PhD Thesis

entitled

THESIS TITLE

Submitted in partial fulfillment

for

the award of the degree of

Doctor of Philosophy

by

Mr. Your Name
(DYYCOXXX)

Supervisor
Dr. Supervisor's Name

October, 2013

Department of Computer Engineering

SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY, SURAT

Declaration

I hereby declare that the work being presented in this thesis entitled "Thesis Title" by me i.e. Mr. Your Name, bearing Roll No: DYYCOXXX and submitted to the Computer Engineering Department at Sardar Vallabhbhai National Institute of Technology, Surat; is an authentic record of my own work carried out during the period 2009 – 2014 under the supervision of Dr. Supervisor's Name.

Neither the source code there in, nor the content of the seminar report have been copied or downloaded from any other source. I understand that my result grades would be revoked if later it is found to be so.

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Approval Sheet

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Acknowledgements

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Abstract

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Table of Contents

List of Figures

List of Tables

List of Acronyms

WSN Wireless Sensor Network

MDS Multi-Dimensional scaling

CMDS Classical Multi-Dimensional Scaling

NMDS Non-metric Multi-Dimensional Scaling

WMDS Weighted Multi-Dimensional Scaling

WNMDS Weighted Non-metric Multi-Dimensional Scaling

RSSI Received Signal Strength

ToA Time of Arrival

AoA Angle of Arrival

TDoA Time Difference of Arrival

KF Kalman Filter

EKF Extended Kalman Filter

PF Particle Filter

UKF Unscented Kalman Filter

SVD Singular Value Decomposition

WSHAN Wireless Sensor Hole Aware Network

WSHUN Wireless Sensor Hole Unaware Network

CH Cluster Head

NA Nystrom Approximation

RMSE Root Mean Square Error

List of Symbols

K_t Kalman Gain

x_t State Vector

P_t Updated Estimate Covariance

H_t Observation Model

F_t State Transition Model

B_t Control Input Model

u_t Control Input

w_t Process Noise

Q_t Covariance of the process noise

S_t Innovation Covariance

R_t Covariance of the observation noise

E Expectation

Z_t Observation model

$p(v_t)$ pdf of process noise

$p(n_t)$ pdf of observation

δ Dirac Delta function

$\tilde{y}_t$ Innovation Residual

$\tilde{x}_{t|t-1}$ Predicted State Estimate

$\tilde{y}_t$ Innovation Residual

$\tilde{w}_t$ Weights Normalized

$\hat{x}_{t-1|t-1}$ A priory state estimate

$f(.)$ Nonlinear state transition function

$h(.)$ Nonlinear output transition function

$\mathcal{N}$ Gaussian Normal density function

N Number of nodes in the network

n Number of anchors in the network

Chapter 1

Introduction

Your first chapter. Go on and place some figures as given below.

(a) something here

(b) without border

Figure 1.1: The caption is here. I can refer to the subfigures (a) and (b). In case the subcaption-number i.e. (a) is not to be displayed above, then do not use [ ] in the subfigure command.

I can also refer to the sub-equations using 1.1(a) and 1.1(b) in figure 1.1. Nothing to say about the references. You could refer this way [1–3] or this way Akyildiz et al. [4]. The citet command is possible due to the "natbib" package and "IEEETranN.bst" file.

1.1   First Section

Lets move ahead with tables.

Table 1.1: My first table

Technique	H/W	Distance	Limitations
RSSI	No	Few Meters	Noise, Interference in range
ToA	Yes	Few Cms	Nodes synchronization
TDoA	Ultrasound Txr	Few Meters	Maximum distance of work
AoA	Set of receivers	few degrees	Work on small sensor nodes

I can always refer this table 1.1 using its label. We can include the equations as well. Both environments viz. begin{equation} – end{equation} and begin{eqnarray} – end{eqnarray} are available. I personally prefer the later one. An example is given below in equation 1.1.

$$x(t) = \begin{cases} 0, & \text{if } t < 0, \\ 1, & \text{otherwise.} \end{cases} \tag{1.1}$$

That's all from me. You may explore as much as you want.

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List of Publications

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