Novel multimedia architecture design pattern using Audio joiner prototype with delay remover

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Abstract

In this paper a novel multimedia architecture design pattern (MADP) is proposed which uses controlled synchronization signals. The architecture can be tested for multimedia production. It is expected that the synchronization signals will play a vital role in multimedia production. The advantages of design pattern and design formation are clearly used. The prototype presented in this paper focuses on control signal with the feature of delay remover. The multimedia architectures used for framing has importance over synchronization; control signal with delay remover presents a novel architecture for audio joiner prototype. The problems of journalism mass communication for audio transfer, broadcast and presentation are affected at the time of audio mixing by the problems of synchronization and delay occured in multimedia formation. This algorithm will set new benchmark in commercial, educational, communication, entertainment multimedia products.

Keywords: Audio, Delay remover, Binary Joiner, Multimedia, Synchronization

Introduction

Multimedia plays a vital role in different sectors like groupware, video on demand services, video conference, electronic shopping systems or entertainment systems. Even Multimedia enabled learning is very important in modern education. Teaching and learning process is nowadays dependent on interactive whiteboards, multimedia projectors, e-presentations. Modern Education policies are becoming increasingly dependent on Multimedia with quality. This society is in need of better Multimedia Architectures to fulfill the need of new emerging, real world problem oriented curriculum, effective analysis system and strong backbone to education system. Patterns are simple and elegant explanations. Patterns capture solutions that have developed and evolved over time. They are abstractions being used to increase reuse and quality in a variety of fields including architecture, software engineering, hypermedia, and teaching/learning [Jones, D. & Stewart, S. (1999)]. A design pattern is a three-part rule, which expresses a relation between a certain context, a problem, and a solution [Christopher Alexander (1979)]. The Multimedia Architecture revolves around the three-part rule. One has to define the relation between multimedia objects (text, graphics, animation, audio and video). Then identify the tool/ module that are expected. The tool/ module are the outcome of the exercise. After visualizing the relationship between multimedia objects and the tool/ module it is the time to work out for a solution. Mere investigation of solution to the multimedia tool will not solve everybody's problem. More need of the Multimedia Tools is prone to defects, limitation of use, non-relationship with real world problems, and redundancy of development efforts. There has to be a design pattern, which will trigger the generation of multimedia architecture and promote multimedia tool/ module reuse. Design Patterns can and should be used to help develop advanced Multimedia Architecture and implement the concept of modular objects.

Multimedia

Multimedia is two or more media run continuously. Multimedia is a combination of more than two media such as text, graphics, animation, audio and video. The production of multimedia components varies from component to component. When written text, speech, photography, music, video and graphics are combined and integrated in digital texts, we are dealing not only with the convergence of media forms. On a more fundamental level it involves a convergence of semiotic systems, reading conventions and rhetorical patterns [Martin Engebretsen (2006)]. Today, certain media formats are of particular interest. When we are dealing with written text, graphics, sound produced, animation we are not only concerned with media objects; rather we are keen to bring a scenario into highlight where a complete multimedia will satisfy the zeal. Multimedia information is rapidly growing both in importance and in diversity [Jack Meadow (1998)].

Multimedia Architecture

The Multimedia comprises of various media. The collection, production with synchronization can cause the overhead to the production systems. The production systems, therefore, should have a mechanism to overcome the problem of overhead elimination. Following are few architecture designs with specific features. CSI (Complex Streamed Instruction) eliminates overhead instructions (such as instructions for data sectioning, alignment, reorganization, and packing/unpacking) often needed in applications utilizing MMX -like extensions and accelerates key multimedia kernels [Cheresiz, D., Juurlink, B., Vassiliadis, S., Wijshoff, H.A.G. (2005)]. CCM (Community coordinated multimedia) envisions the paradigm of consuming multiple media via diversity display devices, converged networks, and heterogeneous platforms within a virtual, open and collaborative community.

Multimedia Application development industry must demand for specialization in multimedia architecture during the recruitment of multimedia-application-developers [Katre Dinesh (2005)].

Design Pattern

The question is whether to find a solution or to find a method that find solution to a problem? A pattern for software architecture describes a particular recurring design problem. The problem arises in specific design contexts. So the pattern presents a well-proven generic scheme for its solution. The solution scheme is specified by describing its constituent components, their responsibilities and relationships, and the ways in which they collaborate. A design pattern is a method of using the knowledge about problem and its solution continuously. A pattern describes the problem and need of its solution. Design pattern straight-a-way tackles about the method of finding the solution of the problem.

Controlled Synchronization Signal Algorithm for Multimedia Architecture Design Pattern:

a. Introduction to Controlled Synchronization

In this paper we propose a new algorithm with controlled synchronization signals. The MADP with controlled signals will help in reducing efforts, redundancy. Multimedia requirement analysis will start with object identification. Identification of size and parameters of modular objects will help in basic architecture definition. The component requirement validity will remove redundancy. The selective approach to High Level Features and Low Level Features of MARS (Multimedia Analysis and Retrieval System) for indexing of objects will resolve the complexities of object modularization [G.N.Shinde, S. B. Kurumbhatte (2002)]. The object interval, features of objects: discrete and continuous should go under temporal synchronization

specifications with logical mapping [Saul E. Pomares Hernandez, Luis A. Morales Rosales, Jorge Estudillo Ramirez, Gustavo Rodriguez Gomez (2008)]. The object precedence based on their status: Active, Passive has to be identified. There should be a clear notational way to design the object interaction [Rhan Jung, and Soung Won Kim (2009)]. As multimedia components are collection of features, and a query based approach seeks the information out of multimedia components, a refined query fine tunes the weight best suitable to user perception [G.N.Shinde, S. B. Kurumbhatte (2002)].].

