Lecture Notes in Electrical Engineering 1003

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S. Geetha
Sravanthi Sashikumar
Carl Diver *Editors*

International Virtual Conference on Industry 4.0

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Springer

Lecture Notes in Electrical Engineering

Volume 1003

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ISSN 1876-1100 ISSN 1876-1119 (electronic)
Lecture Notes in Electrical Engineering
ISBN 978-981-19-9988-8 ISBN 978-981-19-9989-5 (eBook)
https://doi.org/10.1007/978-981-19-9989-5

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The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

Contents

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Design of Web-Based Agile Meeting Dashboard

R. Dhanalakshmi, S. Sankar, V. Srinidhi, and K. Srividya

1 Introduction

In the corporate environment, managing the work routine is required to meet the goals and deadlines. It gives clarity of work and makes the team to be focused on the expected output. Agile management [1] methods provide greater interaction among the team members. It is responsive to any immediate changes thus making the task tracking more dynamic. It is also more flexible which helps the team to manage [2] their work effectively and efficiently.

In every organization, meetings are conducted daily where the team members discuss their doubts and put forward their opinions. Few questions like 'what is done', 'what is to be done', 'when to be done', and 'what are the issues faced' are asked during a meeting. To obtain feedback [3] for the work completed, a retrospective meeting is conducted at the end of each sprint which results in better delivery quality. This software provides better planning of activities based on the priority of work. The activities can be monitored constantly which improves the flow of work.

In the rapid development of technologies, this dashboard deals with understanding the individual's task status along with the time sheets and tabulating the work progress. It also plans the meeting according to the participant's time slot availability. The scrum board [4] helps in displaying the tasks and the progress can be easily monitored through graphical representation. This concept includes the features

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R. J. Kannan et al. (eds.), *International Virtual Conference on Industry 4.0*, Lecture Notes in Electrical Engineering 1003, https://doi.org/10.1007/978-981-19-9989-5_1

such as a discussion forum, chatbox, meeting scheduler, screen share, calendar, document sharing, email notification, meeting recordings (in mp3 or mp4 format), and storyboard polls.

This paper is organized as follows. Section 2 analyzes some existing related work. Section 3 describes the system overview. Section 4 discusses the system prototype. In Sect. 5, the result is discussed. Section 6 concludes the paper.

2 Related Work

There are many existing agile meeting tools that easily manage the sprint. Each application has few features but till date none of them has incorporated all the possible features to make an efficient agile meeting dashboard. The main features and technologies of the existing systems are described here.

A. Zoho Sprint

Zoho Sprint is an agile meeting solution that enables to design projects and provides the product without any delay [5]. This system includes time sheets, meeting scheduler [6], and the graphical representation of each task's results. The performance of this tool is fast and it has a simple configuration.

2 Axosoft

Axosoft is a project management tool that is used for managing projects that are complex. It helps in planning [7] the tasks particularly to the organizations which use the scrum approach. [8]. The main feature of this tool includes the creation of a proper backlog and automated progress generator which customizes the dashboard [9] to display the results. It also helps the user to monitor the project closely and accurately.

3 Scrum-It

Scrum-It is an open-source platform which is developed by the BS group [10]. The user can access this software without any license since it is free of cost [11]. Multiple projects can be managed by this software concurrently. The project-oriented data [12] is stored directly on the database server. In this platform, the scrum board displays the tasks and the burndown chart is used to monitor the work progress.

4 JIRA

JIRA [13] is a licensed project management tool. The main purpose of developing this tool is to identify the bugs and issues [14]. This tool can be used by organizations which have the iterative and incremental SDLC (Software Development Life Cycle) approaches in their project. Moreover, the status call can be scheduled and to notify members about their work, bots are configured.

5 Microsoft Azure

Microsoft Azure assigns the planned tasks based on their priorities. It has a user-friendly interface which manages the user stories and sprints. The status of the project is displayed on the scrum board [15]. To minimize the loss, Azure helps with project forecasting. Bugs can be easily detected and resolved.

