Emotionally Intelligent Machines & Sentiment Synthesis based on Ancient Vedic Astrology

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Abstract

After brain researchers have recognized that emotions are crucial for human and animal intelligence, Artificial Intelligence researchers have also started to acknowledge the importance of emotions in the design of intelligent machines. In this paper, we will discuss about the Emotionally Intelligent Machines(EIM's) which is the new field of research in Artificial Intelligence but it has a great potential to do immense good, however the technology can be misused but it is up to the consumers of this technology who will decide whether it will be used for good or for evil. Also, Astrology has always been a controversial topic and is completely depends upto the personal faiths and beliefs of an individual. Apart from that, this paper describes that how Emotionally Intelligent Machines(EIM's) & Sentiment Synthesis Systems can be developed by using the concept of Ancient Vedic Astrology.

Keywords: Artificial Intelligence(AI), Emotional Intelligence(EI), Emotional Artificial Intelligence(EAI), Cognitive Psychology, Intution, Belief System, Convergence, Divergence, Emotion Dynamics, Long-Short Term Memory(LSTM).

1   Introduction

Mention Research Question Here

Going beyond sentiment analysis or developing such AI systems who have their own sentiments is currently not studied. However, several examples can be found where different methods are used to develop such systems that are capable of responding emotionally after analysing the sentiments from the input, such as the

but working of all these EAI systems which are present currently is based on the logic not on the intution. If it may possible for us to make such an EAI system which works on the basis of the logic as well as on the intution also, then the huge gaps and mismatches which are currently present in between interaction of the human and computers can be fulfilled.

For half a century, artificial-intelligence researchers have focused on giving machines linguistic and mathematical-logical reasoning abilities, modelled after the classic linguistic and mathematical-logical intelligences. This paper describes new research that is giving machines skills of emotional intelligence. Machines have long been able to appear as if they have emotional feelings, but they are now being programmed to also learn when and how to display emotion in ways that enable them to appear empathetic or otherwise emotionally intelligent. They are now being given the ability to sense and recognize expressions of human emotion such as interest, distress, and pleasure, with the recognition that such communication is vital for helping them choose more helpful and less-aggravating behaviour.

Emotionally Intelligent Machines are the systems that can recognize, interpret, process, and simulate human emotions which could be based on the concept of the ancient vedic astrology. They are the machines

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which can adapt different situations and knows how to handle these situations more intelligently and smartly.

This paper also highlights different aspects of emotional behaviour of human beings.

We also suggested a hypothetical model of an Emotionally Intelligent Machine (EIM).

2 Research Model & Hypothesis

The paper mainly describes the discussion on some similarities and relationships between the parameters of dynamical systems, ancient vedic astrology, cognitive psychology & artificial intelligence which has been found during the study of Emotional Artificial Intelligence (EAI). These parameters can be useful in synthesis of sentiments in machines and algorithms by means of the generation of artificial intution based on the concept of vedic astrology which will lead to the development of more emotionally smart and intelligent systems. These type of systems can be very helpful to fullfill the current needs and requirements of emotional artificial intelligence in many areas such as in Healthcare, Education, Business Intelligence, Social Media, Automobile, etc.

3 Related Work & Review of Literature

In 2023, Martins, Paulo in their paper "A Concise History of Hindu Astrology and Indian Spirituality" provides a concise history of Hindu astrology and its symbolism present in its spirituality which is transversal to all cultures. They also mentioned the foundations and main conceptions of Hindu astrology, namely Rasi, Nakshastra, Navagrahas, Bhava, Dashas [1].

In 2023, Bhardwaj, Rishi and Pareek, Aditya in their paper "The Unconscious Mind and Planetary Influences on the Human Unconscious Mind and Personality" discusses the concept of the unconscious mind and its importance in psychology. The authors argue that the unconscious mind is not separate from the rest of the universe and that there is a connection between the human unconscious and the universal unconscious. They also discuss the impact of planetary vibrations on the huma physiology as well as on human psychology [2].

In 2022, Anthes, Richard A. in their paper "Predictability and Predictions" describes their experiences with predictability theory and weather predictions. The author classified the development of mesoscale weather systems into two types: those re-

sulting from forcing by surface inhomogeneities and those resulting from internal modifications of large-scale flow patterns. The author also developed a nonlinear, baroclinic, three-dimensional model of the tropical cyclone and suffered through various forms of numerical and physical instabilities. The numerical instabilities could be controlled by suitable choices of finite difference schemes and various damping or smoothing mechanisms, but physical instabilities persisted and resulted in the evolution of somewhat realistic mesoscale features such as rainbands and eddies on the outflow layer that were not present in the initial conditions [3].

