

# *Abstract*

*As the world population is growing rapidly, space issue is also rising in urban areas which is leading to the increased construction of multi-floor buildings. If an accident or emergency situation happens in such buildings, there is a need for the safe evacuation of occupants of the building. In our thesis, we present an analytical model for the evacuation of occupants in case of an emergency. We are using colored petri nets (CPNs) for modeling the system. We are considering accidental fire occurrence as a case study. Constraints like stampede and situations like finding shortest distance are considered in the proposed evacuation model.*

**Keywords:** Petri Nets, Modeling, Analysis, Colored Petri Nets, Constraints