



Engineering, Design & Innovation

‘Instinctus’

Traffic Density based Smart Signaling System

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Instinctus

Smart traffic signal at intersection

Congestion at intersection is the bane of urban existence. With Instinctus, traffic signals make switching decisions based on vehicular density, measured using underground inductive loops, optimizing signal cycles.

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Design Statement

- ▶ How might we automate the traffic signal lights based on the road traffic density?

Motivation

- ▶ Increasing number of vehicles on the roads resulting in traffic congestion.
- ▶ Failure of conventional traffic signals during rush hours.
- ▶ A genuine traffic jam issue being faced by every individual who commute on regular basis.

Engineering Design Statement

Objective

“To design an automated traffic signal system that switches based on the maximum road traffic density”

Constraints

- (i) The proposed system should be able to get installed in the existing traffic signals.**
- (ii) The signal light switching algorithm of the proposed system should be applicable to all road intersections.**

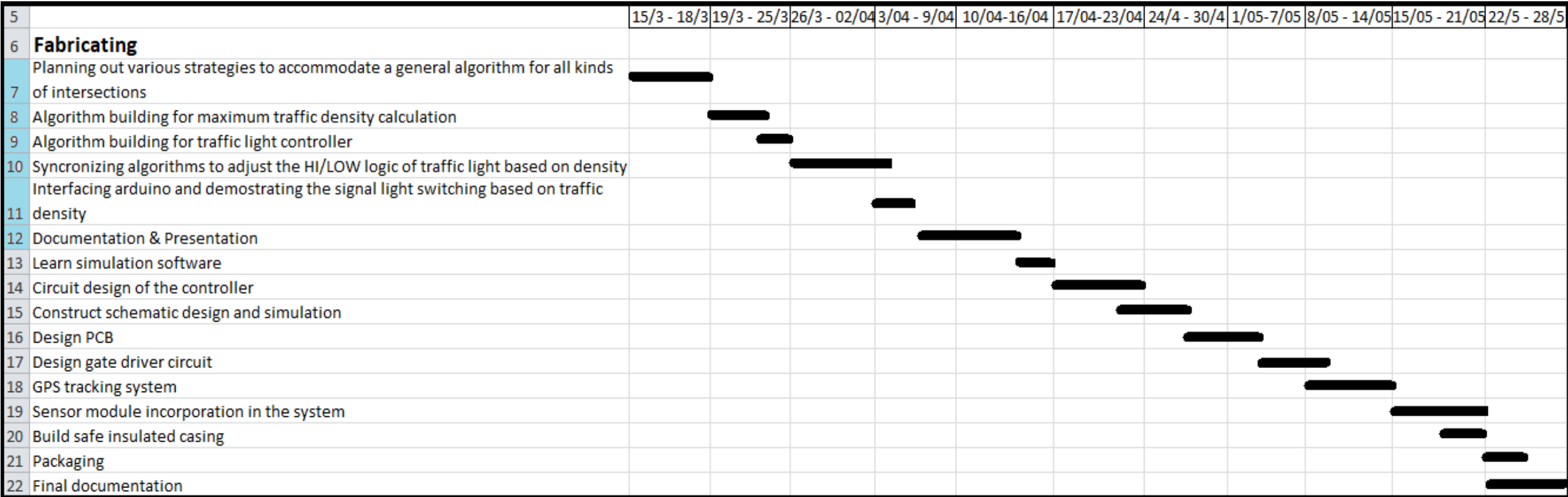
Engineering Design Statement (Cntd...)

Functions

- (i) Signal switching based on the maximum road traffic density.
- (ii) Co-ordinated signal switching at road intersections.

The Executed Solution

Gantt Chart



Zoomed-In View of the Planned Tasks

6	Fabricating
7	Planning out various strategies to accommodate a general algorithm for all kinds of intersections
8	Algorithm building for maximum traffic density calculation
9	Algorithm building for traffic light controller
10	Synchronizing algorithms to adjust the HI/LOW logic of traffic light based on density
11	Interfacing arduino and demonstrating the signal light switching based on traffic density
12	Documentation & Presentation

Prototype

9



Successes, Limitations & Failures

- ▶ **Successful testing of the prototype for co-ordinated signal switching based on maximum road traffic density.**
- ▶ **Proof of concept was tested and verified but other subsystems were not build due to time constraints.**
- ▶ **Time delay in traffic density calculation would be fixed and un-changeable regardless of the intersection.**

Way Forward

- ▶ **Potential contacting with the authorities concerned to test this prototype at any intersection.**
- ▶ **Assembling an accurate inductive-loop based traffic density calculator.**

ASK?

**ART OF SEEKING
KNOWLEDGE!**