In 2022, Shen, Bo-Wen and Pielke, Roger A. and Zeng, Xubin and Cui, Jialin and Faghih-Naini, Sara and Paxson, Wei and Atlas, Robert in their paper "Three Kinds of Butterfly Effects within Lorenz Models" discussed about the three major kinds of butterfly effects within Lorenz models: (1) butterfly effects of the first kind (BE1) represent the sensitive dependence of solutions on initial conditions (SDIC); (2) butterfly effects of the second kind (BE2) represent the hypothetical role of initial tiny perturbations in producing an organized large-scale system at large distances; and (3) butterfly effects of the third kind (BE3), or the so-called real butterfly effect, represent the role of small scale processes in contributing to the finite predictability of large scale processes. The paper also provides a brief summary of the three kinds of butterfly effects and their differences. Additionally, the paper discusses the features of classical Lorenz models and a generalized Lorenz model [4].

In 2021, Rui Liu and Berrak Sisman and Haizhou Li in their paper "Reinforcement Learning for Emotional Text-to-Speech Synthesis with Improved Emotion Discriminability" proposes a new interactive training paradigm for Emotional Text-to-Speech Synthesis (ETTS) called i-ETTS, which aims to improve the emotion discriminability of the generated voice by interacting with a Speech Emotion Recognition (SER) model. The proposed i-ETTS outperforms the state-of-the-art baselines by rendering speech with more accurate emotion style. The authors formulate an iterative training strategy with reinforcement learning to ensure the quality of i-ETTS optimization. The proposed i-ETTS achieves remarkable performance by consistently outperforming the ETTS baseline systems in terms of voice quality and emotion discriminability [5].

In 2020, Takatsu, Hiroaki and Ando, Ryota and Matsuyama, Yoichi and Kobayashi, Tetsunori in their paper "Sentiment Analysis for Emotional Speech Synthesis in a News Dialogue System" proposes a method

to control emotional parameters of speech synthesis in a news dialogue system by constructing a news dataset with emotion labels annotated for each sentence. They use a model combining BERT and BiLSTM-CRF to identify emotion labels and evaluate its effectiveness using the constructed dataset. The model performance can be improved by preferentially annotating articles with low confidence in the human-in-the-loop machine learning framework. The future work includes developing a speech synthesis system that can control emotional parameters using the emotion label estimated by the proposed model and confirming whether speaking with emotion promotes users' understanding in news delivery tasks [6].

In 2020, Dang, Nhan Cach and Moreno-García, María N. and De la Prieta, Fernando in their paper "Sentiment Analysis Based on Deep Learning: A Comparative Study" discusses the use of deep learning models for sentiment analysis on social network data. The authors review the latest studies that have employed deep learning to solve sentiment analysis problems, such as sentiment polarity. They used word embedding and TF-IDF to transform input data before feeding that data into deep learning models. The architectures of DNN, CNN, and RNN were analyzed and combined with word embedding and TF-IDF to perform sentiment analysis. The authors conducted experiments to evaluate DNN, CNN, and RNN models on datasets of different topics, including tweets and reviews. Finally, a comparative study has been conducted on the experimental results obtained for the different models and input features [7].

In 2020, Paul Clements in their paper "Astrology, modernity and the project of self-identity" discusses Western and UK astrology as a fluid divinatory practice that accommodates modern, linear, and literal symbolism while still retaining its pre-modern 'magical' roots. It offers a spiritual understanding, self-knowledge, and self-determination, and encourages elective biography and self-identity. The practice of astrology today is a permutation of esoteric, individual DIY, and sun-sign formats, which offers multiple levels of engagement, from everyday meanings to more personal and philosophical insights. The astrologer mediates psychic hunches embedded in learnt craft, and it grounded some of the ideas presented, including the difficult choices surrounding individual definition and responsibility. The paper concludes that astrology embeds a spiritual outlook that co-exists with profane individualism and materiality highlighting dissonant modernity [8].

In 2020, Hajarolasvadi, Noushin and Arjona Ramírez, Miguel and Demirel, Hasan in their paper "Generative Adversarial Networks in Human Emotion Synthesis: A Review" reviews recent advances in human emotion synthesis using generative adversarial network (GAN) models. GAN models consist of a generator and a discriminator, which are trained iteratively in an adversarial learning manner, approaching Nash equilibrium. The core idea of GANs is based on a zero-sum game in game theory. Instead of estimating the distribution of real data samples, GANs learn to synthesize samples that adapt to the distribution of real data samples. The paper discusses facial expression synthesis, speech emotion synthesis, and audio-visual (cross-modal) emotion synthesis under different application scenarios. The authors also highlight open research problems to push the boundaries of this research area for future works [9].

