OSC and Gesture features of CNMAT's Connectivity Processor
Rimas Avizienis and Adrian Freed

Center for New Music and Audio Technologies (CNMAT)

{adrian,rimas}@cnmat.berkeley.edu
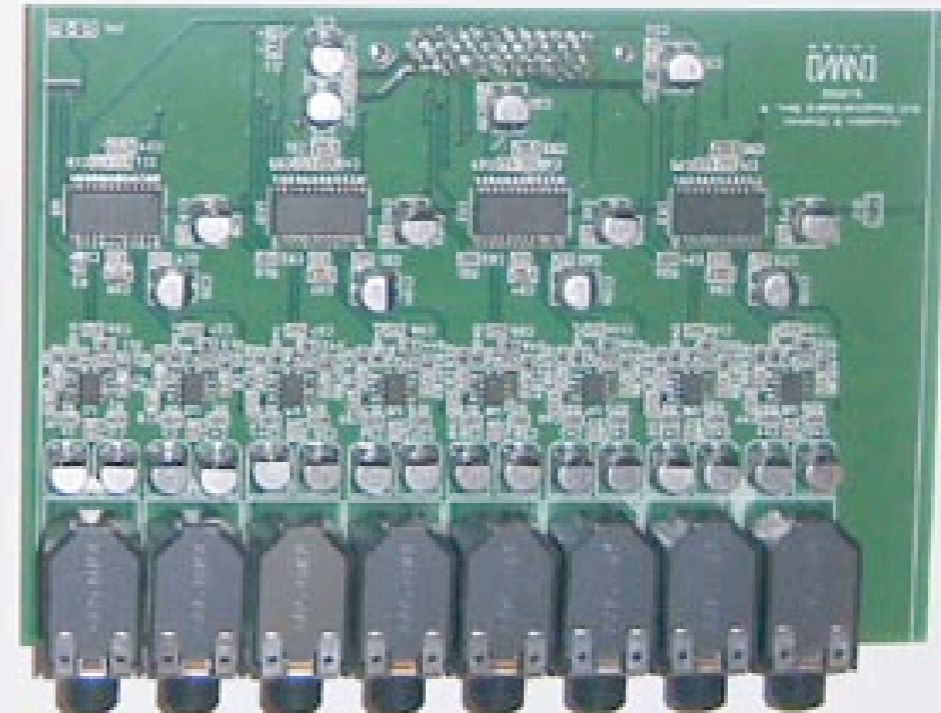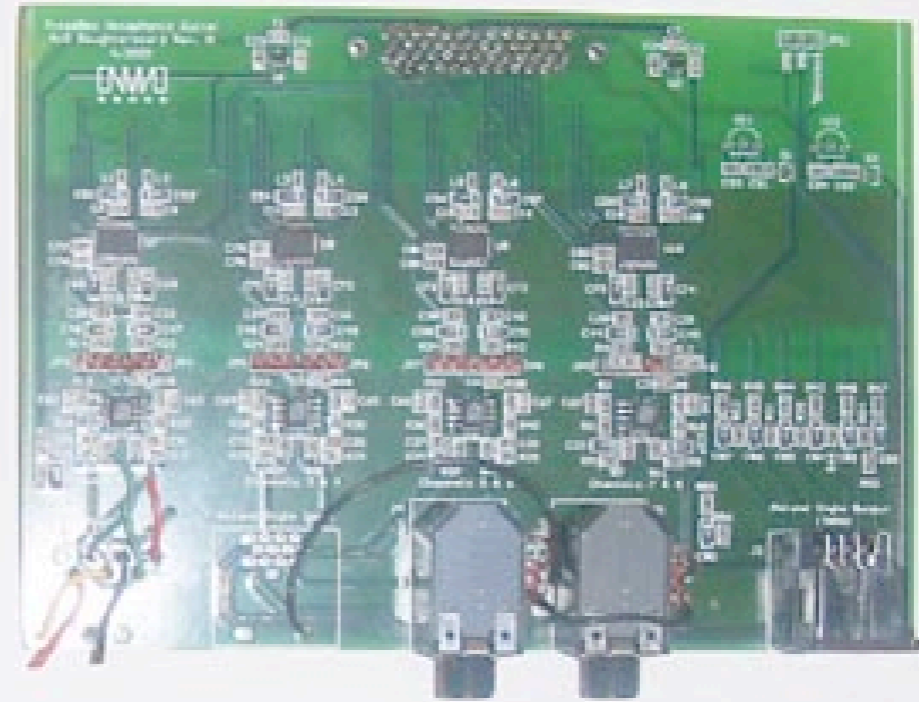