An Overview of Musical Therapy for Mind and Body Using Various Ragas

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ABSTRACT: *Cure the illness or diseases through medicine is a main part of healing process but body and mind response to healing process plays the major role for complete heal. The research work the body and mind response to healing process for a particular illness or diseases with musical therapy is a new domain. In musical therapy Identifying which rage for a particular healing illness or diseases, how much time to play and what time to play are the challenging issue. The mentioned challenges were addressed by notes or swara movement of raga which can be adopt feature extraction techniques from Digital Signal Processing and classification of raga play to a particular healing illness or diseases through various machine learning algorithm. The research work carried on feature extraction techniques from Digital Signal Processing and classification of raga play through various machine learning algorithm review literature and percentage of accuracy in each technique are presented in this paper.*
Keyword: Disease, Music Therapy, Raga, Feature exaction by digital Signal Processing, Machine Learning classification.

I.   INTRODUCTION

The Music was a definite of the science or art of version tones or sounds in sequence, on mixture, or on sequential relations to produce a arrangement taking agreement and endurance .Raga is a musical style on the Indian classical music tradition to use a in an improvised performance. The Music taking 70-75 beats per minute equal to the normal heartbeat of 72 as a very calming effect. . Likewise, rhythms that are slower than 72 beats per minute create a confident uncertainty in the mind and body subsequently the mind, body complex forestalls there the music have a speed up or this reinstated energetic energy bounces a deep reduction to a body. Rhythms that are faster than the heart rate enthuse and revitalize the body.

These Music Ragas are thoroughly connected to different parts of the day rendering to changes on the wildlife or growth of the specific feeling, mood or sentimentality in the human mind. Music is considering the best sedative on modern days of nervousness, tautness and high blood pressure.

It is believe that on the human body as conquered by the three Doshas – Kaph, Pitta and Vata. These rudiments work on a recurring order to rise and fall through the 24 hour historical. In addition, the response of these three rudiments differs with the periods. Hence it is said that execution or attending to a raga at the proper chosen time can touch the health of human existences.[2]

These Music therapy interferences speech many goals: (a) consciousness as the mind/body joining by classifying spirits or feelings and their relations to performances on daily life; (b) mood; (c) physical uneasiness/pain; (d) care, reminiscence or decision-making operative; and (e) non-verbal means of look of opinions, spirits, and feelings.Music therapists provides interactives music involvements at the family events; • facilitate music-based workshops to educate families; • tool music therapy services on and off military installations; • provide discussions to base staff as part of the military family support programs; •join music therapy facilities into mature provision collections for spouses of those vigorously organized (Waiting Warriors); • join music therapy facilities into mature provision groups for parents in the military who have children with singular needs; and • offer summer music therapy camps for dependent children with special needs.

A Raga Chikitsa is defined as "the information of in what way to use raga for the drives of curative. Important landscapes of Raga Chikitsa as the organization is the ragas founded on their rudimentary arrangement (ether, air, fire, water, earth) and the correct use of the rudiments at the constancy the wildlife of the inequity. Ragas as carefully related to different parts of the day rendering to variations on the wildlife and growth as a specific feeling, mood or sentimentality and human mind. Alive schemes show compassion to exact radiant dynamisms – be it acoustical, attractive or electro-magnetic. Music are consider as the best sedative in

modern days of nervousness, tension and high blood pressure. Music is a part of every drive of human action and was use as medicine to treatment illnesses of persons. The control of musical vibrations is link in some very all things, all beings, and all beings in the world on all florae in being. The human body has 72,000 stellar anxieties (Nadis) which nonstop vibrate in a exact rhythmic design. Trouble in their rhythmic vibration is the root cause of illness. The musical notes reinstate their normal rhythm, there by transporting about good health

Healing with music therapy needs the aid of the notes or the ragas created by the use of actual physical instruments. However it may be convenient to generate any musical note using computers even in the absence of the actual instruments. Hence there is a need to design and develop such a system.

➢ to recognize research work on different types of illness or disease for raga in music therapy.
➢ To identify the classification of raga to heal the illness or disease.
➢ To identify the techniques to classify the raga in the literature.
➢ To compare performance of classify the raga in the literature.

The outcomes of the proposed work are recognized research work on different types of illness or disease for raga in music therapy were analyzed . The identify the classification of raga to heal the illness or disease were discussed. The identification of the techniques to classify the raga in the literature are done and also compared the performance of classifying the raga in the literature.

The paper flow starts with introduction to music ragas music therap. The second section gives research methodology, third section gives types of raga and effect/mood, fourth section gives method for detection of raga to musical therapy, fifth section discussed techniques for raga identification and sixth section comparison of techniques for raga classification with conclusion of paper.

II. TYPES OF RAGA AND EFFECT/MOOD

The Hindustani/classical musical reflects ragas has portraying specific moods . A suitable mood is an evoked on the hearer's attention earlier starting the musical treatment. Matanga (9-10th century AD) is the earliest author to describe raga. According to him "raga is that kind of sound configuration containing a melodic actions which as the consequence off clearing to emotions of men".There are four bases of raga: folk songs, poetry, religious songs as mystics and configurations classical musicians. While harmony as the characteristic on Western music, Indian music as pure melody. The general term of melody an India is raga or ragini. Symphonies for raga consume a definite comforting effect and the attention as well as on body . Frequent listening to the specific raga existence selected for a specific disease crops a network of sound shaking. The muscles, tensions and the chakras for the affected part are contract when one impulse as given to the relaxed through to interval between two impulses. Thus, through contraction as the tissue, musical notes kind the blood flow out of that specific area and on the interval there is reduction and a state of summary weight is produced in these areas. Thus, the blood from the adjacent area resolve flow there. This process is frequent repeatedly and the blood flow and energy flow on that part as improved. This brands quick, fast curative. Energy from URF (universal energy field) to HEF (human energy field) conveyed as the strokes for the different tones of raga affects the CNS (Central nervous system) as the roots of the auditory worries are more extensively dispersed and take additional connections than any other anxieties in the body.

Music therapy as a technical method of effective cures for the disease finished the control of music [1]. It can be restores, maintains and recovers emotional, physiological and psychological wellbeing. The articulation, pitch, tone and specific preparation of swars (notes) a particular raga stimulates, alleviates and cures numerous ailments persuading electromagnetic change in the body. Music therapy (http://www.musictherapy. org/; http://www.bsmt.org/) as the clinical practice that involves both client and therapist on this sort of dynamic musical interaction(Andy Hunt et. al 2004).

In 1963 M. V. Mathews [25], specified how nearly any sound container be produced through giving the numbers generated to a computer is examples as the sound heaviness wave. An actual high sample rate of required and if these process is to be valuable musically, programs of generating examples from the limits for notes obligation be written The author mention that computer music looks to be very talented technically.

