

Massachusetts Institute of Technology
Department of Electrical Engineering and Computer Science

6.111 - Introductory Digital Systems Laboratory

Project Suggestions

In past years, a great variety of projects have been successfully completed. The following is a list of some of these completed final project reports.

All the project reports listed below are on file . You may sign out any one for an overnight loan or for reading in the lab. You are free to make a copy of part or all of a report if you want to keep it for a longer time. The best and most interesting of your project reports will be used to augment this list for future terms.

It is often more satisfying to have projects which do something in addition to blinking LEDs. Examples are audio output, TV monitors, or VDT terminal displays.

Be careful - most unsuccessful projects were too complex. We will help you to size your project appropriately.

- Computer/Editor/Graphics

94-8 Video Editing in Real Time

94-11 OSCAR, Optical Character Recognition Machine

94-16 Digital Oscilloscope

95-7 A Digital Parrot

96-3 Visually Controlled Pointer Device

96-7 An Object Tracker

96-15 A Personal Location and Navigation System at MIT

97-4 Stretch

97-9 Digital Postscript Imager

2000-2

The Design and Implementation of a Digital Oscilloscope

2000-3

6.111 Digital Pet Student

2000-4

Brushfire: A Hardware Platform for Running a Modern Operating System

2000-8

Design and Implementation of a General Purpose Computer based on the 6.004 Beta Architecture

2001-15

JPEG Decompression

- Games

90-1

Video Jigsaw
90-5
MEMRUC - The Game
90-7
Digital Othello
90-8
Connect Four Machine
90-10
Master Mind - A Video Game
92-9
Nerd Kit Asteroids
93-16
Tetris
94-18
The 6.111 Pinball Machine
95-1
Virtual Kaboom
95-6
B-n-B Space Invaders
96-4
Battleship
96-6
The Pinball Project
97-1
The Amazing Maze
97-7
Ninja Master Fighting Game
98-1
Core Wars
98-9
Main Battle Tank
98-12
Sign Language Hangman
98-16
Automated Foosball
99-9
Electronic Talking Battleship
99-11
Pac-Man
99-14
Wireless Marksmanship Trainer
99-17
Air Connect Four
99-21
3-D Maze Navigation
2000-5

Stoplight Pitch Nintendo Shifting Controller Entertainment System
2001-3
CTF.111 (Capture the Flag)
2001-5
Super Mario Brothers
2001-8
Monkey Box: an 8-bit Video Game platform
2001-13
Mole Dance Revolution - A 6.111 Interactive Workout

- Music/Audio

90-3
A Digital Music Synthesizer
90-4
A MIDI Controlled Digital Music Synthesizer [MIDI]
90-12
The Magic Music Machine
90-14
 : The Musical Project
90-15
The MIDI Transceiver
91-1
Air Piano
91-4
Elevator Music
91-7
Optical Music Recognition
92-4
Playing the sax, or whatever you want
93-4
Programmable Multi-Channel Sound Synthesizer
94-5
The Digital DJ
94-9
The Multi-Mode Windowing Subtitling Machine
94-10
Super Sampling Sound Sequencer
94-13
The Digital Graphic Equalizer
95-4
Self-calibrating Audio Equalizer
95-13
The Accompanist
95-14
Bach's Napkin

96-11
BPM 2001: A Digital Odyssey
97-2
The Virtual Conductor
98-6
Digital Surround Sound Processor
98-17
Humanoid Robot Ear Sound Localization
99-22
Digital Air Band
2001-7
Programmable Symphony
2001-9
The Digital DJ
2001-14
Rhythm Master
2002-1
Music Capturing, Editing, and Playback Unit

- Video

90-9
Video House of Mirrors
90-16
Video Jigsaw
91-5
The MCG-30 Raster Image Processor
91-6
Smart Vision
92-1
The \$6000 Answer to AT&T's \$1500 Videophone
92-5
Video Tracker
92-8
Digital Darkroom
93-5
Video Edge Detection System
93-9
Digital Video Mixing Board
93-10
Air Sketcher
93-11
Killer Crayons!
93-15
Recursive Picture Manipulation
94-2

Digital Poisson Engine
94-7
Video ``Go"
94-12
Video Chromakeying
95-11
Picture in Picture
95-12
Intelligent Picture-in-Picture Video
96-1
Design and Implementation of a PONG Game
96-2
Relatime Video Motion Detection
96-5
The Digital Conductor
96-8
Video Phone
96-14
Real Time Sky Navigation Aid
98-3
Downtown Traffic Control Simulator
98-4
3-D Vector Graphics Engine
98-5
The Speed Detector
98-10
Design and Implementation of a Target Finding and Termination system
98-14
GEORDI: Generalized Enhancement of Real-time Digital Imagery
98-18
S.I.M.A.E.D. Still Image Magnification and Enhancement Device
99-10
RC4 Video Encryption
99-13
Touchscreen Phone
99-20
A Closed-Caption Decoder
2001-6
Mr. Etch-a-Sketch
2001-2
A Digital Video Security System
2001-10
Visual Target Tracking System

- Speech and Communications

- 93-3
Telephone Switching System with Voicemail
- 93-17
Speech Synthesis Using Linear Predictive Coding
- 93-18
A Single Phone Line Demultiplexor
- 95-2
Time Multiplexed Single Line Communication System
- 96-12
Interactive Tic-Tac-Toe with Speech Recognition
- 97-5
Robotic Dog with Speech Control
- 98-2
A Flexible Dual Tone Multi Frequency Filter
- 98-11
A Voice Based Data Acquisition System
- 98-21
Home Security System with Telephone Interface
- 2001-4
Magnetic Card Reader
- 2001-16
Smooth Operator: The 6.111 Morse code Interpreter
- Robotics
 - 90-2
2-D Robot Arm Solving the Shuttle Puzzle Mechanically
 - 92-6
Robothello
 - 94-6
Seeing, Object-collecting Robot
 - 96-13
The Digital Duck Terminator
 - 98-15
Robot See, Robot do
 - 98-20
To Mars and Beyond
 - 99-12
Bipedal Walking Robot
 - 2000-1
Theseus
 - 2000-6
Writing Robot
 - 2000-7
OJ Rover
 - 2001-11

Writing Robot
2002-2
The ``A-Mazing" Robot *Starring Hank the Tank

- Miscellaneous

87-1
A Real Time Spectrum Analyzer with FFT
87-12
The Life Machine
90-13
Super Paint
92-2
ASPIRE Audio Signal Processor Ideally Realm Exclusive
92-3
Digital Patchbay
93-2
MAP (Map Algorithm Processing)
93-6
6.111 Lab 3 Sights and Sounds Unlimited: A Laser Light Show
94-4
The Conniption Machine
94-15
Dream Machine
94-17
Elevator Control System
93-7
Laser Diagnosis System
95-3
Attitude Control System for a Small Satellite
95-5
Infrared Security System
95-8
Chaotic Scrambler/Descrambler
96-9
Internet Message Board
98-13
Sonar with Pulse Compression
99-15
Digital Pet Parrot
99-16
Digital Billboard
99-18
Barrier-clearing Video Controlled Electronic Target-seeking Car
2001-12
Power Wheels: An Autonomous Driving Machine

2002-3
Automatic Autobahn