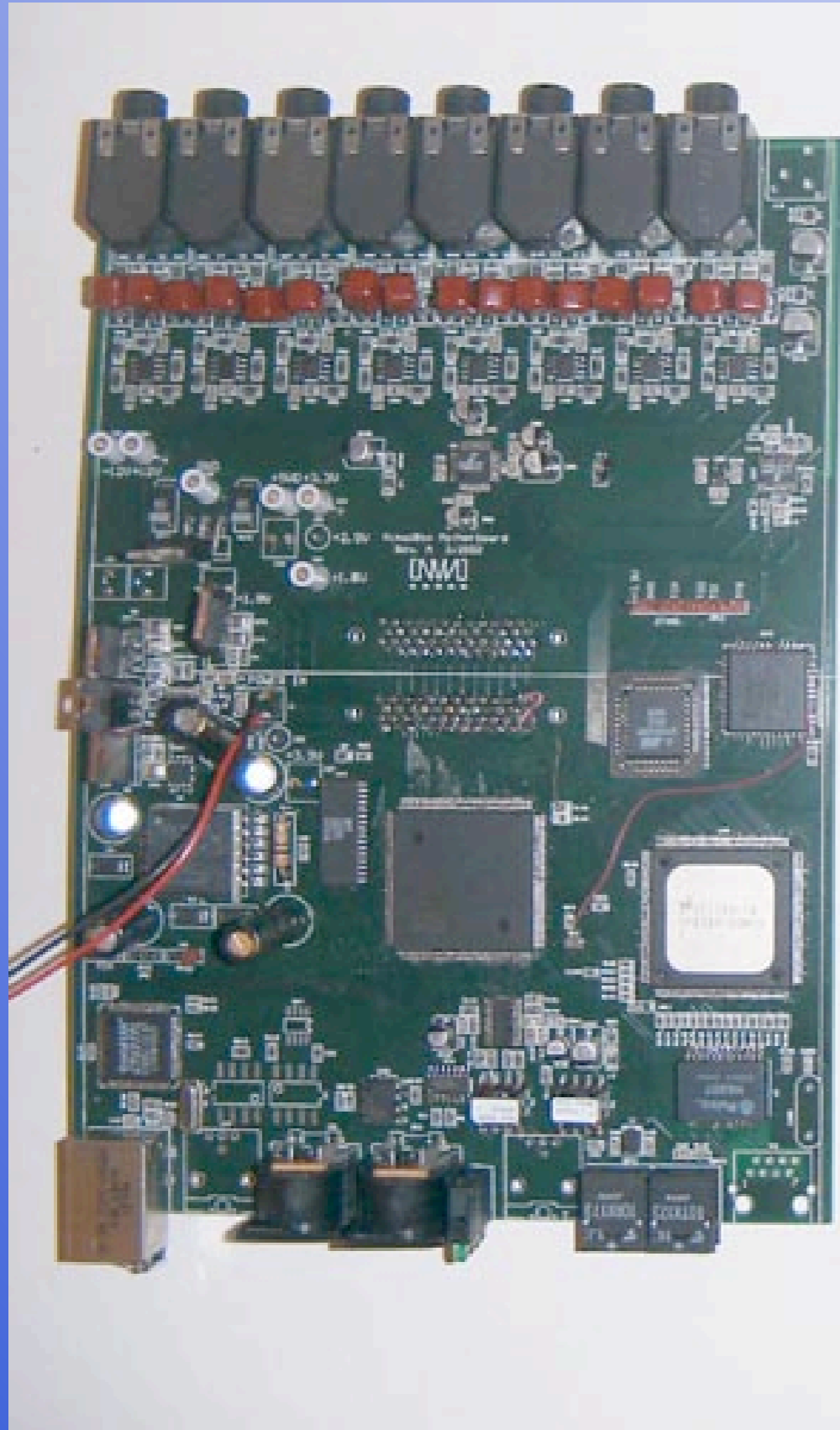
UC Berkeley, Department of Music
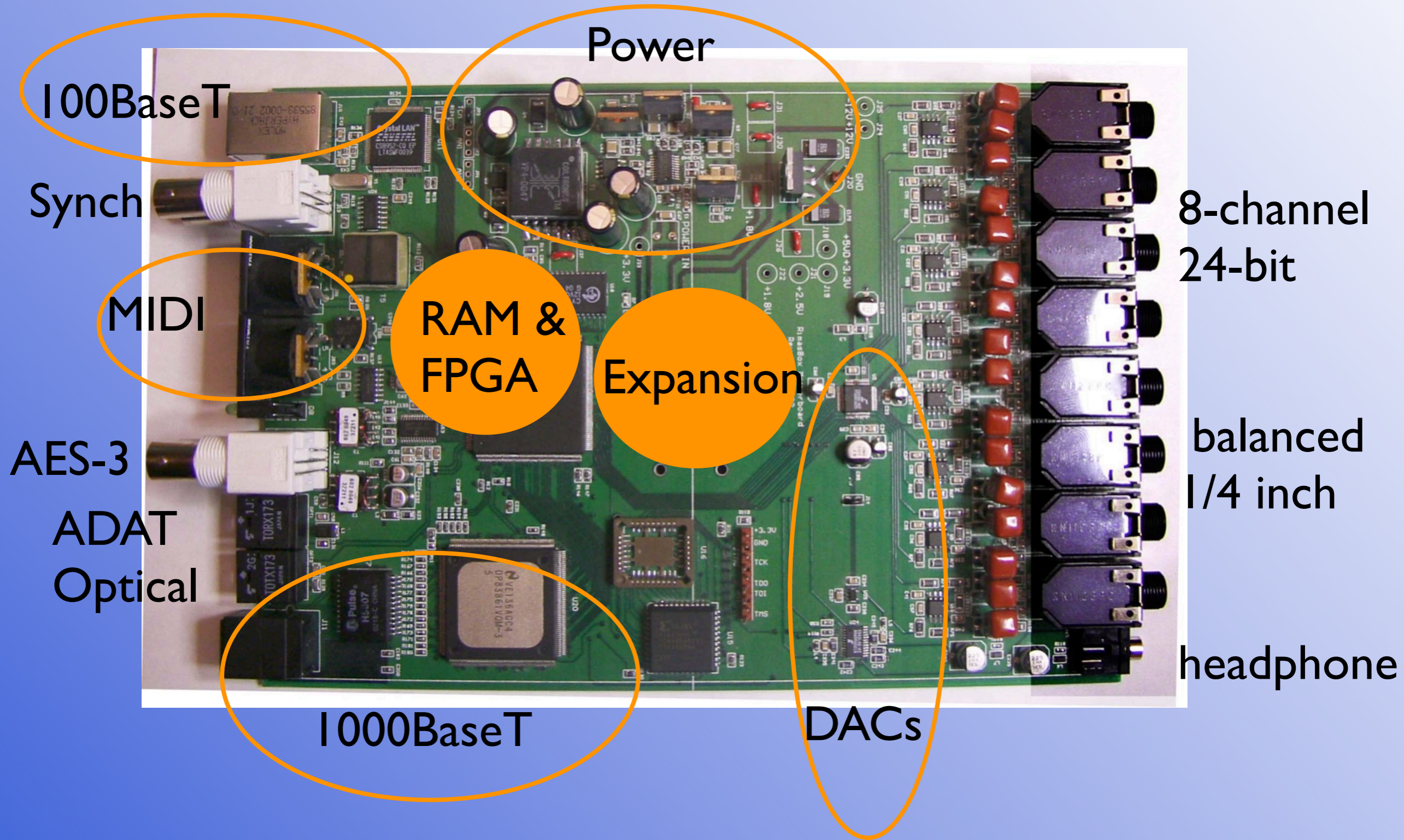
1750 Arch St., Berkeley, CA 94709

