

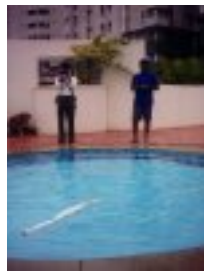
Submarine – Lafayette

(BE Degree Project)

We made a 1.34m GRP submarine capable of static diving and remotely controlled. It took totally 3 months to fix up all the parts and make it watertight. In the end, we tested it in a swimming pool to a depth of 4 feet and had good control of buoyancy as well as propulsion.



electrical assembly



pool test



getting ready

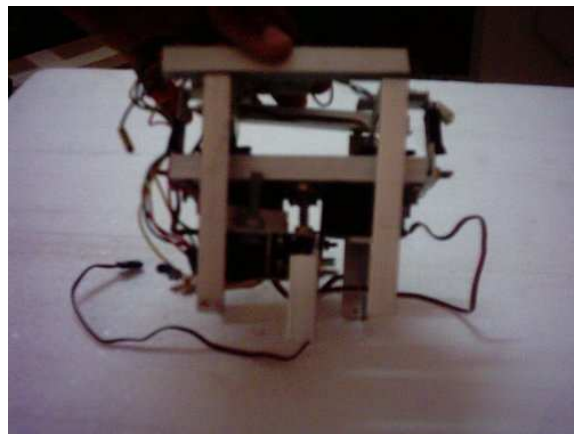
Scope of work: Mechanical assembly, electrical routing, trimming and diving. Design for electronics and software enhancements for the **Delphi Model** (overleaf)

See videos and pictures at <http://www.cselian.com/delphi>

Robotics – Micromouse

(Techfest – IIT Bombay)

Micromouse was the robot we built, capable of navigating a maze and reaching its centre. My teammate isolated a PIC circuit he thought suitable and undertook to have the programming done and the body designed and made.



Scope of MY work:

PCB fabrication and assembly. The smaller aluminum body that we finally used was **re-built overnight** by me, working nonstop over a period of 7 hours.

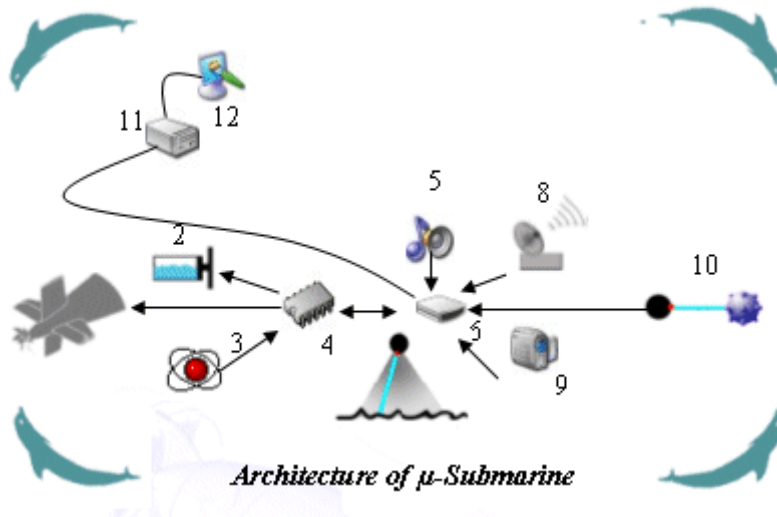
<http://www.cselian.com/electronics/micromouse.html>

Submarine – Delphi (Windows Embedded Student Challenge)

A computer-controlled **multi-utility submarine** capable of the following:

- GPS Navigation with on-board instrumentation
- Ultrasound scanning for floor mapping
- Video & Audio (sound recognition - Matlab)

