

Our goal is to implement a navigation system that ties in with our vision of a completely automated system yet allows integration with the current commuting situation where cars are still manually driven. We demonstrate this with a mock-up of a system of roads in which the traffic conditions are monitored real time. The user of the system is then able to choose a destination and the mode: shortest time or cheapest. With the user options, the user is given directions from his current position till he reaches his final destination.

Our system comprises of two sub systems.



The Traffic Controller Subsystem

Congestion Detection, Position Detection, Traffic light & ERP

- Stores map and real time traffic congestion for all roads
- Infra-red sensors placed at entry and exit points of every road which updates counters in PIC
- 9 bi-directional roads resulting in a single data line and 6-36 address line scheme
- Addresses are polled continuously and each sensor updates congestion count on that path accordingly
- 18 metal plate switches on exit of every road to allow navigation subsystem to know current position of car
- Uses 1 data line and 5-18 address line scheme
- At exit of every road, path is recalculated based on current position and destination
- 18 traffic lights with 3 at every junction and ERP gantries at 2 road entries to simulate real-world traffic conditions and to show the effectiveness of algorithm



The Navigation Subsystem

Wireless system, Dynamic best path calculation algorithm based on user inputs, LCD updates

- Represents a device which would be placed on the dashboard of a car
- Allows for user to input initial position and destination as well as mode of navigation; cheapest or quickest
- Wireless communication between traffic controller subsystem which allows for dynamic best path calculation
- Freedom for user to change destination or mode during travel