(510) 643-9990 tel

(510) 642-7918 fax

www.cnmat.berkeley.edu

Modular System

CNMAT Connectivity Processor

100BaseT

Synch

MIDI

AES-3

ADAT

Optical
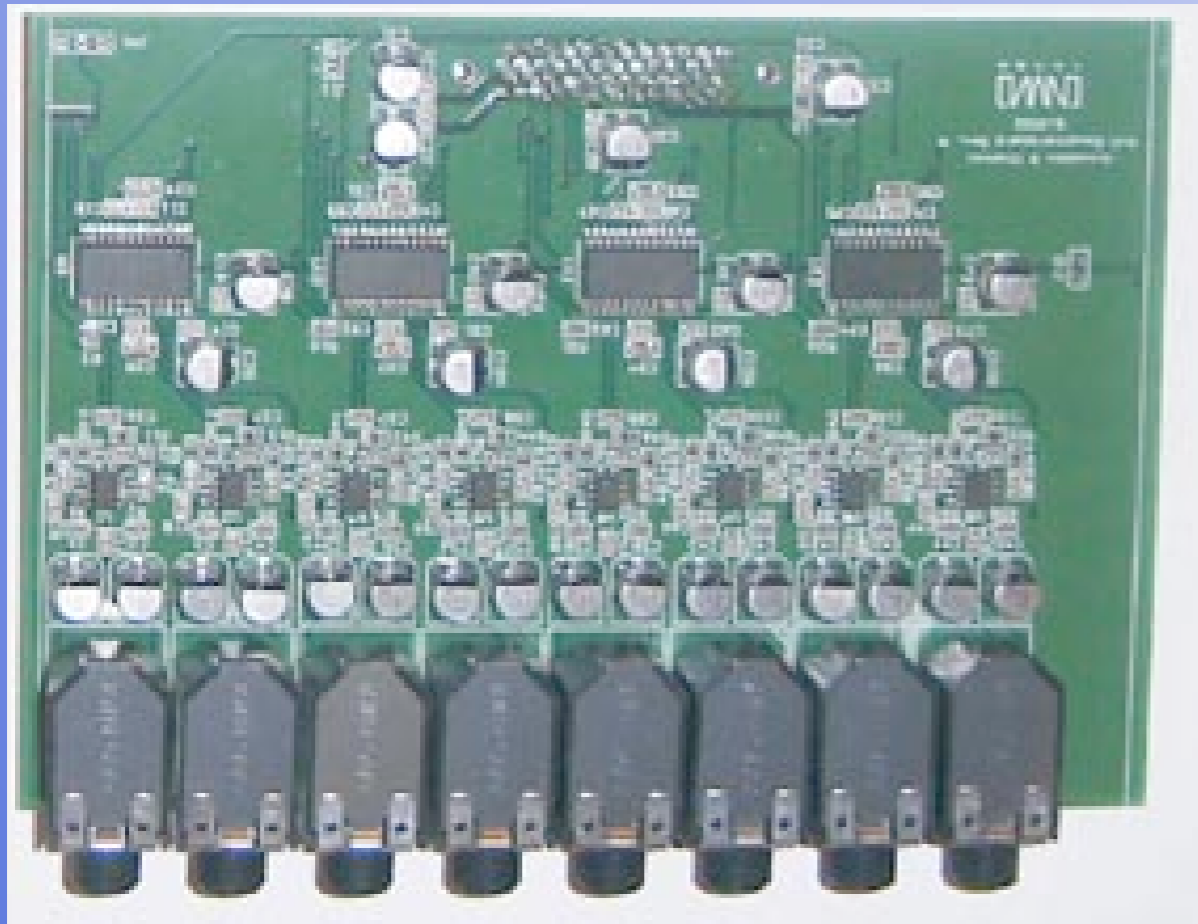
1000BaseT

Power

RAM & FPGA

Expansion