In 2014 BalajiDeekshitulau P.V [24], clarified that music container have move the body of attention in many health-promoting ways, which as the basis for the mounting field identified as **music therapy**. However, one through use music in everyday life and realize many stress release welfares on your own. One of the countless welfares of the music is a strain reliever as that it container be used level after you conduct your even actions so that can be really prepares did not take you absent after your busy schedule. The author have clarified effects of ragas on human health.

The civilizations such as Indians and Greeks were aware of healing properties of music and had been using music therapeutically. Indian traditional healing systems in context of music therapy. Raga Cikitsa is a very popular term in Indian traditional music therapy, which literally means "treatment by raga". Raga is beneficial in a particular medical condition, considering multiple aspects of musical sound, complexity of human hearing process, and multifactorial nature of health and illnesses. Such specific Rasa-evoking effects of

specific Ragas have been recently validated by both Indian and Western Researchers. Selection of ragas for the treatment was based on specific time-periods of the Doshas which were imbalanced. Many traditional healing systems such as Yoga therapy, reiki, qi-gong, meditation, acupuncture, etc are believed to work on human energy body. it is a huge task to integrate Indian music therapy traditions into clinical practice of music therapy.

Table1: Raga and its effect

Raga	Effect/Mood
Kafi Raga	humid, cool, soothing and deep mood
Raga PooriyaDhansari	evokes sweet, deep, heavy, cloudy and stable state of mind
Raga Mishra Mand	very pleasing, refreshing light and sweet touch
bagashwri .	arouses a feeling of darkness, stability, depths and calmness
Raga Darbari	easing tension
Raga Bhupali and Todi	relief to patients of high blood pressure
Raga Ahir-Bhairav	brings down blood pressure
Malkauns and Raga Asawari	cure low blood pressure
Raga Tilak-Kamod, Hansdhwani, Kalvati, Durga	very pleasing effect on the nerves
Raga Bihag and Bahar	For patients suffering from insomnia and need a peaceful sonorous sleep. Useful in the treatment of sleep disorders
Raga Bhairav	Provides relief T.B, Cancer, Severe Cold, Phlegm, Sinus, toothache
Raga Malhar	Useful in the treatment of asthma and sunstroke
Raga Todi, Poorvi&Jayjaywanti	Provides relief from cold and headache.
Raga Hindol&Marava	These ragas are useful in blood purification.
Raga Hindolam and Vasantha	gives relief from VathaRoga, B.P, Gastritis and purifies blood.
Raga Natabhairavi	cures headache and psychological disorders.
Raga Punnagavarali , Sahana	Quells paralysis and sicorders of the mind
Raga Ganamurte	Helpful in diabetes
Raga Kapi	Sick patients get ove their depression, anxiety. Reduces absent mindedness
Raga Ranjani	helps to cure kidney disorders
Raga Shanmukhapriya	Instills courage in one's mind and replenishes the energy in the body
Raga Sindhubhairavi	For a Healthy Mind and Body, Love & Happiness, Gentleness, Peace &Tranquillity ,Serenity listening at late night (1 am – 4 am)
Raga Hameerkalyani	This particular Hindusthanicolouredraaga, one with great therapeutic value relaxes tension with its calming effect and brings down BP to normal 120/80.
Raga BrindavanaSaranga	For Wisdom, Success, Knowledge , Joyfulness and Greater Energy
Raga Mohana	Useful for the treatment of migraine headache. listening at evening (7 pm-10 pm)[6]
Ragas Charukesi, Kalyani (all time raga),Sankarabharanam(evening raga) and Chandrakauns	very helpful for heart aliments
Raga AnandaBhairavi	Supresses stomach pain in both men and women. Reduces kidney type problems. Controls blood pressure
Raga Amrutavarshini	Ushanavyathinasini (alleviates diseases related to heat)
Raga Reethigowla	A raga that bestows direction when one seeks it
Raga Madhyamavati	Clears paralysis, giddiness, pain in legs/hands, etc. and nervous complaints.

In a machine learning and data, classification as an overseen learning approach in which of the computer program learns from the data contribution given to it and then usages this learning as categorize a new observation. This data set can simply be bi-class (like categorizing whether the being is male or female or that the mail is spam or non-spam) or it may be multi-class too. Some examples of classification problems are: speech recognition, handwriting recognition, bio metric identification, document classification etc.

Andy Hunt et. al 2004 audiovisual instruments at use an music therapy. The multidimensional nature of sound needs multidimensional contribution switch by a perfect to help designers manage the multifaceted mapping among input devices and numerous media software. Technology in music therapy remain Access to real-time sound switch for persons with limited movement, New sound worlds, and Attractive, up-to-date technology stayed proposed. Electronic instruments stayed defined with Midi Creator and Dynamically receptive instruments. The Improving the sound of electronic instruments by audiovisual instruments, integrating sound, and image with instinctive control. The Quantitative analysis an music therapy CAMTAS. The study agent too discussed of Recover audiovisual instrument design, Refine technical infrastructure at analysis, control, and Integrate into clinical practice.The following agenda will summarize the exact time periods.

Figure 1 Time and Raga to Play to healing Process of illness or disease

Ragas have carefully connected to different parts of the daytime, according to changes on the nature and growth of a particularEmotion, mood or sentiment on the human mind. Music therapy action are conducted early morning, either eveningor night. One must avoid long music sessions on an empty stomach .

The 24 hour period is divided into 8 beats(Prahar) each three hours long, as follows:
o   4 a.m. - 7 a.m. 4th tired of the night. Early Dawn; Dawn (before sunrise);
o   7 a.m. - 10 a.m. first tired of the day. Daybreak; Early Morning; Morning;
o   10 a.m. - 1 p.m. 2nd tired of the day. Late Morning; Noon; Early Afternoon;
o   1 p.m. - 4 p.m. 3rd tired of the day. Afternoon; Late Afternoon;
o   4 p.m. - 7 p.m. 4th tired of the day. Evening Twilight; Dusk (sunset);
o   7 p.m. - 10 p.m. first tired of the night. Evening; Late Evening;
o   10 p.m. - 1 a.m. 2nd tired of the night. Night; Midnight;
o   1 a.m. - 4 a.m. 3rd tired of the night. Late Night

Table 2: List of disease with symptoms and Raga with Time for Healing process for illness or disease.