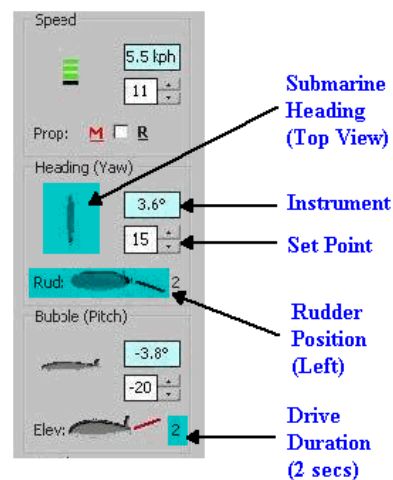
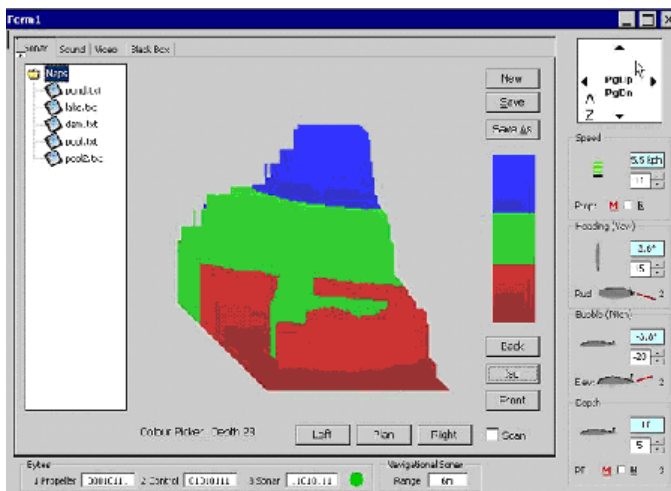
Electronics



1. Rudder, Elevator, Propeller
2. Piston Tank
3. Instruments (Depth / Gyroscope)
4. Micro-controller
5. Piezo-electric Hydrophone
6. Modem (RF)
7. Scanning SONAR
8. GPS Receiver
9. USB Camera
10. Forward SONAR
11. e-Box
12. Display

Scope of work: μ C based system, telemetering, ultrasonic ranging, power drives.

Software



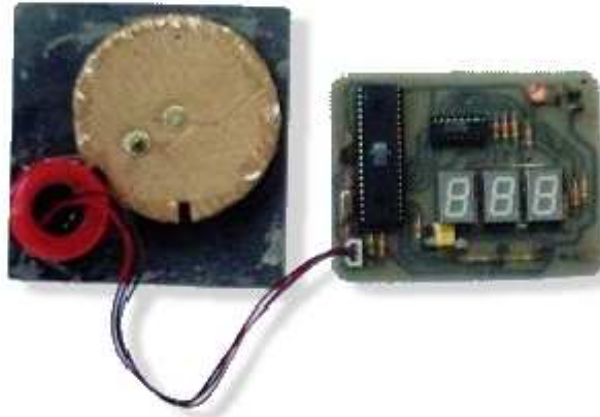
Scope of Development: Black Box - Setting Course for Navigation (Auto Pilot) - Simulating Instruments - Rendering Isometric Views of mapped sea floors - Using Notch Filters to isolate and identify sounds - a camera (USB) for video input & stills.

<http://www.cselian.com/electronics/wesc.html>

Microcontrollers (8051):

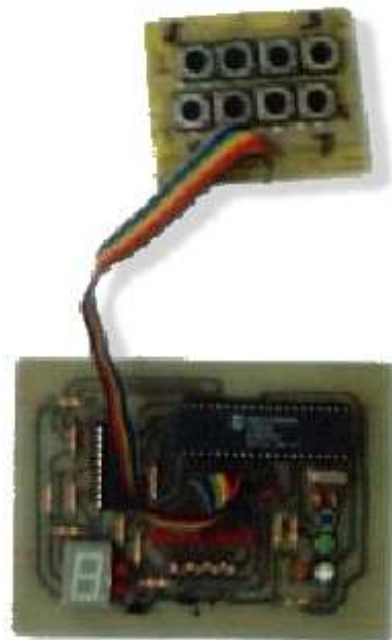
Energy Meter:

- 3 digit multiplexed output
- Opto-coupler as input.
- Jumper setting to display rate.
- Rate calculation on an incremental slab basis.
- ALP uses recursive algorithm for addition.



Buzzer:

- To be used in a Quiz for the "Buzzer Round"
- Max. of 8 contestants
- Stores sequence in which teams press their buttons.
- Can scroll through the list of 'pressed' teams.
- Polling of port & masking with already pressed teams.
- Once winner is determined, reset for next question



Scope of work:

- Assembly Level Programming.
- μ C based Circuit Design
- PCB Design (electronic CAD)
- PCB Fabrication + Assembly

Schematics and ALPs: <http://www.cselian.com/electronics/index.html>