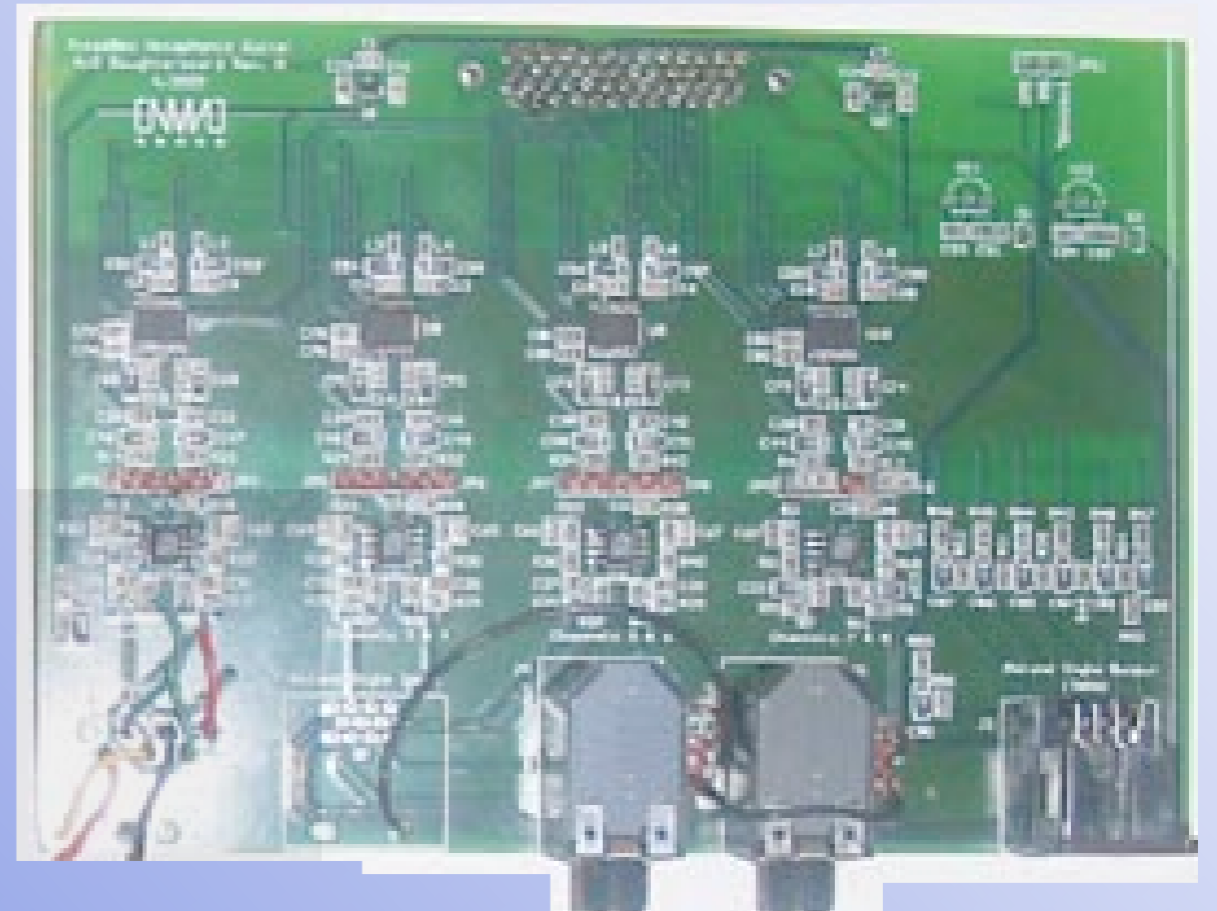
DACs

8-channel 24-bit

balanced 1/4 inch

headphone

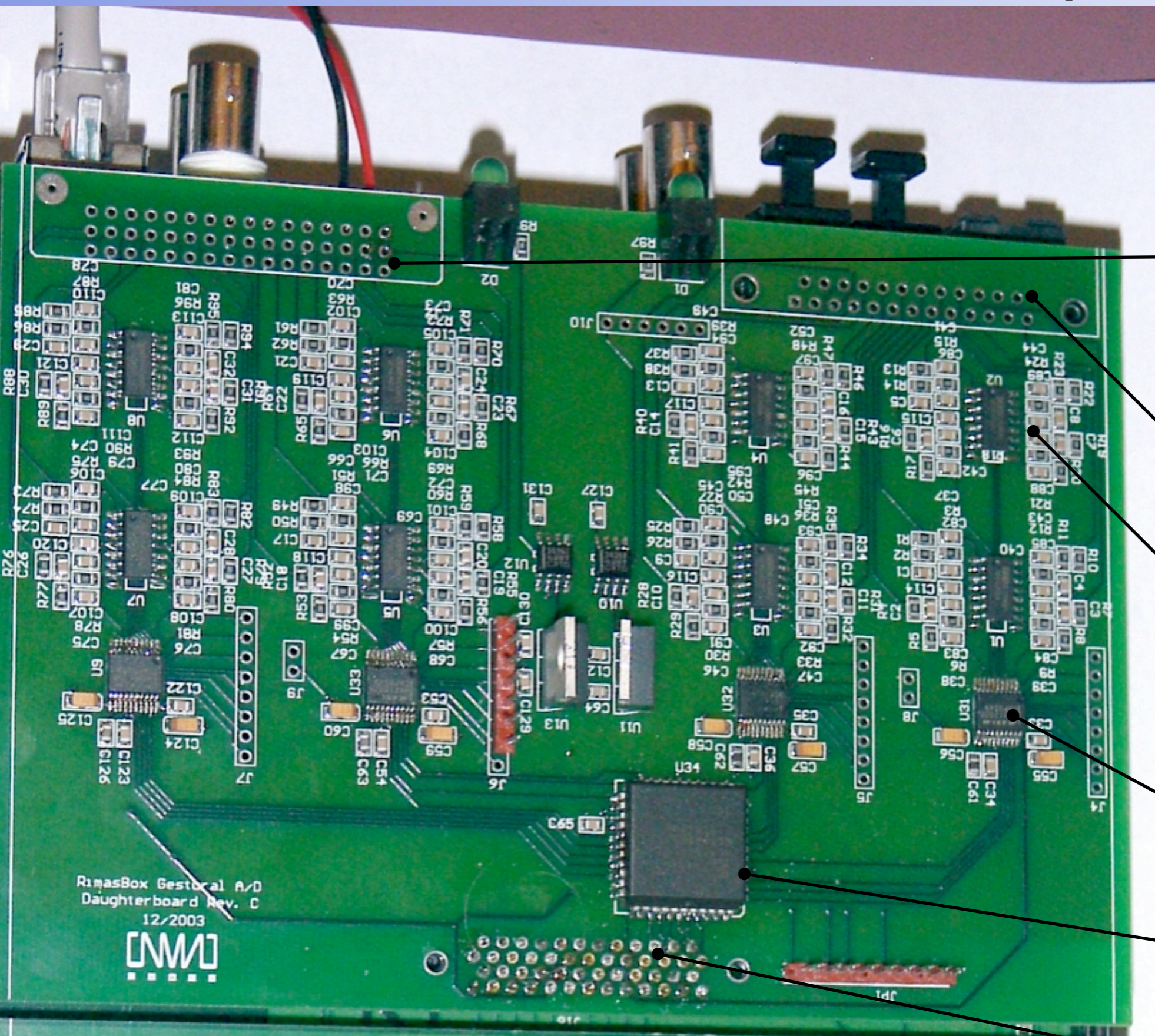# Analog Audio Input Modules

8-channel 24-bit
balanced
1/4inch

Roland DIN-13 and
RMC 9-pin DIN hex
guitar + 2 1/4inch pickup