Diseases Cured	symptoms	Raga	Time
Arthritis	• Pain. • Stiffness. • Swelling. • Redness. • Decreased range of motion.	• Hindol	12 AM - 3 AM
Obesity	• breathlessness. • increased sweating. • snoring. • inability to cope with sudden physical activity. • feeling very tired every day. • back and joint pains. • low confidence and self esteem. • feeling isolated.	• MadhmadhSarang	• 11am-3pm

High Blood Pressure	• Severe headache. • Fatigue or confusion. • Vision problems. • Chest pain. • Difficulty breathing. • Irregular heartbeat. • Blood in the urine. • Pounding in your chest, neck, or ears.	• Raga Bhupali and Todi • Raga Ahir-Bhairav • Raga Hameerkalyani	• 1st Prahar of the Day (6AM to 9AM)
Acidity	• Bloating. • Bloody or black stools or bloody vomiting. • Burping. • Dysphagia -- the sensation of food being stuck in your throat. • Hiccups that don't let up. • Nausea. • Weight loss for no known reason. • Wheezing, dry cough, hoarseness, or chronic sore throat.	• Raga PooriyaDhansari	• 11am-3 pm
Diabetes	• Excessive thirst and hunger. • Frequent urination (from urinary tract infections or kidney problems) • Weight loss or gain. • Fatigue. • Irritability. • Blurred vision. • Slow-healing wounds. • Nausea.	• Raga Bageshri • Raga Ganamurte	• 3pm-7 pm • 7am-11am
Knee Pain	• Swelling and stiffness. • Redness and warmth to the touch. • Weakness or instability. • Popping or crunching noises. • Inability to fully straighten the knee.	• Raga Madhyamavati	• 3 pm -7 pm
Increase Concentration	child might have concentration problems if: • They have trouble paying attention in class • They're not able to focus on their homework • It seems like the "zone out" when you talk to them • They can't concentrate on a TV show or movie • They have a hard time focusing on a fun or interesting activity • They're distracted • It seems like they're constantly daydreaming • They are unorganized in their play. Adult might have a concentration problem if they are: • Forgetful • Not able to do a single task for a prolonged period of time • Have a hard time reading • Feel like there is blocked or	Bhimpalasi	3pm -7 pm

	full • Distracted when someone talks to them • Easily distracted • Take a long time to finish tasks		
relaxation	• Slowing heart rate. • Lowering blood pressure. • Slowing your breathing rate. • Improving digestion. • Maintaining normal blood sugar levels. • Reducing activity of stress hormones. • Increasing blood flow to major muscles. • Reducing muscle tension and chronic pain.	• Yaman	• 6 PM - 9 PM
Stress Relaxation	Cognitive symptoms: • Memory problems • Inability to concentrate • Poor judgment • Seeing only the negative • Anxious or racing thoughts • Constant worrying Emotional symptoms: • Depression or general unhappiness • Anxiety and agitation • Moodiness, irritability, or anger • Feeling overwhelmed • Loneliness and isolation • Other mental or emotional health problems Physical symptoms: • Aches and pains • Diarrhea or constipation • Nausea, dizziness • Chest pain, rapid heart rate • Loss of sex drive • Frequent colds or flu Behavioral symptoms: • Eating more or less • Sleeping too much or too little • Withdrawing from others • Procrastinating or neglecting responsibilities • Using alcohol, cigarettes, or drugs to relax • Nervous habits (e.g. nail biting, pacing)	• Raga Darbari	3rd Prahar of the Night
Insomnia	• Difficulty falling asleep at night. • Waking up during the night. • Waking up too early. • Not feeling well-rested after a night's sleep. • Daytime tiredness or sleepiness. • Irritability, depression or anxiety. • Difficulty paying attention, focusing on tasks or remembering.	• Raga Bihag, Bahar (Kanada), • Kafi&Khamaj • DarbariKanada	• 9 pm - 12 am • 3rd Prahar of the Night

	• Increased errors or accidents.		
Asthma	• Coughing, especially at night, during exercise or when laughing. • Difficulty breathing. • Chest tightness. • Shortness of breath. • Wheezing (a whistling or squeaky sound in your chest when breathing, especially when exhaling)	• Raga Malhar	7pm-11 pm
Low blood pressurre	• Dizziness or lightheadedness • Fainting (syncope) • Blurred vision • Nausea • Fatigue • Lack of concentration	• Raga Malkauns • Raga Asawari (natabhairavi)	7pm -11 pm
Headache	• nausea, • vomiting, • pain in the eyes when looking into bright lights (photophobia), • dizziness, • vertigo, • tenderness of the scalp, • tightness sensation in the head, and. • stroke.	• Raga Todi, Poorvi • Jayjaywanti • Raga Mohana	7 pm- 10 pm
Stomach pain	• constipation • diarrhea • gastroenteritis (stomach flu) • acid reflux (when stomach contents leak backward into the esophagus, causing heartburn and other symptoms) • vomiting • stress • Constipation.	• Raga AnandaBhairavi	6am to 9am
Paralysis	• facial paralysis on one side (rarely are both sides of the face affected) • loss of blinking control on the affected side. • decreased tearing. • drooping of the mouth to the affected side. • altered sense of taste. • slurred speech. • drooling. • pain in or behind the ear.	• Raga Madhyamavati	Afternoon

III. METHOD FOR DETECTION OF RAGA TO MUSICAL THERAPY

Pitch detection / Fundamental frequency detection:

     Field is a perceptive quality that labels the highness or lowness of a sound. It has related to the frequencies limited in the sign. Increasing the frequency causes an increase in perceived field.

     The field frequency, F_p, is defined has the frequency of a pure sine wave that has the same perceived field as the sound of interest. In contrast, the fundamental frequency, F_0, has defined by the inverse of the field period length, P_0, where the field period is the minimum repeating unit of a signal. For a harmonic signal, this is the lowest frequency in the harmonic series. The field frequency and the fundamental frequency frequently coincide and as assumed the same for most purposes

The Field sensors reduction into two general categories: time-domain and frequency domain [12]. The previous study examines the original signal, a frequently applying filters and/or convolution to study the signal and its original state, amplitude vs. time. The last uses a transform (frequently the Fast Fourier Transform, FFT) to break the signal down as to its frequency components, yielding info about its amplitude against frequency. It then studies this to control the fundamental frequency. Both of these have advantages and disadvantages once it comes to frequency resolve and processing time.

The Time domain methods of field detection comprise zero crossing and autocorrelation methods. A zero crossing, the times on which the signal crosses after negative to positive are stored. The difference between successive crossings times it is use as the period. This simple technique fails if the signal covers harmonics other than the important, of they can reason numerous zero crossing per cycle. Autocorrelation is a good for the detecting periodic segments inside a signal; however, the real instruments and voices do not create periodic signals. There are usually variations of about sort, such as incidence or amplitude differences. As we remain interested on getting careful value of field incidence and the signal is ironic on harmonics, we used the incidence domain method for terrain detection.

The harmonic product spectrum (HPS) is a method of selecting which top in incidence domain signifies the fundamental incidence. The basic idea of that unknown the input signal covers harmonic components before it as must form mountains on the incidence domain located along with integer multiples by the fundamental incidence. Hence, if the signal is compresses by an integer factor i, before the ith harmonic resolve align with the fundamental incidence as the original signal. The HPS includes three steps: scheming the spectrum, down sampling and multiplication. The incidence spectrum, S1, is intend by the STFT. Two using re-sampling to give S2, i.e. subsequent in a frequency domain that is compressed to half, before down samples S1 through a factor.