In 2019, Abbasi, Mohsin and Beltiukov, Anatoly in their paper "Summarizing Emotions from Text Using Plutchik's Wheel of Emotions" discusses the analysis of emotions expressed by people on the internet using Plutchik's wheel of emotions. The wheel is used as a tool to identify and summarize emotions to their primary classes. The methodology involves allocating a weight to each emotion depending on the class it belongs to and its distance from the center of the wheel. These weights are then multiplied by the frequencies of emotions in text to identify their intensity level. The intensity of each emotion is summed up with the intensity of its primary emotion while summarizing it. The paper concludes that the methodology effectively summarizes emotions in the text, but neutral emotions and feelings described in Plutchik's wheel of emotion complicate the process of summarization. In future, the authors plan to propose a mechanism to avoid complications while summarizing neutral emotions [10].

In 2019, Sahiti S. Magapu, Sashank Vaddiparty in their paper "The Study of Emotional Intelligence in Artificial Intelligence" discusses the role of Emotional Intelligence in Artificial Intelligence and its potential applications in various fields such as healthcare, education, consultation, and construction. The use of Emotional Artificial Intelligence can help machines to better understand and respond to human emotions, which can lead to more advanced solutions to complicated problems. It can also help to close the barriers between humans and machines, providing new opportunities for equal treatment. The conclusion of the paper is that the use of Emotional Artificial Intelligence gives a much more profound view on how machines can help humans compared to traditional AI today [11].

In 2019, Piletsky, Eugene in their paper "Consciousness and Unconsciousness of Artificial Intelli-

gence" discusses the need to understand the problem of multilevel mind in artificial intelligence systems. It proposes that consciousness and the unconscious are not equal in natural mental processes and that the alleged mental activity of Artificial Intelligence may be devoid of the evolutionary characteristics of the human mind. The paper presents several scenarios for the possible development of a 'strong' AI through the prism of creation (or evolution) of the machine unconscious. It also proposes two opposite approaches regarding the relationship between the unconscious and the conscious. The conclusion raises interesting questions about whether a machine can have a phenomenal experience or something remotely resembling it, and whether there is a fundamental difference between the imitation of rational behavior and the rational behavior itself [12].

In 2019, Chen, Ruiqi and Zhou, Yanquan and Zhang, Liujie and Duan, Xiuyu in their paper "Word-level sentiment analysis with reinforcement learning" proposes a new framework named Word-level Sentiment LSTM (WS-LSTM) that uses reinforcement learning to realize text sentiment analysis. The framework uses three different LSTM tunnels for each action (Positive, Neutral, and Negative) to get sentiment tendency for each word in a sentence. The model can get word-level sentiment sequence with a relatively good result through reinforcement learning. The conclusion of the paper is that the proposed method can successfully combine text sentiment analysis with reinforcement learning and can get sentiment for each word in a specific task [13].

In 2017, Sharma, Raksha and Somani, Arpan and Kumar, Lakshya and Bhattacharyya, Pushpak in their paper "Sentiment Intensity Ranking among Adjectives Using Sentiment Bearing Word Embeddings" proposes a semi-supervised technique that uses sentiment bearing word embeddings to produce a continuous ranking among adjectives that share common semantics. The system demonstrates a strong Spearman's rank correlation of 0.83 with the gold standard ranking. The use of sentiment embeddings reduces the need for sentiment lexicon for identification of polarity orientation of words. Results show that Sentiment Specific Word Embeddings (SSWE) are significantly better than word2vec and GloVe, which do not capture sentiment information of words for intensity ranking task. The sentiment intensity information of words can be used in various NLP applications, for example, star-rating prediction, normalization of over-expressed or under-expressed texts, etc [14].

In 2017, Zhou, Hao and Huang, Minlie and Zhang, Tianyang and Zhu, Xiaoyan and Liu, Bing in their pa-

per "Emotional Chatting Machine: Emotional Conversation Generation with Internal and External Memory" proposes Emotional Chatting Machine (ECM) that can generate appropriate responses not only in content but also in emotion. The model addresses the emotion factor using three new mechanisms that respectively (1) models the high-level abstraction of emotion expressions by embedding emotion categories, (2) captures the change of implicit internal emotion states, and (3) uses explicit emotion expressions with an external emotion vocabulary. The proposed model can generate responses appropriate not only in content but also in emotion, as shown by objective and manual evaluation [15].

In 1997, Hochreiter, Sepp and Schmidhuber, Jürgen showed in their paper "Long Short-term Memory" introduces a novel, efficient, gradient-based method called Long Short-Term Memory (LSTM) to solve long time lag problems. LSTM is local in space and time, its computational complexity per time step and weight is $O(1)$. Each memory cell's internal architecture guarantees constant error flow within its constant error carrousel (CEC), provided that truncated backprop cuts off error flow trying to leak out of memory cells. Two gate units learn to open and close access to error flow within each memory cell's CEC. The multiplicative input gate affords protection of the CEC from perturbation by irrelevant inputs. Likewise, the multiplicative output gate protects other units from perturbation by currently irrelevant memory contents [16].