3 System Overview

After analyzing various existing systems, we have come up with the idea of including additional features to our advanced software. They are further explained below.

A. Discussion Forum

The Agile Meeting Dashboard provides a forum where the team members can discuss and ask their queries on the particular task assigned to them. For successive assignments, the new discussion forum is created automatically. In a decision forum, each person's knowledge [16] is shared which results in effective decision-making.

2 Chat Box

It has a chat box feature where the members can have a one-on-one conversation or group conversation through text. The user can send and receive messages only if they are connected to the same server [17]. To share one's knowledge and ideas, this chat box is integrated in this software.

3 Meeting Scheduler

The calendar displays the scheduled meetings along with time sheets. Since the calendar is visible publicly, the meeting scheduler [18] schedules the meeting according to the available slots. This is done using a conflict detection algorithm.

Conflict Detection Algorithm

x = number of participants

y = start time of meeting

z = end time of meeting

a = 1

b = 0

while a <= x do

while the start time and end time of the assigned meeting of every 'a' participant do

c[start] = assigned meeting start time from database

c[end] = assigned meeting end time from database

if(y >= c[start] & y <= c[end]) or (z >= c[start] & z <= c[end]) then

b = 1

break

a = a + 1

end if

end while

end while

if b = 1 then

Conflict

else

No Conflict

end if

The above pseudo code explains the algorithm that detects the freetime slots avoiding the conflict. This algorithm uses the participants list, meeting start and end time, and the meeting date to detect the conflict. For every participant in the meeting, the conflict is detected by the following steps. c[start] fetches the start time of all the scheduled meetings on the particular day from the database and stores it in an array. Likewise, c[end] fetches the end time of all the scheduled meetings from the database and stores it in an array. The currently scheduled meeting's start time is compared with each start time in the array c[start] and the end time is also compared in the same way. If there's any conflict, the process stops and indicates the user otherwise if no conflicts are detected, the meeting gets scheduled at the given time slot.

4 Email Notification

Once the meeting is scheduled, a notification is sent to the assignee through email. The email sent includes the meeting details, organizer details, and the participants list. It also sends a reminder 5 min prior meeting. This is done using Javax Mail Server (JMS) API. JMS is a platform and protocol-independent framework which uses SMTP (Simple Mail Transfer Protocol) for sending and receiving mails.

5 Content Share

During meeting, the participants can share their screen to make their contents visible to their team members. Even the participants can have control on their screen once the request is granted. Meeting notes can be generated date and time-wise along with the name of the meeting. The notes are saved in the database in encrypted form using the Base64 algorithm. The user can download and have the notes in their local system.

Base64 Algorithm

This algorithm deals with encryption in Java. RFC 4648 alphabet is used for encoding the text and RFC 2045 for decoding the text. The encoding text should be 76 characters per line. It has many methods to encrypt and decrypt the data. For accessing these methods, java.util.base64 must be imported in the file.

6 Meeting Recordings

The entire meeting session can be recorded in mp3 or mp4 format. If the user wants to refer to any topic or if he's not available at that time, he can refer to the recordings so that no knowledge is lost. It becomes easier and is time efficient. The recording will be saved once the meeting is ended which will be accessible to everyone only for a particular period of time. They can download it for longer use.

7 Storyboard

The storyboard automatically shifts the task status based on the user action. If the assigned task is viewed, the status will be shown as Opened. If the task is sent for prior review, it will be shown as In Progress. If it is submitted, the status will display Completed and if the task is not at all viewed, status will be Nil. This saves time by giving an overview of the project status. The chart displays the progress and estimated time to complete the task within the particular sprint.