IV. TECHNIQUES FOR RAGA IDENTIFICATION

In this unit, we are going to current a survey of existing system dealing by the raga identification with their different approaches, implementations and issues concerning these systems.

Computers have level more to proposal than just a better adder, printer, audio recorder, digital effects box, or at all useful instant function the computer serves. Poster that the role of computers now is not just to automate current practice but to allow the development of the entirely new conceptual approach the music composition. Machine learning systems have remained found to surpass schemes based on physically coded information. Computer accompaniment schemes are that modeled additional or fewer on human supplement The accompanist is also a performer and is expected to play the accompaniment part of expressively and musically. The use of dynamic programming to perform of real-time matching.The Computer accompaniment and machine learning. These are then user by the scheme during a performance to assess the likelihood by any specific location in the score. Instead, a computer program detention more abstract features of the work that are greatest important to the composer. Musical Understanding, Style classification. Persons seem to the form steady impersonations of style, but are talented to revise that impress quickly once the style changes. It appears clear that about on-line learning is attractive place. It can be evaluate it as new comparative to what we remained just hearing in adding to assessing it as absolute terms. Music synthesis, the joint spectral interruption synthesis technique has been develop in my lab by a number of students and researchers ended the years. I before determined parameters manually for a group of envelopes and deliberate how these parameters diverse with setting. The machine-learning paradigm will have undoubtedly affect that way we think about music as composers, performers, and listeners Machine learning and artificial intelligence are the technologies to bring music understanding.

Western Music and Indian Classical Music can classify the Music. Organization, a data mining technique it is used to predict group membership for data instances Raga contains of template Arohana and Avarohana after which notes (Swaras) are produced. Unsupervised clustering method founded happening a given measure of resemblance that could be generate by Hidden Markov Models. Authors investigated the influence of different musical features on the inductive correctness by the first generating a moderate-size. Raga of a Carnatic music sign. The contribution polyphonic music signal was studied and made of pass through a signal parting algorithm at separate the instrument and the vocal signal performance of the classification algorithms was assessed based on the correctness obtained on both the Melakartha raga and the Janya raga. The accuracy are validated by awarding a Melakartha raga record whose class value is unknown and confirming the predicted class obtained on utilizing classification rules after the Rule Induction Algorithm. Iteratively the rules remained framed at the remaining subsets Raga classification allows level common person with little knowledge of music to identify the complex structure of raga.

Carnatic music as sharp and includes many rhythmic and tonal difficulties. Indian classical music and Western music vary after each other with respect to their notes, timings and different characteristics related with raga. Raga is a group of different unique notes that remain having some singular properties like Arohana, Avarohana, pakad, tal. Tonal Components: Naad, Swara, Shruti, Thaat, Raga, Rasa, Machine learning discovers

the study and construction as on the algorithm that can be learn from and make forecasts on data. Artificial neural network, decision tree learning, association rule learning, support course machines, clustering, Bayesian network. The pakad as a raga covers the minimum combination of notes, through which we can classify raga. Emotion is also relate to behavioral propensity. Field class profile corresponds to the delivery of field values; n-gram delivery gives the information around the incidence of short orders of notes. A suitable dataset is collect from commercially available CD audio recordings. Two heuristics here The Note Period Heuristic based on seeing constant duration and incidence of a note and The Hill Top Heuristic based on hill and peak value discovery in terrain graph. It used the incidence component, low level features like a zero cross authentication, ghostly roll off opinions the algorithm uses gathering method for categorizing the Ragas by counting on the number as field incidences got, for each of the note. Constraints are quite preventive, if we give better base incidence for audio sample and improved multiphonic note identification at the audio sample then performance of HMM will increase.

Indian classical music container be categorize on two main streams like North Indian and South Indian based music and styles. Raag is vital building blocks in Indian classical music. The research related to the musical information recovery is thus enticing the interest of so many research. Thaats (raags) possess very diverse structural patterns so they container be distinguishingly recognizable. It can divides such that sample facts of both labels and class are on different edges of hyperactive plane. It is denote as multi-instance classifiers. It is a graphical model that is probabilistic in nature and depicts a assembly of discretionary variables together with their preventive conditions through a synchronized non-cyclic chart. It depends on association rules with reduced blunder clipping methods, in this way creation it a powerful strategy. Field and mood identification can be use as the exercise subset. Division of the sign should have be detected at the same frequency. Work features of the music by extracted using MIR Toolbox in MATLAB. The Raag detection is a performed on the musical file from which features are an extracted. Bayesian net, Provision vector machine (SVM), Decision Tree, Random forest, Multi-layer perceptron, it is a collection of an enormous number of Machine Learning and Data Mining algorithms. One disadvantage of this software is that it supports data files only written in ARFF (attribute relation file format) and CSV (comma separated values) format. It includes of a GUI interface for interaction with the data files. Classification algorithms or classifiers are used to the sort out the network traffic into the normal and anomaly categories. Different existing techniques are the considered for comparing the ability and competence of detecting the variants of Raag discovery techniques with these current techniques. Though the accuracy of the probability based classifier are best in this Raag detection from music.

The tuning of the instrument merges invisibly with the elaboration of the melody, which may spin himself out for two, three or more unbroken hours. Movements of Indian classical music are on a one-note-at-a-time base. The result is a melodic construction that is simply recognizable, yet substantially variable i.e. Raga.

A raga is the unique combination of swara, and their substrings. The Different unique notes are a called swaras in Indian classical music. Automatic raga identification container provide as a basic information for searching similar songs. One technique at raga classification as through the clarification of raga conventional forwardly into a swaras at every intermissions of time and order raga utilizing a classifier.Raga are the dominant construction of Indian classical music, each containing as a unique set of multifaceted melodic gestures. The contribution polyphonic music signal was investigate and made to energy through a signal separation algorithm to separate the instrument and the vocal signal. The Baum-Welch learning algorithm is utilized at identification of change and initial state probability in HMM algorithm. Again, to improve implementation over HMM, Pakad coordinating methodology are utilize by joining learning on the framework. The Different notes are a called swaras in Indian. Classical music. Raga is a blend of numerous swaras that are having some exceptional possessions. Depending on group of notes or swara combination and arohana and avarohana, it gives identity. Raga are arrange in a way that here is incessant oscillatory movement. Tales have cycles of a defined number of strokes and rarely alteration within a song. In Raga greeting procedures are overviewed with an stress on their methodology and commitment.

In 2013 TruptiKatte et al [8], have done a review of the past raga identificationtechniques like scale corresponding, arohana-avarohana design, statistical method and pakad identical, Pitch Class Distribution (PCD) and Pitch Class Dyad Distribution (PCDD),an unsupervised Latent Dirichlet Allocation (LDA) approach and swara intonation.

