic emitter.
- Students need to know **audio signal processing**, **basic DSP**, and **acoustical wave** properties before they can build this project,



# JPEG compliance Image Coder

- Students build a fully portable, battery-powered system that can serve as a platform to test the latest image compression technology.
- The DSP board is interfaced to a CCD camera and the captured image is displayed in the QVGA (320 by 240) LCD screen.
- Students devised a clever technique to reduce the size of image by more than 100 times and yet perceptually lossless!
- Have now extended this project for motion JPEG to capture and compress motion images (video)
- Students need knowledge of **image processing**, and **embedded system**.



**JPEG Compression (115 times)**



JPEG Compression

**Proposed (115 times)**



**JPEG Compression (142 times)**

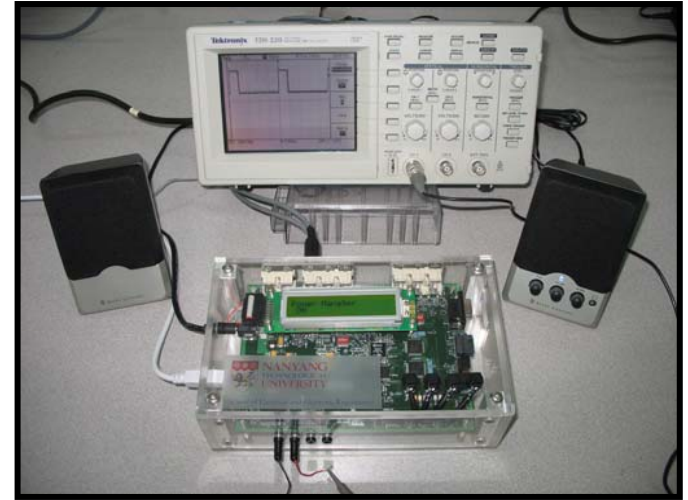


**Proposed (142 times)**



# MP3 Players with special audio effects

- A cool MP3 player is built by students.
- Students can store hundreds of music in the compact flash.
- Students program a full-fledge MP3 decoder that can also play special audio effects, like equalizer, 3D audio, bass enhancement, virtual surround, etc.
- Students need the knowledge in **audio signal processing** and **embedded system**



# Low Cost Antenna Array Processing Testbed

A low cost real-time antenna array test bed constructed in 1995/6. It is a narrowband system used for algorithm development in parallel C.



Antenna array

Receiver

Processing & Display unit

## Algorithm Development:

- DOA Estimation
- Array Beamforming
- Array Calibration



# Creative Award for the Power Conscious Software Implementation of Signal Processing Algorithms



**NANYANG**  
TECHNOLOGICAL  
UNIVERSITY

## 3rd prize for the Perceptual Subband DCT JPEG Image Coding System



**NANYANG**  
TECHNOLOGICAL  
UNIVERSITY

All these projects were carried out by undergraduates taking the DMP specialization. They have an edge...

See what you can dream of with the power of DMP...

