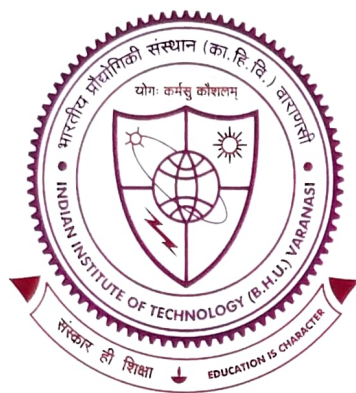


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# Event-triggered Predictive Control of Networked Control Systems with Output Transmission



Thesis submitted in the partial fulfillment for the  
Award of Degree

**Doctor of Philosophy**

By

*Haritha Mittapally*

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2024


To  
The  
Supreme Personality  
Lord Shiva  
and  
My Beloved Family

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# Nomenclature

## List of Greek and Roman Symbols

$\mathcal{R}$	Set of real numbers
$\mathcal{N}$	Set of positive numbers
$\mathcal{R}^*$	The set of all *-tuples of real numbers
$P$	Positive definite matrix
$\gamma_k$	Communication decision at $k^{\text{th}}$ instant
$\epsilon$	Scalar value ( $0 < \epsilon < 1$ ) to be chosen for ET

## Abbreviations

NCS	Networked Control System
MBPC	Model-based Predictive control
MPC	Model Predictive control
ET	Event-triggering
ETT	Event-triggered Transmission
PT	Predictive Triggering
PET	Predictive Event Triggering
ST	Self Triggering
NPC	Networked Predictive Control
ETPC	Event-triggered Predictive Control
TEPC	Two-channel Event-triggered Predictive Control
PTPC	Predictive Triggered Predictive Control
LQR	Linear Quadratic Regulator
LMI	Linear Matrix Inequality