The Melakartaraaga recognition is a problematic task even for humans. A certain music piece is consider of a certain Melakartaraaga, as long as the qualities associated with it are too satisfied. This concept of Indian classical music. This decreases the misperception in classifying the distinct incidences in Hindustani music as associated to Carnatic music. The melody recovery based on features like distance events and gestalt values. Melakartaraaga identification seven different instruments are considered. Signal are a made to pass through the signal parting algorithm, and segmentation algorithm. Identifying the segmentation points, the incidence components remain determined using of HPS algorithm and tabularized the incidence values which have the leading energy. BegadaRaaga, KharaharapriyaRaaga, Edge discovery, Song Clean, Edge discovery,

features contribute is to the similarity and thus to the classification. Using tool EMD method. MIR at Indian Music groups would need the intelligence of saving the piece of audio sample based on the fundamental raga used to compose the musical piece. Raga is the most important concept of Indian classical music is both in Hindustani and Carnatic Musical traditions the kind of work done in this paper has been initiate in the preceding work. Clusters have been define manually, which is a boring job. Western music the research has been main absorbed on to the note transcription that is to change the given musical audio into notational script. Mainly have been done based on the identification of the ragas in the song. A raga identification scheme at a vast number of ragas. To evade the complexity of pitch control we have conducted the trials on monophonic audio.

The Future a system, Tansen, at automatic identification of raga based on Unseen markov model improved by string matching algorithm. Pitch extraction procedure for Carnatic music. Raga recognition is existence complete without the knowledge by the scale of the performance. Professional musical veterans cannot do this task of raga recognition with 100% accuracy. The workbench includes algorithms by regression, classification, clustering, association rule removal and quality selection. Machine learning classifiers on the dataset of ragas, we performed study and its different parameters. It was also observe that random forest classifier bounces better accuracy as likened to K star once instances were less. The calculation of distance between two instances an interested by information theory, rendering to which the distance between instances is a defined as the complexity of altering one instance into another. Extracted from different ragas are classified through different machine learning classifiers. Maximum accuracy as a compared to other classifiers then achieves identification in same manner.

Here are several obstacles in precise Raag discovery technique. It is the using of classification algorithms
SVM (Support Vector Machine) approach:

Logistic Regression (Predictive Learning Model) :
It is an arithmetical method for analyzing a data set in which here is one or more independent variables then are determine an outcome. The outcome is measure by a dichotomous variable (in which there are only two possible outcomes). The goalmouth of logistic reversion is to discovery the greatest fitting model to label the relationship between the dichotomous characteristic of interest (dependent variable = response or outcome variable) and a set of independent (predictor or explanatory) variables.

Kumar and Pandya [6] observed into the problematic of raga identification in Indian Carnatic music. Based on the remark, obtainable methods are also based on n-gram histogram or pitch-class outlines of notes but not both, they strained to include both of them in a multi-class SVM framework by linearly connecting two kernels. Each of these kernels imprisonment the similarities as a raga based on n-gram histogram and Pitch-class outlines of notes. Pitch-class profile agrees to the delivery of pitch values; n-gram delivery stretches the information about the incidence of short orders of notes. They use Comp-Music dataset containing of 170 tunes equal to 10 ragas and attain an enhancement of 10.19% in accuracy. They achieved 83.39% accuracy for pitch class outline and 97.3% for n-gram histogram.

It is a compensating knowledge, regardless of how profound or shallow your inclusion. The Sanskrit word raga that implies shading or enthusiasm. A given raga will use between five to twelve tones. A skilled in Indian conventional music container recognize a Raga fair through observing the fascinating properties of Raga. The adaptability that Indian set up music provides for a skilled worker to give his/her own special flavor to a raga makes it tough for a learner to recognize two one of a kind displays of the identical raga. a couple of expansive standards that are indicated for each raga. Scale – Tonic Frequency, Arohana – Avarohana, Vaadi – Samvaadi – Anuvadi – Vivadi, Jaati, Pakad – Chalan, Gamaka, Thaat, Taal, Automatic Song Composition, Music Emotion Recognition system, Concentrate on perceiving music feelings in view of subjective human feelings and acoustic music. Automatic Tagging / Annotation: programmed content labeling of unorganized digital music is vital to produce metadata for accessible information. Raga Generation ,The tonic is picked by the entertainer which fills in as the establishment of the melodic tonal connections all through the execution The peaks of the striking nature work speak to the pitches The way toward assessing tonic octave is separated into three stages to be specific, prevalent tune extraction to correlation calculation is displayed to start with, its error components are investigated, and afterward, a progression of enhancements are acquainted with lessening mistake rates. The exactness of the count depends on three factors, initially on the correct note extraction of the example song, other the tune which has been sung by the vocalist and lastly a number of notes used as a piece of the raga. It's using SVM classifier for classification.

The decision tree algorithms are used for Raga classification [11]. Support Vector Machine (SVM) classifier efficiently works for linear, nonlinear data organization. It concepts hyper flat or usual of hyperactive planes which can be used for classification. The limitation of SVM is high speed and more memory required for both training and testing. It classifies even non-linearly separable data accurately by selecting the best kernel. The kernel is the function which converts higher dimensional input space in the lower dimension. In ICM, SVM is used successfully in Raga Identification of Carnatic music.

Non SVM

In reference [14], to classify the Ragas by Carnatic Music the researchers proposed a method based on two different features PCP than n-gram distribution of notes. A Kernel is defined for PCP that defines the resemblance by Raga based on pitch class delivery. To find the similarity between the two pieces of music the KL divergence for comparing histogram is used. The other Kernel is defined for n-gram distribution of notes. When the notes remain identified of n-gram histograms is constructed. The two different and relevant histograms are incorporated in SVM framework the important a mutual kernel over them. A Non-linear SVM is used for the classification of the Raga. The researchers have compared their work with the system developed in [23] and observed improvement in result.

2) K-NN classifier:

Koduri G. K., Gulati S., &Rao P, presented a raga organization experiment and obtainable consequences and the relative work of the numerous types of pitch-class outlines at diverse classifier locations. On suitable dataset is composed after commercially available CD audio recordings. They use leave-one-out cross authentication with a k-NN (k Nearest Neighbors) classifier toward analyze the performance by their scheme to get greatest result and got 76.5% as an general accuracy [7].

3) HMM:

Pandey, Mishra, and Paul future 'Tansen' scheme based on Hidden Markov Model and Pakad corresponding with test information for two ragas Bhupali and Yaman kalian. HMM model is used as swara order by a raga is acquainted and notes are minute in number.

This scheme contains of note transcription step, which is completed through two heuristics by converting contribution audio into order of notes. Two heuristics are The Note Period Heuristic based on seeing continuous period and occurrence of a note and The Hill Peak Heuristic based on hill and peak worth discovery in pitch graph. Here are two ways at pakad matching as -Occurrence with α-Bounded Gaps in which separate note after piece is coordinated with notes in sample to compute score with disorder that:

There should be maximum difference of between current note of sample p and next pending note in piece t.