32-channel Gesture/Sensor Input Board

DIN Analog

DB25 Analog

3rd-order filter

12-bit A/D

Mux

Connector

8-channel A/D Slice
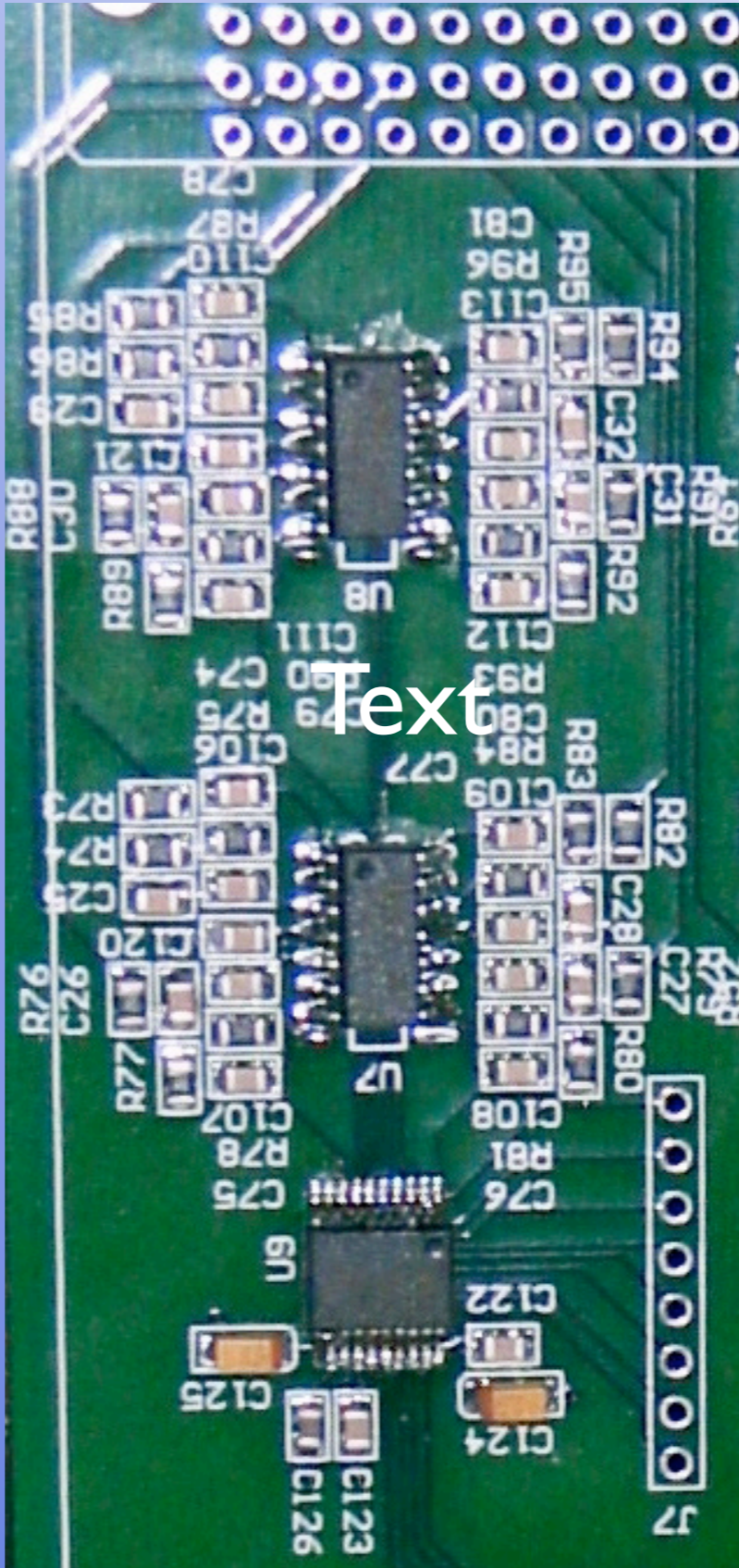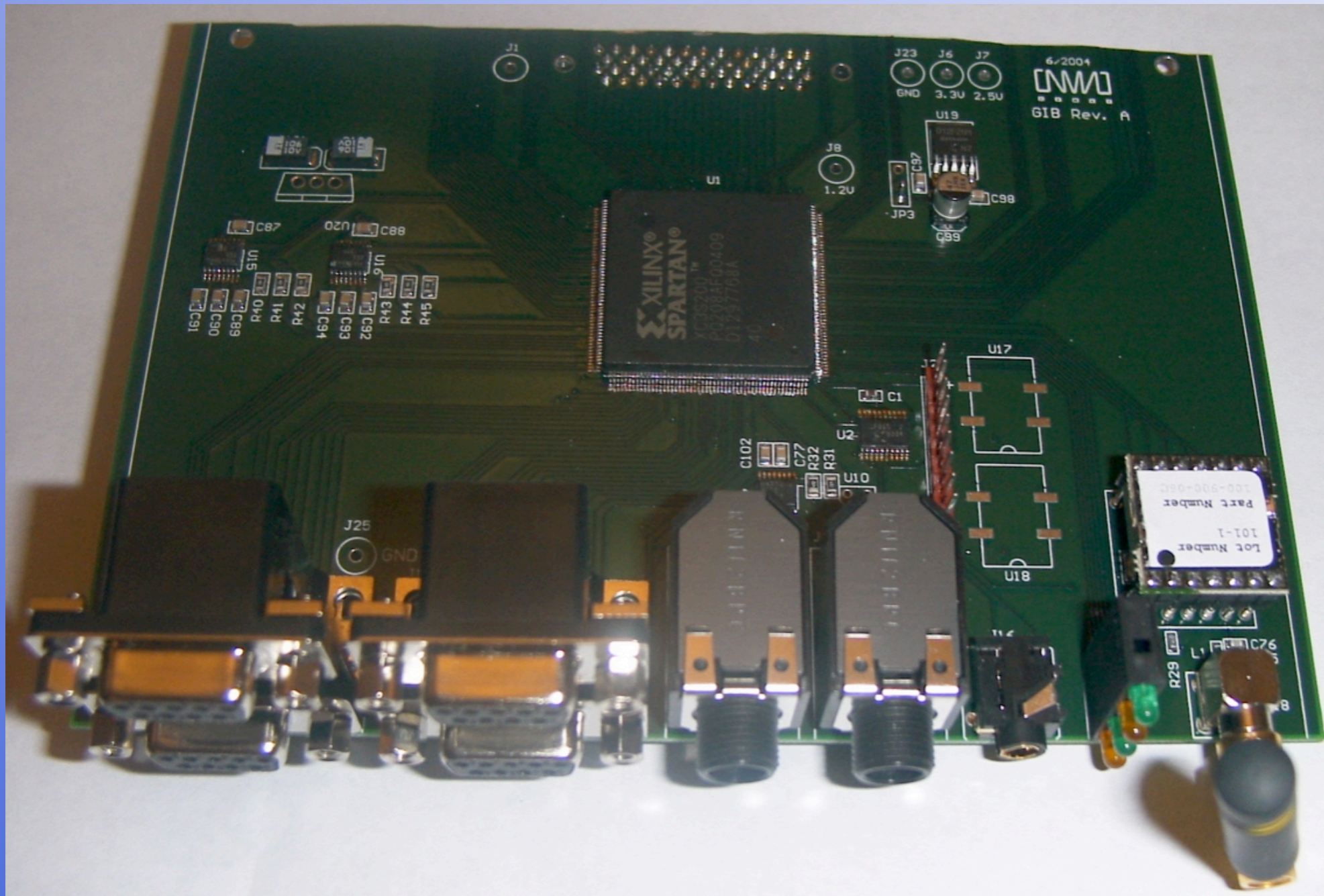
Input Protection
Anti-aliasing
Noise Reduction

New, Versatile Gesture Board

Spartan III FPGA: 400K gates, RAM and 16 fast multipliers

Wireless

4 digital sensor network ports   2 Pedal   2 channel analog 1/8inch 4pin

OSC support in OS/X

- Modified OS/X ethernet driver primary interrupt code to :