4 Theoretical Framework

4.1 What is Artificial Intelligence?

Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to perform tasks that normally require human intelligence such as learning, problem-solving, decision-making, perception, language understanding, and more [11]. AI systems use algorithms and statistical models to analyze data, recognize patterns, and make predictions, without explicit instructions from human operators.

4.1.1 Limitations of AI

Although artificial intelligence (AI) has made significant advancements in recent years, there are still some limitations to the technology. Some of the limitations are:

- **Lack of Common Sense:** AI systems lack the common sense that humans have, which can

make it difficult for them to understand complex situations and make appropriate decisions.

- **Limited Creativity:** AI systems are designed to operate within the parameters set by their algorithms and data, which limits their ability to generate truly creative solutions or ideas.

- **Lack of Emotional Intelligence:** AI systems are not capable of experiencing emotions, which limits their ability to understand and respond to emotional cues in human interactions.

Limitations of AI highlight the need for continued research and development to address these issues and improve the capabilities of these systems.

4.2 What is Emotional Intelligence?

Emotional Intelligence (EI) refers to the ability to recognize, understand and manage one's own emotions as well as the emotions of others. It involves being able to use emotional information to guide thinking and behavior, and to navigate social situations effectively [11].

EI is often described as having four components: self-awareness, self-management, social awareness, and relationship management. Self-awareness involves recognizing and understanding one's own emotions, strengths, and weaknesses. Self-management involves being able to regulate one's own emotions and behaviors in response to different situations. Social awareness involves recognizing and understanding the emotions of others, as well as the social norms and expectations of different situations. Relationship management involves using emotional information to communicate effectively, build and maintain relationships, and resolve conflicts.

EI is considered an important factor in personal and professional success, as it can help individuals navigate social interactions, build strong relationships, and manage stress and challenges effectively.

4.3 What is Emotional Artificial Intelligence?

Emotional Artificial Intelligence (EAI) is the ability of AI systems to recognize, understand, and respond appropriately to human emotions. It is an emerging field of AI that focuses on building machines that can perceive, interpret, and express emotions similar to human beings.

Emotional AI uses various techniques such as natural language processing, sentiment analysis, and facial recognition to detect emotions in human interactions. These techniques are then used to train algorithms and models that can predict and respond to human emotions in real-time.

Emotional AI has numerous potential applications, such as improving customer service, enhancing human-robot interactions, and providing mental health support.

4.4 Why Truly Intelligent Machines Need Emotions?

Many machines are in our household items such as kitchen, bedroom, which are artificially intelligent to help us with our daily tasks, however, they are emotionally unintelligent to adapt to our fulfillment. If one desires an Artificial Intelligence, the Artificial Intelligence should be able to adapt to the individual's state of mind. At the present time, many leading companies have expanded the idea of Emotional Artificial Intelligence into their AI systems. [11].

The need of EIM's are can be seen due to their numerous applications which are expanding rapidly. Some of the common applications of EIM's include:

- **Social Media:** They can be used in social media to analyse user's emotions and provide more personalized content.

- **Business Intelligence(BI) & Operational Research(OR):** EIM's are more intelligent than the traditional machines as a result they can help in Decision Making which is involved in Business Intelligence & Operational Research.

- **Human Resources:** In human resources to analyse employee's emotions and improve the work environment and productivity.

- **Development of Machine Ethics & Computational Morality:** Emotional AI can play a vital role in the development of machine ethics and morality. It will allow machines to understand and respond to human emotions, which is an important component of ethical and moral decision-making.

- **Human-Computer Interaction(HCI):** Emotional AI is extremely helpful in HCI, as it enables computers to understand and respond to human emotions, making the interaction more natural, intuitive, and empathetic. Here are

some ways in which Emotional AI can be useful in developing machine ethics and morality:

- **Understanding Human Emotions:** EAI can help machines to understand human emotions, which is an important component of ethical decision-making. For example, a machine that can detect when a human is experiencing fear or pain could adjust its behavior accordingly to avoid causing harm.

- **Ethical Decision-Making:** EAI can help machines to make more ethical decisions by taking into account human emotions and responses. For example, a self-driving car that can detect when a passenger is feeling anxious or stressed could adjust its driving style to provide a safer and more comfortable ride.

- **Morality and Empathy:** Emotional AI can help machines to exhibit more empathy towards humans, which is an important component of moral decision-making. For example, a robot that can detect when a human is feeling sad or lonely could provide comfort or companionship.

