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DEGREE: M.S (Non-thesis)

MAJOR: Computer Engineering

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PLACE: 3041/3043 Coover Hall

MAJOR PROFESSOR: Dr Arun Somani

Title: Schedulability Modeling & Verification Using Model Checking in Uppaal

**Abstract :**

In Real-Time embedded systems, schedulability of tasks is a major challenge in ensuring the system deadlines are met. An application or operating systems consists of a collection of tasks which needs to be scheduled. Various scheduling principles can be applied to ensure orderly \& efficient usage. At the same time the scheduler needs to make sure the deadlines are met.

The project is aimed at to demonstrate an approach to design and verification of a real-time schedulable system. Generic Task and Resource Automata are designed and modeled as basic building blocks. The scheduling algorithms (FPS \& EDF) are implemented via an interface within the model. The implementation ensures configuration based scheduling within the model. The scheduling model design takes into consideration any policy violations of task/resources. Overall the project demonstrates a proof of concept simulation for implementation of a real-time scheduling system design using timed automata. This can hence serve as a basic framework for doing schedulability analysis.