The synchronization model should possess the support for the generation of synchronization specifications. This ability concerns three aspects: specification maintainability, specification reusability and consistency checking [Saul E. Pomares Hernandez, Luis A. Morales Rosales, Jorge Estudillo Ramirez, Gustavo Rodriguez Gomez (2008)].

In an object identified, the color of a pixel generally cannot be independent from its neighbours. The objects of a same region will have texture effects [Mina Koleini, S. Amirhassan Monadjemi, Payman Moallem (2009)]. The modular objects should contain the database for pixel information (size, shape, color, hue, luminance, etc.). The algorithm sets and retrieves the values as required.

In the audio visual synchronization Processor Scheduling for reducing wait time will be controlled.

wait time (t_{wa}) for audio
& wait time (t_{wv}) for video
Processor Scheduling (tP) -> (t_{wa}) (t_{wv}) and Control Signal

Here, we propose a Controlled Synchronization Signal Algorithm for multimedia architecture design pattern.

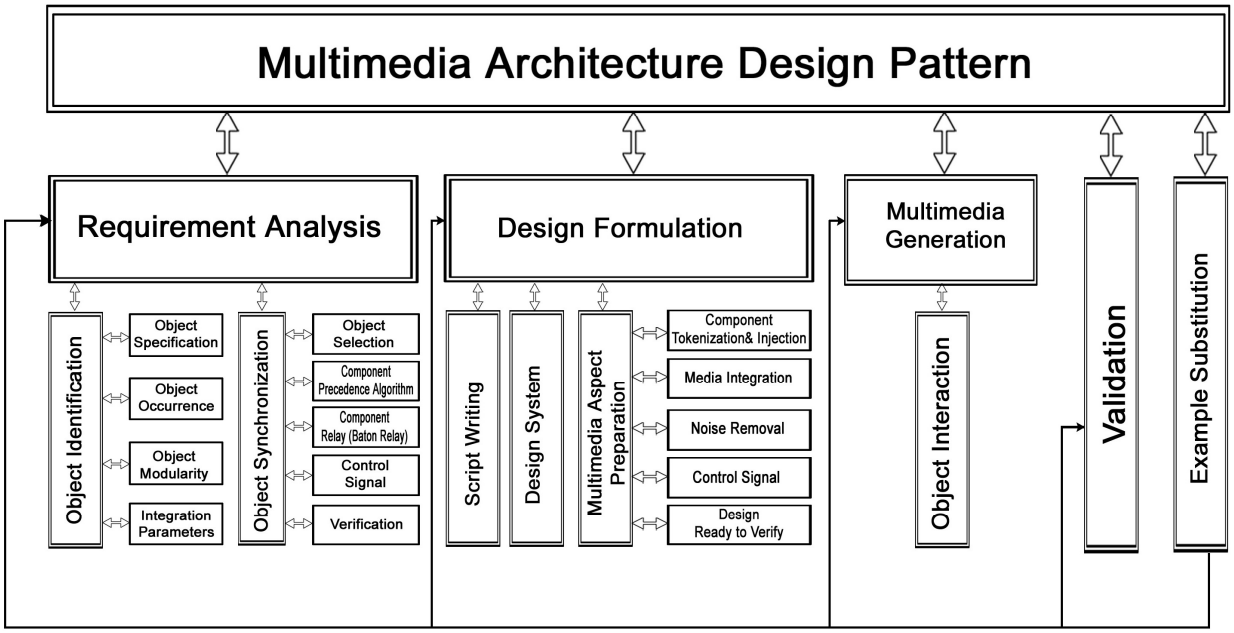
1. Requirement Analysis
    a. Object Identification
        i. Object Specification
        Specify the objects/ components that comprise the tool/ module. The complete listing of the objects/ components will enable the categorization of them and their classification.
        ii. Object Occurrence
        The object occurrence and duration in the story is to be known well in advance. The occurrence will decide whether to make the appearance of the object/ component to be visible or not.
        iii. Object modularity
        iv. Integration Parameters
    b. Object Synchronization
        i. Object Selection
        ii. Component Precedence Algorithm
        iii. Component Relay (Baton Relay)
        iv. Control signal
        v. Verification
2. Design Formation
    a. Script writing
    b. Multimedia Aspect Preparation
        i. Component Tokenization and Injection
        ii. Media Integration
        iii. Noise Removal

iv. Control Signal
v. Design-ready-to-verify

c. Design System

3. Multimedia Generation
   a. Object Interaction
      The objects are now ready for interaction. Control signals will mix the objects in desired sequence.
4. Example Substitution
5. Validation

Flowchart



Conclusion

This design pattern helps multimedia designers to manage the complexity of the multimedia tool/ module. When redundancy in problem is identified, the generalized algorithm can be implemented productively to provide a reliable multimedia tool/ module. The architecture design presented in this paper with delay remover is effective. The processor scheduling and control signals of delay remover are a part of a novel design in this prototype. This design pattern also describe about the multimedia components, the communication between these components, and the mechanism of building these components for obtaining a real world multimedia tool/ module. This pattern defines a way of communication using delay remover technology between multimedia-application-developers. The architecture is useful for communication industry for removing delay problems.

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