- **Human-Machine Collaboration:** Emotional AI can help facilitate collaboration between humans and machines by allowing machines to understand and respond to human emotions. This could lead to more effective and productive collaborations, as well as greater trust between humans and machines.

- **Customer Service:** EAI can be used in customer service to understand customer's emotions and respond accordingly, improving customer satisfaction. It can also be used in getting customer reviews, feedbacks & and conducting surveys.

- **Healthcare:** EAI could be very useful in healthcare sector to detect patient's emotions and provide appropriate treatment and care. They could be a great blessing for the treatment of psychic patients and for counselling of persons suffering form depression & anxiety or even having suicidal tendency.

- **Education:** EAI can be used in education sector to improve the effectiveness of teaching by understanding the emotional state of the students and adapting the teaching method accordingly.

- **Marketing, Sales & Advertisement:** EAI can be used in marketing to analyze customer's emotions and tailor marketing messages to maximize their impact which leads in increment of sales conversion rate.

- **Art & Culture:** AI which can generate creative artistic content like Melodies & Progressions in Music, Paintings & Poetry is currently based on logical reasoning. By the development of Emotional AI, generation of this type of content can reach the next level of the arts which can also be used by the artists as a reference for their work.

- **Media & Communication:** EAI has a huge potential to do great in the field of media as it can be used as a NEWS anchor or an interactive agent which can communicate with their listeners emoitionally.

- **Entertainment:** Emotionally Intelligent Machines can be used in the entertainment industry to create more immersive experiences for users by understanding their emotional responses, in gaming industry to create more engaging games that respond to the player's emotions also create the dynamic gaming environment accordingly, in movies industry to create ambience, environments and also in writing scripts.

4.5 Cognitive Psychology

Human mind is one of the most important part of the entire human body which contains thoughts, imagination, memory, will power & sensation. Every human being has it's own personality. Some have similar personalities, some have not. The individual's own mindset is responsible for it's own personality and behaviour.

In psychology according to Sigmund Freud, human mind is classified majorly into three categories. Conscious, subconscious & unconscious mind. All the events around us which we are experiencing at the current instant which is also known as the "awareness", comes due to the conscious mind whereas all of our habits and routines which are formed due to the repetition of different task and our experiences are stored in the subconscious.
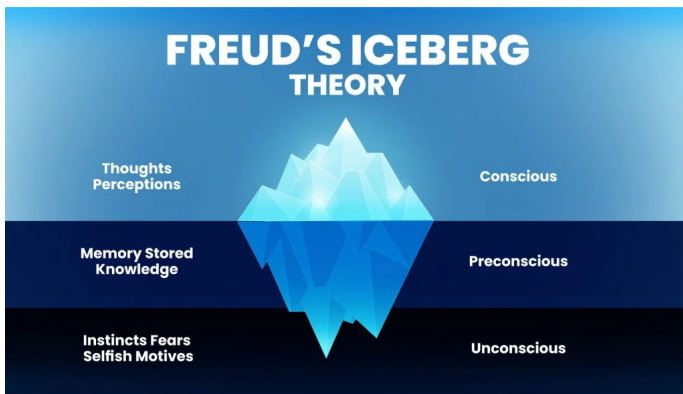
Figure 1: Sigmund Freud's Iceberg Theory

Figure 2: Plutchik's Wheel of Emotions

Figure 2 shows PWOE.

The third type of category of mind is the most mysterious and powerful which is the unconscious mind. It operates beyond our conscious awareness. It is the part of our mind which contains thoughts, memories and emotions that we are not aware of, but that still influence our behaviour and feelings drastically. Conscious mind contains short-term memory. The content stored inside this type of mind can be changed easily on the other hand, the subconscious mind has long-term memory. It can store thoughts longer than the conscious mind which are difficult to change and involves practising something continuously, developing habits by doing continuous efforts in order to change the mindset. The unconscious mind has permanent memory which is almost impossible to be changed by any type of effort. It is the primary source of the human behaviour and personality. It is just like the default personality of a person. These three levels of mind can be understood by the Sigmund Freud's Iceberg Theory as shown in the figure1.

