

Planning for **Sannidhanam** in the context of Mandalakalam

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Abstract

Pilgrimage centers are facing various issues due to the huge inflow of pilgrims. With an increasing number of people attending religious events and an increase in crowd density in pilgrimage centers, crowd management has become more difficult than ever before. Most of the crowded religious events involve simultaneous movement of very large groups of people in various directions. Mass gathering in remote locations under limited infrastructural facilities often pose serious threats to human stampedes and other disasters. Sabarimala attracts the highest number of seasonal pilgrims annually in Kerala. (Total Arrival 8,32,391, in 2020, The season is in the months of December and January, Approximately 45,000 to 60,000 per day). Sabarimala Pilgrimage has a history of two major crowd disasters, one in 1999 which caused 52 deaths and the second incident in 2011 causing 102 deaths. Sabarimala pilgrimage is highly prone to human stampedes during the Mandala-Makaravilakku season. The availability of limited open space, uneven topography and high density of pilgrims together make Sabarimala a stampede hotspot. In this study Agent Based Modelling (ABM) is used to understand the crowd behaviour and to identify hotspots. Aim of the study is to prepare a crowd management framework for Sannidhanam during Mandalakalam.

Key words: Pilgrim centre, Crowd management, Agent based modelling