8 Task Scheduler

This application allows users to quickly assign and update tasks according to the client's requirements. It uses a priority [19] based algorithm which sorts the task based on its priority. Once the task is assigned, a reminder is sent through email along with the task details which include task name and description, priority of the task, assigner name, and task deadline. If the task is not completed on time, a notification is sent automatically stating it as incomplete. The assigner can also modify the assigned task at any time. The modification will also be notified to the assignee.

Priority-Based Sorting Algorithm

PQ-Sort(T, A)

INPUT –task list T, priority comparator A for the tasks of T

OUTPUT– task list T sorted in increasing order according to A

PQ = priority queue with comparator A

while ¬T.isEmpty ()

r = T.remove (T.first ())

PQ.insert (r, ∅)

while ¬PQ.isEmpty()

r ← PQ.removeMin().getKey()

T.addLast(r)

The above pseudo code explains the algorithm that stores the tasks priority-wise. The priority is assigned by the following steps. If a new task is assigned, the priority of the scheduled task is compared with the priorities of every task in the database. In the comparison, if the priority of the newly added task is relatively high, the task gets inserted in the first place. Likewise, based on the priority weightage, all the tasks are sorted accordingly.

4 System Prototype

This system is a web-based application with responsive behavior. It uses markup language, CSS, JavaScript as front end technology and MySQL database as back end technology as it stores large amount of data [20] instantly and effectively. This software is integrated with JMS (Java Mail Server) API for sending and receiving emails.

In this application, various algorithms have been used. Base64 algorithm is used for encrypting and decrypting before storing in the database. Priority-based algorithm is used for displaying the task priority-wise. A conflict detection algorithm is used for detecting conflict to schedule the meeting without any conflicts (Fig. 1).

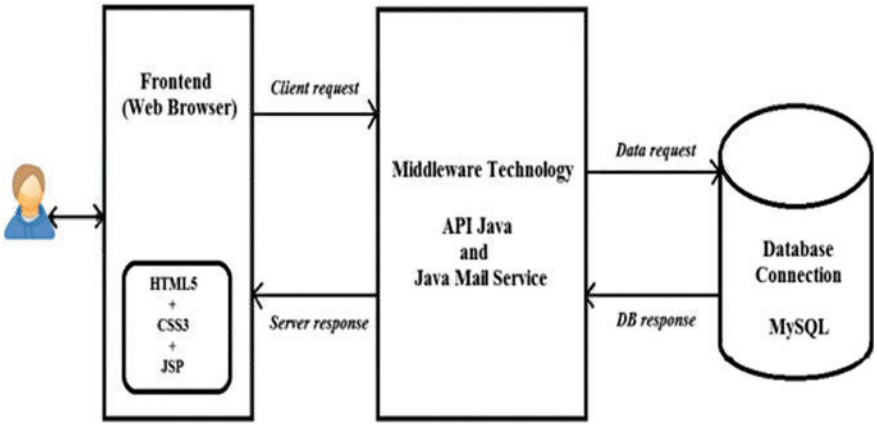

Fig. 1 Architecture diagram

5 Result and Discussion

Let us discuss the result of few features and discuss the working function of each feature and their relationship.

Figure 2 explains the function of the task scheduler. If the user wants to add a task, he must fill in all the task details so that all the team members can know about them. Once he clicks the 'ADD' button, the task will be added and the details will be displayed in the task tab of both the assignee and assigner.

If the assigner wants to notify the assignee through the mail, he can send it using 'SEND NOTIFICATION' button. Once the mail is sent, a success alert box will be popped up. The assignee work progress can be monitored by the assigner at any time. Also a notification is sent after the task deadline gets expired.

Figure 3 shows the page on which the assigner can update or delete any assigned task. The assigned task details are fetched from the database and shown in this tab. After any modification, the assignee is notified through email.

Figure 4 displays all the tasks in a particular sprint. It is visible to all the members of the team. All the task details are fetched from the database and shown in this tab.

Figure 5 shows all the meetings scheduled for a day. The start and end time of the meeting is displayed here. It works using Java Mail Server (JMS) API. Using the login mail ID, the API filters the meetings and displays them here.