4.6   Plutchik's Wheel of Emotions

Plutchik proposed a psychoevolutionary classification approach for general emotional responses. He considered there to be eight primary emotions—anger, fear, sadness, disgust, surprise, anticipation, trust, and joy. He also created a wheel of emotions to illustrate different emotions. Plutchik first proposed his cone-shaped model (3D) or the wheel model (2D) in 1980 to describe how emotions were related [17].
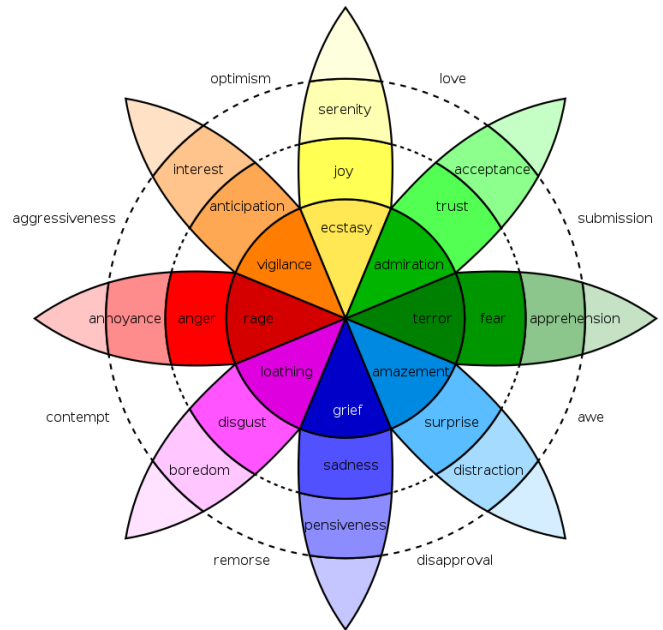
4.7   Logical Thinking V/S Intuitive Thinking

Logic and intuition are two different ways of acquiring knowledge and making decisions.

Logic is a systematic and rational way of thinking that relies on rules, principles, and evidence to arrive at a conclusion. It involves reasoning and analysis, and is based on the assumption that true knowledge can be acquired through objective observation and testing. Logical thinking is often associated with science, mathematics, and philosophy, and is used to solve problems and make decisions in a wide range of fields.

Intuition, on the other hand, is a more subjective and immediate way of knowing that is based on a person's instinct or "gut feeling" about a situation. It is often described as a kind of unconscious or automatic mental process that occurs without conscious awareness or reasoning. Intuitive thinking is associated with creativity, innovation, and quick decision-making, and is often used in fields such as art, design, and entrepreneurship.

While both logic and intuition can be useful in different contexts, they have different strengths and weaknesses. Logical thinking is often more reliable and accurate in situations where objective evidence and analysis are important, but it can be slow and cumbersome. Intuitive thinking is often faster and more

flexible, but it can also be less reliable and more prone to bias and error. The most effective approach to problem-solving and decision-making often involves a combination of both logical and intuitive thinking, depending on the situation and the available information.

4.8 Emotion Dynamics

In 2017, Jon Miles published a blog on his website. In this blog named emotion dynamics or equation of emotions, he discussed about the mathematical modelling of human sentiments and different states of human mind which is based on the analogy of human mind with an electrical dynamical system. According to his blog, the three phenomenas of mind, craving, anger and attachment are related to each other as like the inductance, resistance and capacitance in an electrical network as shown in figure 6 by a second order ordinary linear differential equation 1.
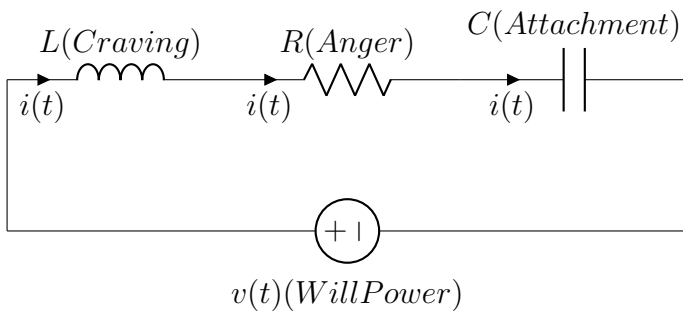
Figure 3: Analogy of Emotion Dynamics with an Electrical System

$$v(t) = L\frac{di(t)}{dt} + Ri(t) + \frac{1}{C}\int i(t)dt \quad (1)$$

If we convert this electrical system into its frequency domain equivalent by using Continous Time Fourier Transform, then equation 1 will be transformed into an algebraic equation 2. According to the miles blog, the R, X_L and X_C in equation 2 represents the habit, denial and doubt [18].

$$Z = R + j(X_L - X_C) \quad (2)$$

where, R = Emotive Resistance,
X_L = Emotive Inductive Reactance,
X_C = Emotive Capacitive Reactance,
and $j = \sqrt{-1}$

Active energy planets are Mars, Mercury, Venus whereas passive energy planetsare Saturn and Jupiter. Sun and Moon are continuous source of energy combustion while Rahu and Ketu are continuous sources of consumption in terms of electrical source and sink type connection types [19].