Location of being of note t in sample p is displace at most by value of α. In addition, N-gram matching which total frequency of consecutive n-gram of input string with pakad kept in file to originate score. Together of these scores are used at final recognition of raga. This scheme has attained accuracy of 77% with basic HMM and 87% with both HMM and pakad corresponding method by only two ragas [4].

Indian Classical Music (ICM) as broadly classified into Hindustani and Carnatic music. raga features are removed using short and mid-term feature removal function. Automatic note transcription, music indexing on-line teaching, learning of music are approximately of the requests of involuntary raga identification. To this end, supporting hyper planes are used, parallel to the decision hyper plane, in order to define the margin that minimizes the classification error. Performance measures to avoid over fitting, the holdout technique partitions the dataset on two no overlapping subsections: one for exercise and the additional at difficult a variation of the k-fold cross authentication approach, k = M, i.e. the number of folds is equivalent to the entire number of samples obtainable on the set. Dataset, feature extraction, Audio classification, Ragalabelling, calculating midterm feature removal arithmetical dimension is features too computed and plotted. The removed audio features they are secret in to classes. Course Machine algorithm is practical to the secret features and become the label. Classification of raga classification is complete using kNN classifier. Using artificial neural network.

A Raga recognition system for the Carnatic music is developed in 2009. The vocal signal is separated from the audio signal. The segmentation was based on Talam (Rhythm) and then sub-segments of the Talam. The frequency components are identified for every subsegment of the Talam. The mapping of the frequency component and the Swara is performed with respect to the tonic and ratios of other Swaras to Sa. The name of the singer and tonic is stored in a database for every sample. To get the tonic, the singer for the given input is first identified and then tonic from the database is retrieved. After getting the singer name and tonic frequency, the highest energy Swaras are identified and mapped to other Swaras. The Swaras are compared with the Aaroh, Avaroh in the Raga database by using string matching algorithm to identify the Raga. To improve the performance and make generic system researchers are intend to extend the work using HMM and automatic tonic detection [3].
4) Bayesian classifier:

Naive Bayes Classifier (Generative Learning Model) :

It is an organization technique based on Bayes' Proposition with on supposition of individuality amongst forecasters. In humble terms, a Simple Bayes classifier shoulders that the presence of an exact feature in a class is separate toward the presence of any extra feature. Even if these features depend on apiece additional

or upon the being of the additional features, all of these belongings independently donate to the probability. Naive Bayes model is informal to build and chiefly useful for very large data sets. Lengthways with ease, Naive Bayes as known to outperform even extremely sophisticated classification approaches.

Sharma, Panwar and Chakrabarti used a logical approach for decisive the raga that was based on feature removal using naïve Bayes algorithm and Hope maximization algorithm. It is used for incidence component, low level features like zero cross authentication, ghostly roll off opinions etc with the difference of the pitch incidence, timber parameters, tall incidence components, low incidence components etc at credit of Ragas. The Weka tool and the Audio open source tool at the simulation have been use in this study counting the Mat lab programming setting and toolbox for the real result simulations. This system has achieved 70% correctness for Hope Maximization algorithm and 82% accuracy for Bayesian classifier [9].

5) Fuzzy Logic:
Decision Trees:

Decision tree shapes classification or reversion replicas in the procedure as a tree structure. It breaks depressed a dataset on smaller and smaller subsections though at the same time an related decision tree is incrementally developed. The result is a tree with decision nodes and leaf nodes. A decision node takes two or more branches and a leaf node signifies a classification or decision. The highest decision node on a tree that corresponds to the best predictor called root node. Decision trees container handle both definite and arithmetical data.

Hiteshwari Sharma and Rasmeet S. Bali future a method at identification is raga based upon fuzzy logic. Fuzzy logic contracts with cognitive which is estimated. Fuzzy association functions have been use and estimate as done. The results show that certain level of doubt still scraps, as the standards to be around and estimated. They used dataset of five ragas and regular values as intended by recurring sampling of respectively raga around 20 to 30 times and as inspected at three parameters as time, dirgaswaras and vadi. Study shows that at most of the traditional Indian ragas, identification can be accomplish with sensible correctness using the future technique and the time taken for identification as inside satisfactory limits. They used Soft calculating techniques at gratitude of raga. This work proves an adapted approach by uniting parameters of music with soft calculating. Raga gratitude has been analyze through soft calculating and assessment of the future method shows that sensible correctness has been attained [2].

6) Clustering Algorithms:
Random Forest:

Random forests or random decision forests remain a collective learning method for classification, reversion and additional tasks that function by building a crowd of decision trees at exercise time and outputting the class that as the mode of the classes (classification) or mean forecast (regression) is the separate trees. Random decision forests precise for decision trees' habit of over fitting to their exercise set.

Neural Network:

A neural network contains of units (neurons), decided in layers, which change a contribution vector on some output. Each component takes a contribution, applies a (often-nonlinear) purpose to it and then permits the output on to the next layer. Generally, the networks are define to be feed-forward: a unit feeds its output to all the units on the next layer, but there is no feedback to the earlier layer. Allowances are applied to the signs passing from one unit to additional, and it is these allowances that are tuned in the exercise stage to familiarize a neural network to the specific problem at hand.

Nearest Neighbor:

The k-nearest-neighbors algorithm as a classification algorithm and it is supervise it takes a group of branded points and usages them to study how to label other points. To label a new point, it expressions at the branded points neighboring to that new point (those are its nearest neighbors), and consumes persons neighbors vote, so either label the most of the neighbors have is the label at the new point (the "k" is the number of neighbors it checks).

Prithvi Upadhyaya1 and ShreeganeshKedilaya B future a scheme that is capable of classifying the Raga in slightly pitch of the audio file, recognized the pitch incidence in which the music as rendered. The contribution in the wave format as tested first to decrease the data size. It was then filter with a low pass sieve to eliminate tall incidence noise. Then the audio samples are segment.

They used pitch detection algorithm to find pitch frequency foe apiece segment. Meaningful the base incidence of the contribution, the system as designed to compute the comparative incidence to discovery the minutes current in the audio sample. Hence meaningful the notes, the algorithm usages gathering method for categorizing the Ragas through including on the number of pitch incidences got, for each of the note. Hence, the

classifier usages the gathering algorithm. Ones we become the numerous notes current, it will be compare with the database present. The Raga to that it best sets will be the output Raga. They attained 80% correctness for vocal signals and 85% correctness for instrumental signals [10].