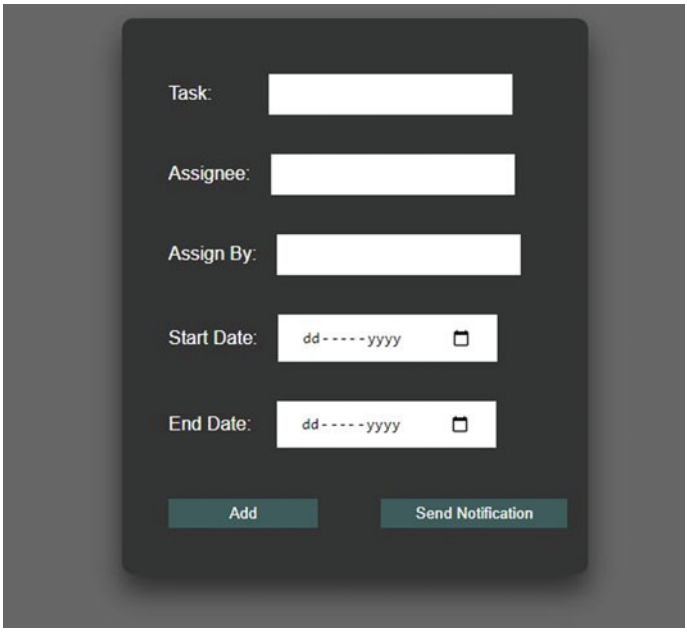

Fig. 2 Task scheduler

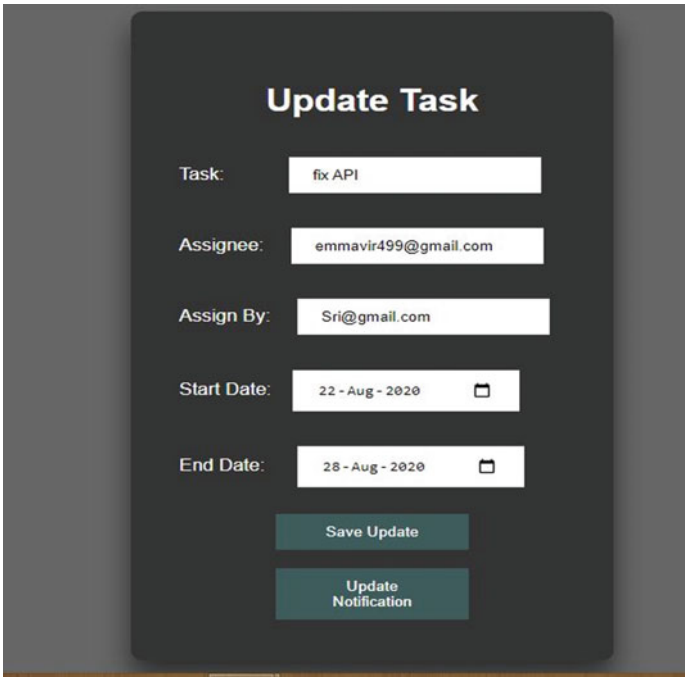

Fig. 3 Modify task

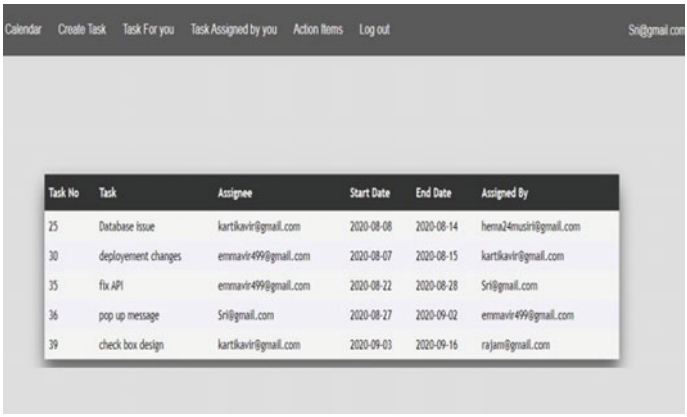

Fig. 4 Action items

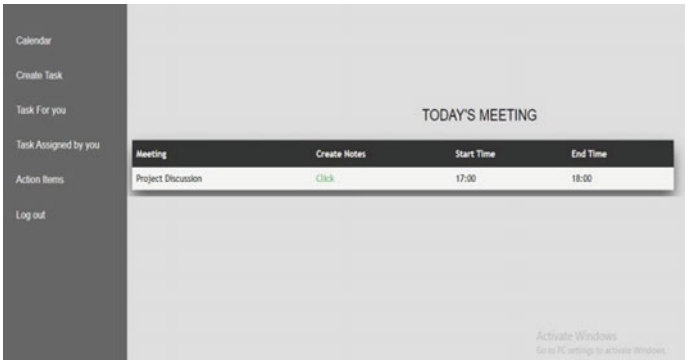

Fig. 5 Scheduled meetings

Figure 6 shows the meeting notes taken during the meeting. The user can save the notes for later use. These are stored in the database in encrypted form. They can even download the notes and have them in their system.

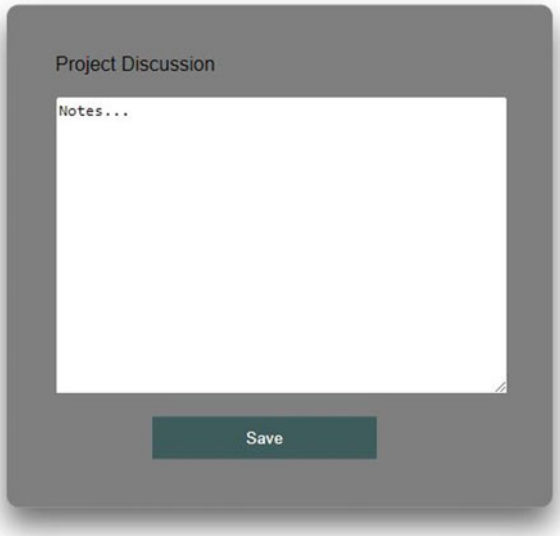

Fig. 6 Meeting notes

6 Conclusion

This system manages the work routine effectively in any organization. It helps in improving the productivity of the organization. After analyzing the related works in existing papers, we have added new features which increase the quality of the software. The added features benefit the following to this paper.

- At the end of each sprint, using the obtained feedback we can improve the task accordingly.
- Transparency in the work status so that monitoring becomes easy and the work will be completed effectively.
- This system supports high-quality and on-time deliveries.

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Deep Learning Based Hybrid Approach for Crowd Anomalous Behavior Detection

Aniruddha Prakash Kshirsagar and L. Shakkeera

1 Introduction

With the rapid development of information and technology, surveillance video system has been widely used in public like highways and stations, and a large amount of abnormal activities has been recognized and analyzed in video data. In actual application, it is a significant direction to recognize various actual scenes with high accuracy and missing report rate. It is necessary to study the recognition method in video based on deep learning, which is helpful to reduce the safety hidden trouble caused by abnormal activities [1].