4.9 Butterfly Effect & Chaos Theory

Richard A. Anthes in 2022 by his paper "Predictability & Predictions" showed his experiences with predictability theory and weather predictions began as an undergraduate student at the University of Wisconsin in Madison in the early 1960s. His interest in numerical simulations led to the development of a simple nonlinear one-dimensional gravity wave model and later a nonlinear, baroclinic, three-dimensional model of the tropical cyclone. His experiences highlighted the challenges of numerical and physical instabilities in weather prediction models [3]. [4] In chaos theory, the butterfly effect is the sensitive dependence on initial conditions in which a small change in one state of a deterministic nonlinear system can result in large differences in a later state.

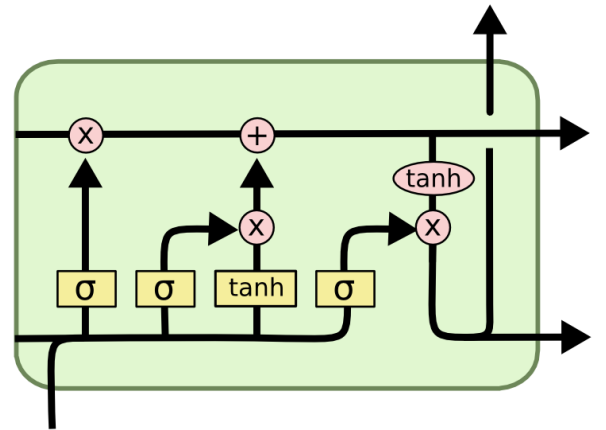## 4.10 Long-Short Term Memory(LSTM)

[16]

Figure 4: LSTM as Conscious & Subconscious of AI

Figure 4 Representation of LSTM as Conscious & Subconscious of AI.

4.11 Vedic Astrology

Vedic astrology, also known as Jyotish, is an ancient system of astrology that originated in the In-

dian subcontinent. It is considered one of the oldest astrological systems in the world and has its roots in the Vedas, the ancient sacred texts of Hinduism. Vedic astrology(Jyotish) is one of the most important limb(Vedanga) out of the total six limbs(Vedangas) found in the ancient Indian scriptures. The origins of Vedic astrology can be traced back to around 1500 BCE, during the late Vedic period. It is classified into the three major branches or disciplines known as the Siddhanta, Samhita and Hora. These branches provide different approaches and methods for studying and practicing astrology.

- **Siddhanta:** Siddhanta deals with all the mathematical calculations of space & time which is involed in the study of planets, stars, comets and contellations present in the space. It is also referred as the Astronomy in modern days.

- **Samhita:** Samhita, also known as Muhurtha, is the branch of Vedic astrology that deals with collective or mundane astrology. It focuses on predicting and analyzing events and phenomena on a broader scale, such as natural disasters, weather patterns, political developments, and societal events.

- **Hora:** Hora or horarian astrology is the branch of Vedic astrology that specifically deals with individual horoscopes or birth charts (Jataka).

There are many ancient texts and scriptures about all these three branches of the vedic astrology, that were written by Maharishies. But here, we are only considering the Surya Siddhanta [20, 21] and Brihat Parashara Hora Shastra [22–24] which are the most popular texts that are used by most of the astrologers today for astrological predictions and consultations. We also discuss some of rules and priciples described by the dictums found in these texts.

4.11.1 Significance of Houses

The concept of houses plays a significant role in interpreting a person's birth chart or horoscope. The chapters 13 to 24 of Brihat Parashara Hora Shastra [22–24] discusses in detail about all these houses. We can understand the concept of the houses by the following dictum:

गच्छन्तो भानि गृह्णन्ति सततं ये तु ते ग्रहः । भचक्रस्य
नगश्व्यंशा अश्विन्यादिसमाह्वया ॥३ :४ ॥ [22, 24]
तद्द्वादशविभागास्तु तुल्य मेषादिसंज्ञकाः । प्रसिद्धा राशयः
सन्ति ग्रहास्त्वर्कादिसंज्ञकाः ॥३ :५ ॥ [22, 24]

राशीनामुदयो लग्रं तद्द्रशादेव जन्मिनाम् । ग्रहयोग्वियोगाभ्यां फलं
चिन्त्यं शुभाशुभम् ॥३ :६ ॥ [22, 24]

The space is divided into twelve houses, also known as "Bhavas," which represent different aspects of an individual's life. Each house is associated with specific areas of life, such as personality traits, relationships, career, wealth, health, spirituality, and more. Here's a brief introduction to the twelve houses in Vedic astrology:

Those planets that constantly move and grab the houses, they are the celestial bodies. The divisions of the zodiac are the angles of the chariot, starting with Ashvini and others.