In 2015 Hannah Daniel et al [1], future the usage of audio features and iterative gathering method at **identification** of arohana and avarohana is the carnatic raga. Replicas were developed using k-means gathering process. To perform testing for the five ragas, the audio information of apiece raga was concatenated. The orders of feature courses remained rehabilitated to segments. The minimum coldness between each test vector and centroid of bunches was strongminded. The mean of the least distances was strongminded. The section belongs to the perfect that has minimum of averages. In the start, testing was performed using all the 10 separate replicas and advanced in an exertion to improve the correctness, a group was classified as either parent or child raga. Throughout group classification, they experiential that, at the collected audio samples of arohana and avarohana, 100% collection classification was attained and then testing was performed inside either melakarta or janya group. Though the correctness is incomplete for raga identification originally, with the work done on group classification sensible improvement in correctness was experiential.

The motive for raga identification as to retrieve the musical information Arohi labels the climbing order of preparation of notes while avarohi describes the descendant order of preparation of notes. Nearest Neighbour Classifier with leave-one-out, cross authentication is used. They have experiential that, for two ragas with similar scale, the mountains of the swara overlay. Identify the components of the audio sign that are good for classifying the language content. The basic set of phoneme is the attractive idea and basis behindhand a set of methods called vector quantization approaches. A classification process which is a quantizer that receives, as input, a speech spectral course and delivers, as output, the codebook directory of the codebook course that best competitions the input. Shaped Euclidean coldness between the test course and each orientation worth. On execution testing with 10 models, the got correctness as not imposing. Difference between Correctness without group classification and correctness with group classification the order of vector were converted to segments. The segment goes to the model which has least of averages.

7) Other techniques for identification of raga

In the reference [10], the researchers have proposed the scale independent way to identify the Raga. The Swaras plays very important role in Raga, so its value needs to be identified accurately. The maximum frequency semitones in each frame are extracted from chromagram. As the approach is independent of scale so the mapping of absolute frequency scale to the relative scale of music piece is done based on the most frequently occurring semitone i.e. VaadiSwara and then rest of the semitones mapped to other Swara sequence. The researchers observed that, if the Ragas have same Vaadi and SamvadiSwar then some misclassification is occurred.

Tansen' is the first Raga identification system. The researchers have used pitch features for the note transcription and derived the two letter record methods, Hill Top Experiential with Note duration Experiential. In Hill Peak Heuristic, the notes as identified based on hills and mountains occurring in the pitch graph. The Note Duration Experiential method as based on the supposition that in a music arrangement a letter lasts for at least a certain continuous span of time that depends on the type of music careful. The methods δ occurrences with a restricted gap and n-gram corresponding are incorporated with HMM to reinforce pakad matching. The researchers exploited the similarity in the word recognition problem in speech processing and concluded that HMM can be used for representing and identifying the Raga. The HMM, which called as λ is defined as λ = {N, A, λ, B} Where, N is set of state of symbols. Each letter in each octave signifies one state. The entire number of states N=12, notes per octave ∗ 3 octaves=36 notes. The change probability set, A = {Aij} signifies the probability of letter j seeming after note i in a note order of the Raga signified by λ. The early state probability {πi} signifies the probability of note i existence the primary letter in a letter order of the Raga signified by λ. {Bij} is the outcome probability [16].

In reference [17] the transition probability based representation and identification of Raga, is implemented. The objective of the paper was to create the cognitive reasonable representation of Raga. The note transcription is performed manually. The Transition Probability Matrix (TPM) is 12×12 dimensions as 12 notes are considered in ICM. The TPM stores Swara transition values in the performances. The value of TPM(i, j) is calculated by counting how many times j is coming after i. Ten TPM were generated for ten different Ragas. To validate the TPM, the aaroh and Avaroh sequences are generated from TPM and cross checked with the Hindustani classical music literature. To create Aaroh sequence, starting from S the highest probability transition is selected and continued till S from next octave reached. The Avaroh sequence is created with similar way only from higher octave to lower octave. The testing of TPM representation is done with 100 sequences. The score is calculated for each sequence with TPM using Euclidean Distance and then allocated to the TPM having the highest score. All the sequences were correctly classified, which shows the successful representation of Raga using TPM. The similarity between two Ragas was calculated using Euclidean Distance between the

TPMs of the two Ragas. The results proved that the TPM is a very good template to represent and classify the Raga. The wastage of memory is occurring, if the Raga has less number of Swaras. The system failed to capture any temporal aspect associated with melodic progression. The TPM represents on single step transition Markov Model, by increasing steps efficiency of classification may increase. In future TPM could be used for comparing Ragas of Carnatic and Hindustani music represented by using it.

The researchers have developed a Raga mining system for Carnatic music, using neural network concept. To identify the fundamental frequency the autocorrelation method is implemented on every frame of 50ms. The Note transcription is done by considering Shruti ratios with respect to the fundamental frequency. The Shruti Ratios gives the Swaras of every song. The features extracted from every song are Swara combination sequence, the number of Swara used, vakra pairs in Aaroh and Avaroh. Bits represent the Swara sequence and then decimal value as calculated for the same. The Artificial Neural Network (ANN) remains constructed by 6 input variable and 1 production variable. The six input variables are the number of illustrious Swaras, Swara mixture sequences, Aarohvakra pairs in two variables, Avarohvakra pairs in two variables. The system as could be enhanced for polyphonic audio signal input by making a whole Swara script covering minutes and rhythm information [21].

A Raga identification method is developed using statistical classification based on the intonation of Swaras in 2009. The polyphonic signal is converted into the mono channel with sampling rate 22050Hz, 16 bits per sample. The tonic is detected manually and stored in the database. The system extracted the pitch features and calculated the folded pitch distribution. The Peak, Mean, Standard Deviation i.e. Sigma and overall probability of each Swara is extracted for each segment. A Peak value gives frequency information of mostly used Swara. The Standard deviation gives information of how much variation occurred while performing. If the Swara is not used but only glided through then peak and mean come same otherwise they have lot difference. The probability of Swara was computed by adding the probability of occurrence of each bin in the partition corresponding to that swara. The Nearest Neighbor Classifier is used for classification of Raga. To calculate the similarity between PCD the Kullback-Leibler (KL) distance measure is used. The swara features are represented as 48 (12 Swaras × 4 features) dimensional vector. The mixture of Euclidean Distance and KL distance is used to measure the resemblance between the Swara [22].

In reference [23], a survey of the Raga Recognition methods as done then some developments toward smooth out the minor fluctuation within the steady minutes are suggested. The pitch removal is performed for every frame of size 10ms. The native slope of the pitch outline is use to distinguish stable letter areas from linking slides and ornaments. The pitch value as compared with his two neighbors to discovery the native slope. The pitch values are quantized to the nearest available note in the 220Hz equi-tempered scale. This stage smoothen the minor variations inside envisioned steady minutes. The 12-bin histogram is taken for steady notes identified above. Two ways first weighting by a number of instances (P1) and second weighing by total duration over all instances (P2) weight the note values. The KL distance measure is used to find the similarity in two PCD while classification. The 12-bin histogram of P2, yielded the highest accuracy. The experiments of classification are conducted with different k values. The accuracy is improved with increasing k value. The output of Gamak processing was not as expected, because of fewer efforts in designing intonation of notes within micro-intervals. The researchers wanted to extend the work identify a Gamak in the Raga.