Computer vision [2] and other methods have been used to recognize the abnormal activity. At present, existing researches mainly combine human and intelligent video surveillance to monitor and warn against abnormal activity. Manual recognition is still the main method and is supplemented by automation and information technology, thus the standard of abnormal activity recognition needs to be improved. Because the SVM network model can accurately describe the semantic characteristics of video time series changes, and is suitable for identifying abnormal activity with relatively long intervals and delays in videos. So, the SVM network can be used to perceive the semantic characteristics of abnormal activities in videos, which is conducive to the early recognition of hidden security problems and effectively alleviating the problems caused by manual recognition. Dubey et al. [2] proposed a method based on the combination of trajectory and pixel analysis to measure the velocity and direction of the moving target trajectory and realized the recognition of abnormal activity through a clustering algorithm. The accuracy of trajectory feature extraction has a great influence on the result and is not applicable to video data with many noises. AI and deep learning are ideas that are regularly covered. There can be a slight disarray between the terms, Machine learning utilizes a bunch of calculations

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R. J. Kannan et al. (eds.), *International Virtual Conference on Industry 4.0*, Lecture Notes in Electrical Engineering 1003, https://doi.org/10.1007/978-981-19-9989-5_2

to dissect and decipher the information, gain from it, and in light of the learnings, settle on the most ideal choices. Then again, deep learning structures the calculations into various layers to make a "fake neural organization". This neural organization can gain from the information and settle on shrewd choices all alone.

1.1 Deep Learning

Customary AI strategies will in general capitulate to ecological changes while profound learning adjusts to these progressions by steady criticism and work on the model. Profound learning is worked with by neural organizations which mirror the neurons in the human cerebrum and installs numerous layer design (few noticeable and few covered up). It is a high-level type of AI, which gathers information, gains from it, and enhances the model. Regularly a few issues are mind boggling to the point that it is essentially outlandish for the human cerebrum to understand it, and subsequently programming it is an unrealistic idea. Crude types of Siri and Google Aides are a fitting illustration of customized AI as they are found compelling in their modified range. However, Google's profound psyche is an extraordinary illustration of profound learning. Profound learning implies a machine, which learns without anyone else through numerous experimentation strategies. Frequently a couple hundred million times.

1.2 Existing Approaches

In article [3], Sultani et al. combined histogram, PHOG and HMOEOF features to recognize abnormal activity through SVM. However, their method requires an amount of calculation and the final classification accuracy needs to be improved. Kavikuil and Amudha [4] proposed an anomaly activity recognition model based on the AlexNet network, but the imbalance of recognized data is an important factor that affects the algorithm's training feature.

Compared with the mentioned methods, the extracted feature's quality was affected by data noise, the video sequence information utilization rate is low, and poor classification results a multiple feature fusion based on CNN and SVM abnormal activity recognition method was proposed and introduced the attention mechanism [5] to SVM, then analysis the correlation between the features, which can effectively extract features to reduce the long sequence information and the information shortage.

2 Proposed Convolutional SVM Approach

A. *Activity representation with deep learning models*

We transform the issue of abnormal activity recognition into an outlier recognition problem of space–time sequence, and the output is divided into two types: normal and abnormal activities. The spatial–temporal features were extracted by CNN and SVM. SVM can effectively avoid long-term dependence problems, and the gradient will not disappear after time back-propagation training [6]. In addition, attention mechanism was introduced to effectively analyze the correlation between model input and output, avoiding the influence of background noise and long sequence, to obtain more information (Fig. 1).

Each frame is the input of CNN model for convolution operation in the video, and finally a 2048-dimensional feature vector $\mathbf{C_r}$ will be chosen as spatial output through the fully connected layer for transmission to the SVM Attention layer.

B. *SVM attention models*

In sequential tasks, it is critical to learn the time dependence between the inputs. As a special time recurrent network, SVM obtains higher level information by stacking together [7]. The cell structure is shown in Fig. 2.

SVM network is controlled and updated by input gate i_t, forgot gate $f_{t,}$ and output gate o_t, where there is an input, if i_t is activated, its information will be stored in the cell. Also, if f_t is turned on, the unit state c_t is forgotten. The latest feature in the fully connected layer. Next, the 1 * n-dimensional feature vectors are feeding into the SVM unit output c_t is determined by whether $o_t$is propagated to the final state h.

