
Schedule This - A Decision Support System for Movie Shoot Scheduling

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Summary. Creating a movie shoot schedule is an important part of the movie production process. Even for a small movie project already 50 activities requiring 130 resources such as different actors, director, team, special effects and locations etc. have to be scheduled respecting complex constraints which may be imposed on single resources as well as on every activity.

We formulate the movie shoot scheduling problem (MSSP) using and extending the $\alpha|\beta|\gamma$ -scheme suggested by Demeulemeester and Herroelen and we present a prototype of a Decision Support System for MSSP based on a meta-heuristic approach for generating operational schedules.

1 Project Scheduling in the Movie Industry

Project scheduling is an important part of the movie production process. A movie is shot following a shoot schedule, which is based on the movie script. Each scheduled activity is related to a scene of the movie script. It requires a large number of resources of different renewable resource types. There exist only very few hard order-constraints, thus, from a theoretical point there are many feasible schedules with a highly varying quality.

The scheduling process is not only performed at the beginning of the shooting project, but rescheduling is performed, whenever resources become unavailable or other disruptions appear.

State of the Art. So far, the shooting schedule has always been created manually. There are two software systems, which only help to organize some of the data related to the schedule, but not all. One is the system EP Scheduling, formerly known as Movie Magic Scheduling, the other one is only known in Germany and called SESAM Drehplan. The systems never check the schedule during the manual creation for feasibility nor is there any sophisticated functionality to create a schedule automatically or to store the data -besides

the blocking times in SESAM Drehplan- semantically, which would be the first step to automate some processes. Thus, they both lack decision support functionality.

Related Research. We know of only two papers which address the MSSP. One presented at the MIC 2005 ([2]) only proves that a simplified version of the problem obtained by relaxing all the complex domain specific constraints is NP hard and can be solved as a bin packing problem. Fink and Voss ([3]) use a toy example of a MSSP to illustrate the nature of discrete optimization/sequencing problems.

The Challenge of Movie Shoot Scheduling. A system, which implements a model of the MSSP, can highly reduce the complexity of creating a movie shoot schedule. It can facilitate the scheduling tasks at three different levels:

- Automated (re-)scheduling
- Interactive (re-)scheduling
- Manual (re-)scheduling with constraint checking

Our decision support system *Schedule This* implements the movie shooting model and allows better and faster scheduling, thus, the whole process of movie shoot scheduling can be handled more efficiently.

2 The Movie Shoot Scheduling Problem

Basically two steps must be performed in order to create a movie shoot schedule, first a work breakdown structure (WBS) must be created, secondly the items of the WBS must be scheduled, either manually or automatically.

2.1 Creating the WBS

The WBS is based on the movie script. For each scene or shot an item is created following a specific procedure. The standardized structure of a movie script simplifies this procedure: Of each scene or shot the headline in capital letters denotes the location, the atmosphere¹, the duration of this part in the final movie and the number of the scene. During this process the required time for the shooting of the scene will be calculated based on the content of the scene. In the body text of the scene the other information, e.g. the actors - written in capital letters -, props and cars can be found.

¹ E/N = exterior/night, i.e. the scene plays outside during night. Usually each kind of atmosphere is connected to a special color, thus, it can be easily identified by the scheduler. E.g. E/N could be dark blue and I/D (interior/day) could be yellow.