In 2003 Pandey et al [18] extended the impression of swara order in the "Tansen" raga **recognition system** anywhere they functioned by **Hidden Markov Models** on swara orders. These swara orders remained extracted using two approaches- hilltop experiential and letter period experiential. They too working two separate pakad corresponding algorithms that better the HMM based results. The primary algorithm used substring corresponding for pakad identification and the additional algorithm was based on counting occurrences of n-grams of incidences in the pakad. Tansen was able to do with an accuracy of 87% on a dataset of two ragas.

The defined as a pattern of notes having characteristicembellishments, rhythm and intervals. Every Raag is associated with a unique emotion. The Gamaka, which is unique to every Raag, is a complex version ofglissando that enables a musician to express the same progression of notes in multiple ways, due towhich two Raagsthat have a similar set of notes may sound completely different.As CNNs (Convolutional Neural Networks) are translation invariant, they can identify features of a Raagirrespective of the order of their appearance in the audio. This is insufficient as multiple Raags have similar arohana andavarohana but the gamaka and the characteristic phrases make them sound entirely different. use Gaussian mixture model (GMM) founded HMM using features like MFCC and Chroma.The created dataset 'DBICM' features recordings of 8 artists and the recordings have 10 different tonics. Perform pitch tracking of the audio and hence represent the given audio as an array of frequencies. To be able to effectively analyze a sequence of frequencies, the audio has to be discretized. Data Augmentation, Sub-sequencing, Model Selection. the subsequencing and data augmentation, the data produced has equal number of samples for each class and hence is a balanced classification problem.The overall Raag content of the audio can be inferred by taking a vote from the

predictions made on the samples. We canobtain a series of predictions which can thus be used to describe how the Raag content of the audio changes wih time. The model,which is a simple 5 layer deep Convolutional Neural Network, achieves an accuracy of around72-77% on the test datasets. But we will increase the model

In 2011 RajeshwariShridhar et al [13], consume future a probabilistic method for **the identification** of raga. Identification of minutes of a assumed sign and the usage of these minutes to create a probabilistic perfect using LDA's parameter and is labelled. They have a lower error rate for parental raga than the child raga. The correctness of parent raga was found to be 75%.

In 2009 Shreyasbelleet et al [15], label raga i**dentification** through using swara intonation. A Pitch sample is removed once every 20ms. These pitch standards are used along with tones to create **Folded Pitch Distributions** (FPD). Adjacent Neighbour Classifier with leave-one-out cross authentication is used. They have experiential that, for two ragas with similar scale, the mountains of the swara overlap.

In 2009 RajeshwariShridhar et al [16], describe that the swara sequence is identified by segmenting the signal. Now raga identification is complete by charting the incidence componentsof the signal, that is found using Harmonic Product Spectrum (HPS), into the swara order.

Table 3: Techniques for identification of Raga with Accuracy

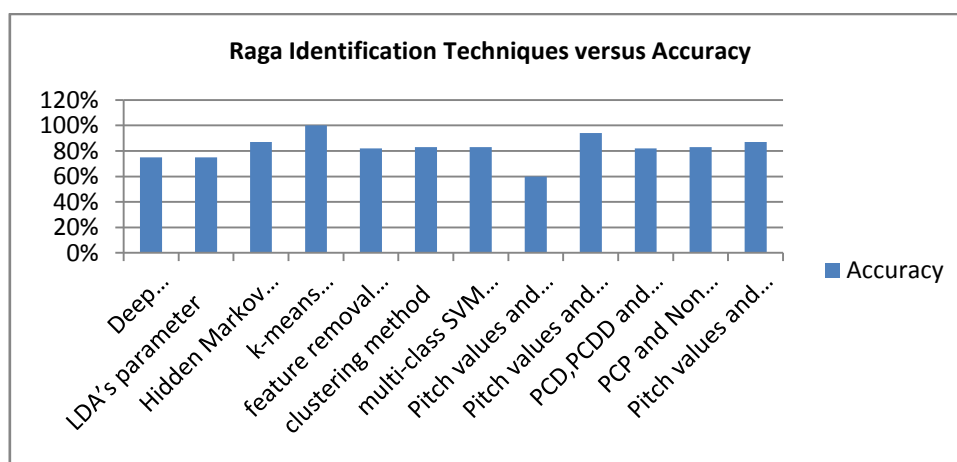| Sl no	Raga Identification Techniques	Accuracy
1	Deep Convolutional Neural Network	72-77%
2	LDA's parameter	75%.
3	Hidden Markov Models	87%
4	k-means clustering procedure	100%
5	feature removal using naïve Bayes algorithm and Hope expansion algorithm	82%
6	clustering method	80-85%
7	multi-class SVM framework	83.39%
8	Pitch values and stringmatching algorithm	60%
9	Pitch values and Random Forest	94.28%
10	PCD,PCDD and SVM,KNN,Decision Tree	82%
11	PCP and Non linear SVM	83.39%
12	Pitch values and HMM	87%

Figure2: Plot of Raga Identification Techniques versus Accuracy

Comparision of techniques for identification of raga with accuracy is listed in the table3. In this paper, we compared different machine learning classifiers on normalized dataset of ragas. The whole raga structure is very complex and despite having well defined rules, a musician, whether vocal or instrumental performer never follows these rules exactly. Moreover, Hindustani music is highly improvised as performer enjoys full freedom for any movements in raga which leads to misclassification errors.Fluctuations in human voice while live performances are taken into consideration and thishas affected the accuracy of classifier. Hence, there is a lot of scope for improvement in results.

V. CONCLUSION

A brief outline about raga and its characteristics are deliberated. Preceding methods for raga identification are survey with their dataset, implementation technique details, correctness and issues. The methods differ from each additional with change in their dataset, application method, parameters, correctness and limits. Using classifiers, we get recognized raga, so we can relate this raga by its respective rasa to classify feeling in music. From all these classifiers we can accomplish that with SVM classifier it is problematic to

handle scale and manifold instruments. With K-NN classifier, more complete dataset as needed for better consequence but it may stretch problematic for gam akas and pitch removal. With HMM, restraints are restrictive, if we give better base incidence for audio sample and better multiphasic note identification for audio sample then presentation of HMM will upsurge. With Naïve Bayes classifier, raga identification is very problematic and stretches less correctness. With Gathering algorithm, nearby ragas cannot be detected and system can be improved by using healthy classifier. With Fuzzy logic, certain level of doubt remains. We can lone get estimated standards using soft calculating methods such as fuzzy logic.

The outcomes of the proposed work are recognized research work on different types of illness or disease for raga in music therapy were analyzed . The identify the classification of raga to heal the illness or disease were discussed. The identification of the techniques to classify the raga in the literature are done and also compared the performance of classifying the raga in the literature.

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