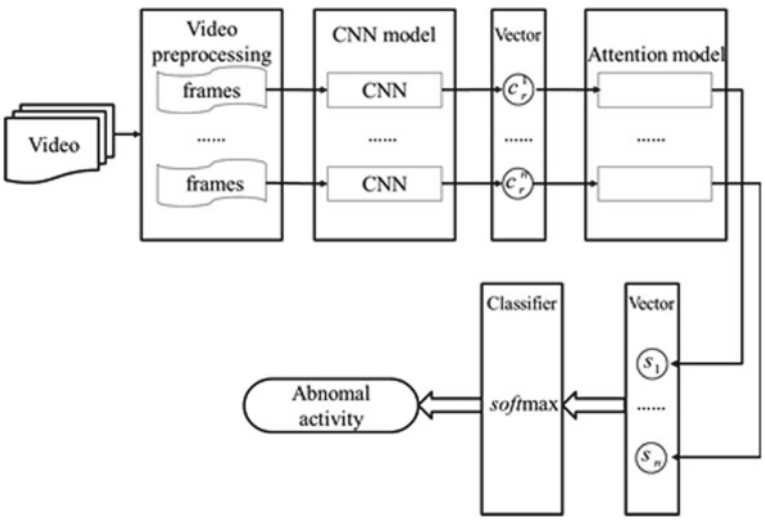

Fig. 1 Method of abnormal recognition-based CNN SVM attention models

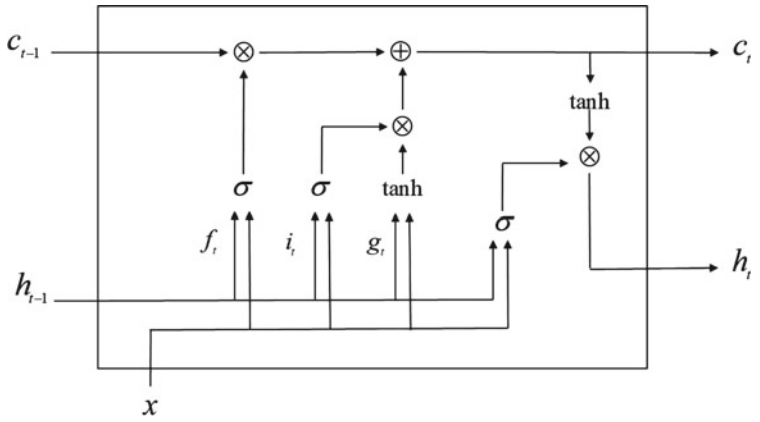

Fig. 2 SVM cell structure

The state of each cell can be expressed by the attention model to train the time series features. The attention mechanism can distinguish key features from the hidden state output of the SVM layer.

C. *CNN models*

The essence of CNN is to extract the visual features between data through convolution and pooling operations, and the extracted features will become more and more abstract with the increase of the number of layers, and finally converge at the full connection layer. Due to the good performance in the process of feature extraction, we chose inception-v3 model to extract features that are different from traditional CNN models, it convoluted images through different convolution verification operations, and then combined different convolution layers in parallel. The dataset used in the experiment is a publicly dataset UMN [8] with a resolution of 320 * 240, and it contains normal and abnormal activity in the crowd. Dataset contains 11 videos in 3 scenes where some people walking normally and suddenly running after some time, and all video scenes are taken in a permanent position with a static background. We trained on a normal section of 5 videos of all scenes and tested on all videos. The experimental parameters settings: experiment SVM super parameter of the model is obtained by cross-validation, and using the Singh and Mohan [9] optimization neural network model, it can weight vector update and set up according to the model, using the batch size of 64, every time training for the whole is represented by feature vector after pooling layer. CNN as input of SVM network, output vector used in this experiment single-layer SVM network and the attention of the input layer, in the attention layer, to compute the weight vector, and then the weight vector and the input vector to merge the current layer, a new vector **s** and as a weighted vector and all of the time step characteristics, its overall structure is shown in the Fig. 3.