

## A CRITIQUE ON DIGITAL TRANSFORMATION OF MUSIC PRODUCTION USING VIRTUAL SOUND TECHNOLOGY (VST)

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### Abstract:

Music plays a vital role in handling the emotions of humans, even for animals. More over it plays a key role in highlighting the visual communications. This article reviews the conventional and modern technique used in music production. In conventional techniques, the percussion instruments, plucked instruments, blowing instruments, etc., are mixed to render the music. The evolution of computer and sound synthesizers changed the music production techniques drastically in every portion of orchestration such as horn section, rhythm section even in vocal section. The sound and signal processing techniques furnish the way to produce music easy compared to the conventional techniques. The music production and rendering programs such as CUBASE, ProTools, Fl Studio, Neoundo, Sound forge utilizes the sound processing algorithm to mix and even to synthesis the sounds. These programs are highly competitive to the live instruments and it pays the way for virtual sound technology.

**Keywords:** *Virtual sound Technology, MIDI, Synthesizer, workstation*

### 1. Introduction:

In computer assisted music rendering, human involvement is less compared to conventional real time musical instruments. In virtual sound technology (VST), MIDI form of music notes are utilized to reproduce or to interchange the voice of the musical instruments. Moreover, these MIDI forms of notes accompanies to transpose the scale of a composition. It

assists to the composer to render a music with less human interference. These VST plays vital role in rhythm section, it can reproduce the native instruments without using the live instruments. The synthesizing programs utilizes the acoustic properties of live instruments and it generates new composition of user defined notes. The VST based synthesizer as shown in figure 1.1



**VST sound sampling synthesizer**

**Figure: 1.1**

Conventional technique involves in real time recording station and live instruments. Whereas in modern recording stations carries sound processing units such as mixing instruments, digital / Analog delay, chorus and Vibrato units. Due to digital transformation, Sound processing hardware can be replaced by sound processing programs. These Virtual sound technology applications assists to play integrated sounds such as Acoustic, Jazz, Bass guitars, piano, Violin, Flute etc. More over these programs allow to play multiple notes at a time which is more difficult to play in real time. Hence It reduces the work of skilled musicians in recording stations. Figure 1.2 demonstrates an example of virtual sound instrument application for guitar instrument.



**Image line FL studio VST guitar Synthesizer**

**Figure 1.2**

**2.Virtual sound Technology**

Virtual sound technology is an audio plugin This application integrates the software and the synthesizers. These VST applications are classified broadly into three type i.e., VST Instruments, VST Effects, VST MIDI Effects. VST MIDI effects can be used to arpeggiate or transpose the musical notes from one note to another note. VST sound effects performs the similar function to the sound processing hardwares which includes phasers, reverbs, delay, predelay, Echo etc., Virtual sound synthesizers are used to replicate the native sound instruments. The widely used sound synthesizers are Nexus, Sylenth, Massive, Omnisphere, FM8, Absynth, Reaktor, Gladiator, Serum and Vanguard. VST sound effect controller and synthesizer is exhibited in figure 2.1 and 2.2



**Figure 2.1**

**Vocal Auto tune Plugin – Image line**



**Subtractive Phase – Sytrus Synthesizer**

**Figure 2.2**

### 3. Musical instrument Digital Interface (MIDI)

MIDI interface format is a protocol which is used to playback or record the musical notes on digital synthesizers. In a MIDI keyboard, there are 128 notes are available numbered from C 1 about 8.18Hz to G9 of 12500Hz. Each consequent notes are higher than the previous note. These MIDI protocols are used to apply patches for the rhythm pads. These protocols can be transformed in digital forms from one instrument to other. Moreover these MIDI protocols carries the information such as velocity (hardness or loudness of instrument), notations, pitch, vibrato, panning (Stereo – Lift and Right Ratio) and Tempo (Clock signals). These MIDI recording signals are not made with microphone in recording stations. It is the signal generated by the synthesizer which includes all information of music. These MIDI File is very less in size hence it is very easy to store and transfer from one instrument to another instrument. More over these MIDI file cab be transferred to cloud to transform the music information.

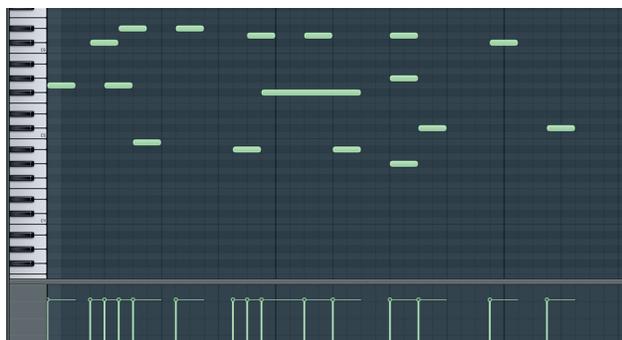
#### 3.1 Modern Music Work station:

The Music instrument manufacturers like Yamaha Roland, Korg etc., are manufacturing the musical work stations which can perform sampling of sounds. These facilities is to make learn the characteristics Oof sound if the musical instrument and these machines can able to replicate the similar native sounds of the live instruments. These work stations also includes sequencers. It helps to render the music in finished structure. Moreover these work stations are integrated with the MIDI instruments. The digital information are recorded from the blowing, percussion or plucked instruments. The MIDI saxophone as shown in figure which converts the musical information such as wind velocity, pressure of wind, notations, pitch, tempo, panning are recorded in the work stations.

These MIDI information are formed as layers and it is overlapped by another layer of MIDI musical information of vocals. In Vocal sections, voice dynamics, panning, depth can be controlled using VST sound effects. In VST sound effect plug-in pitching of voice is possible to tune the voices. The plugins like Auto tune, Pitcher assists to tune the voices in perfect notations. The picture shows the plug-in of pitcher from image line Fl studio. VST MIDI controller and a Piano roll as shown in figure 3.1 and 3.2



**Fruity Pad Controller for Drum synthesis  
– Drum Machine  
Figure:3.1**



**Piano Roll - MIDI player with velocity  
sensor**

**Figure 3.2**

**4.Critique on VST sounds over  
conventional native instruments:**

Even the virtual sound instruments reduces the skilled work of musicians it can able to replicate the original native instruments such as table, Dhols (Indian percussion instrument), bass drums, violin, cello, harp, trumpet, flute etc., The modern technology is competing the olden musical note playing skills. Modulation phenomenon of viola can be replicated in keyboard and synthesizer by using touch sensors. These similar phenomena can be processed for pan flutes, oboe and other blowing instruments. Whenever the modern technology interferes the conventional technique, there is demerits of implementation of technology in real time. These technologies reduce the work of musicians it implies the skilled musicians are not required to play and render the music.

**5.Conclusion:**

The Virtual sound technology revolutionize the music industry by easy music production. The skilled musicians can be utilized to produce music. It also reduce the work of orchestra conductor since the VST instruments and sequencer helps to play by layers and not a live orchestration. Moreover the MIDI instruments are costlier than the native live instruments; hence the initial investment cost is high compared to conventional instruments. The MIDI files gives opportunity to change or transform the notations based in the need of a music composer. It helps to compose the music in a short span of time with an error free compositions. Arpeggiating the musical notations are easy compared to the conventional instruments.

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