  - upsamples gesture data to audio rate and streams as CoreAudio channels

  - routes MIDI to CoreMIDI

  - buffers gesture data as OSC bundle messages readable from /dev/OSC
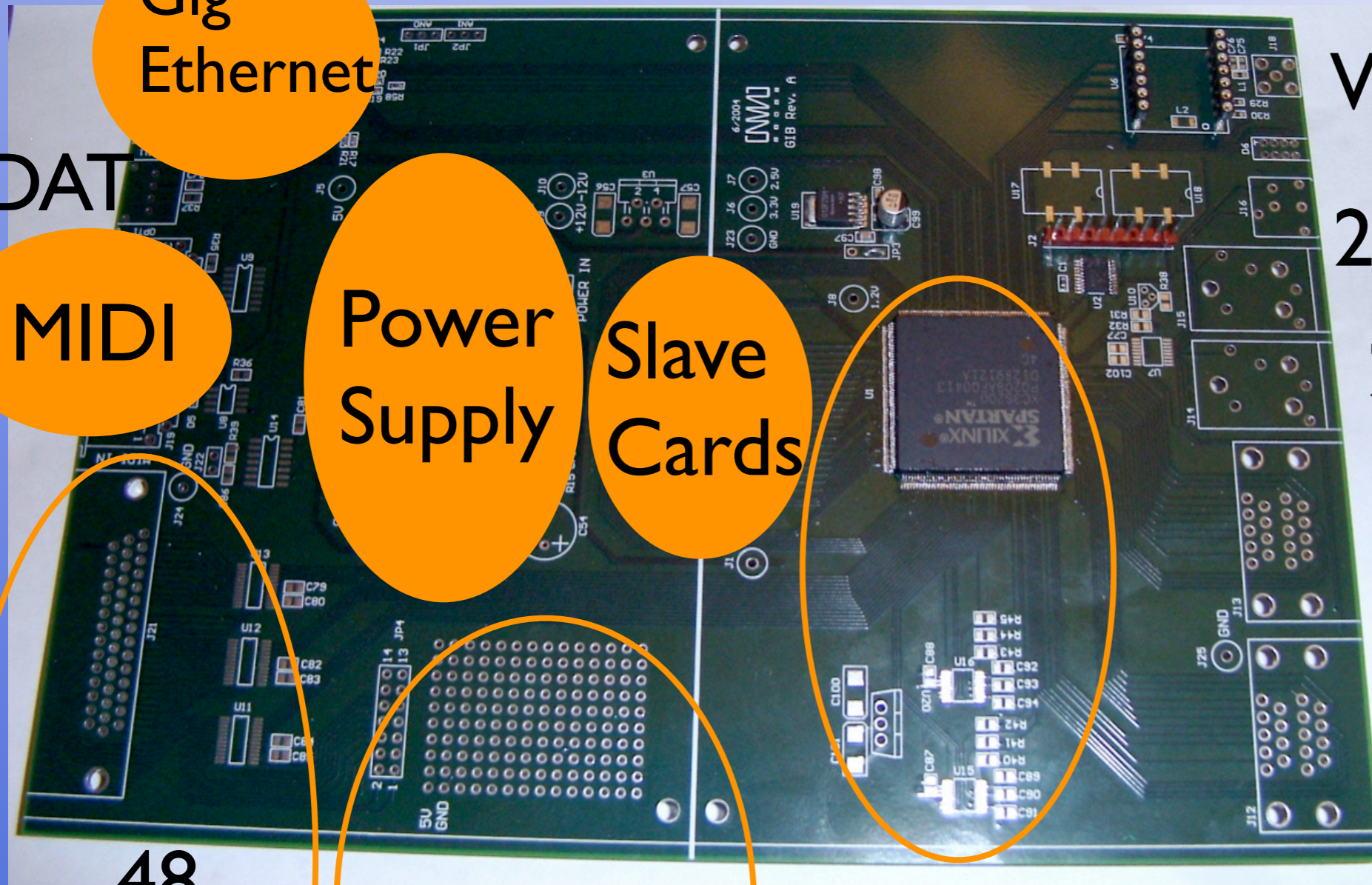
OS/X Thread Priority

- Direct (hardware) interrupts

- Timers and page-out

- Real-time (multimedia, i.e. CoreAudio)

- Indirect interrupts (drivers)

- Window Manager, TCP/IP

- User Threads

Ongoing Work

- Extensions to hundreds of audio channels

- Broadcast OSC using second ethernet port

- New more gesture-oriented connectivity processor

New Connectivity Processor

Gig Ethernet

ADAT

MIDI

Power Supply

Slave Cards

Wireless

2 channel analog

2 Pedal

4 digital sensor network ports

48 channels A/D

Prototype area

Spartan III
FPGA: 400K gates, RAM and 16 fast multipliers

Further Information on CNMAT Connectivity Processor

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