The twelve divisions are known as equal signs, starting with Aries and others. The well-known zodiac signs are the celestial bodies, starting with the Sun and others.

The rising sign of the zodiac is the Ascendant for individuals. By the combination or separation of the planets, the auspicious and inauspicious results should be contemplated.

- **First House (Lagna or Ascendant):** Represents the self, physical appearance, personality, and overall life path.

- **Second House:** Pertains to wealth, possessions, speech, family, values, and self-worth.

- **Third House:** Governs communication, siblings, skills, short trips, courage, and intellect.

- **Fourth House:** Represents home, mother, comfort, real estate, ancestral property, and emotional foundation.

- **Fifth House:** Relates to creativity, intelligence, children, education, romance, and speculative endeavors.

- **Sixth House:** Deals with health, daily routine, enemies, debts, conflicts, and service to others.

- **Seventh House:** Focuses on partnerships, marriage, relationships, business collaborations, and public image.

- **Eighth House:** Associated with transformations, secrets, inheritances, spirituality, life and death, and occult sciences.

- **Ninth House:** Relates to higher knowledge, beliefs, philosophy, long-distance travel, luck, and spiritual pursuits.

- **Tenth House:** Governs career, reputation, social status, achievements, authority, and public recognition.

- **Eleventh House:** Pertains to gains, friendships, social networks, aspirations, goals, and humanitarian activities.

- **Twelfth House:** Represents solitude, spirituality, hidden enemies, subconscious mind, losses, and liberation.

Each house is further influenced by the planetary positions and aspects, providing insights into different areas of life and their interconnections. Analyzing the houses and their interactions helps astrologers interpret a person's life circumstances, potential challenges, and opportunities for growth and fulfillment.

4.11.2 Properties of Zodiac Signs

अथ खेटा रविश्चन्द्रो मङ्गलश्च बुधस्तथा ।
गुरुः शुक्रः शनि राहुः केतुश्चैते यथाक्रमम् ॥३ : ११ ॥ [22, 24]
मेषो वृषश्च मिथुनः कर्किसिंहकुमारिकाः ।
तुलालिश्च धनुर्नक्रे कुम्भो मीनस्ततः परम् ॥४ : ३ ॥ [22, 24]

Sun, Moon, Mars, Mercury, Jupiter, Venus, Saturn, Rahu, and Ketu, these are mentioned in order, one by one.4.11.2 Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius and Pisces are the twelve contellations also known as the zodiac signs.4.11.4 However, the main source of all these things are the four basic elements which are the Fire, Water, Wind, Earth & Sky. However, describing all the shlokas here is not possible but properties of the twelve zodiac signs are described in shloka number 7 to 23 of BPHS [22,24] which are interpreted by the astrologers as follows: Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius and Pisces.

the zodiac signs are based on the 12 divisions of the ecliptic, with each sign representing a specific portion of the sky. These signs are associated with different elements, ruling planets, qualities, and characteristics that are believed to influence an individual's personality, behavior, and destiny.

Here is a brief introduction to the zodiac signs in Vedic astrology:

Aries (Mesha): The first sign of the zodiac, represented by the Ram. Aries individuals are known for their leadership qualities, courage, and assertiveness.

Taurus (Vrishabha): Symbolized by the Bull, Taurus is associated with stability, determination, practicality, and a strong connection to material possessions and pleasures.

Gemini (Mithuna): Represented by the Twins, Gemini is associated with intellectual pursuits, communication skills, adaptability, and curiosity.

Cancer (Karka): Symbolized by the Crab, Cancer is associated with emotions, sensitivity, nurturing tendencies, and a strong connection to home and family.

Leo (Simha): Represented by the Lion, Leo is associated with creativity, self-expression, leadership, confidence, and a desire for recognition and admiration.

Virgo (Kanya): Symbolized by the Virgin, Virgo is associated with meticulousness, practicality, analytical thinking, attention to detail, and a desire for perfection.

Libra (Tula): Represented by the Scales, Libra is associated with balance, harmony, diplomacy, sociability, and a strong sense of justice.

Scorpio (Vrishchika): Symbolized by the Scorpion, Scorpio is associated with intensity, passion, depth, secrecy, transformation, and a keen sense of intuition.

Sagittarius (Dhanu): Represented by the Archer, Sagittarius is associated with exploration, adventure, intellectual pursuits, optimism, and a philosophical outlook on life.

Capricorn (Makara): Symbolized by the Goat, Capricorn is associated with discipline, ambition, responsibility, practicality, and a strong drive for success.

Aquarius (Kumbha): Represented by the Water Bearer, Aquarius is associated with humanitarianism, independence, innovation, intellectual pursuits, and a desire for social change.

Pisces (Meena): Symbolized by the Fish, Pisces is associated with sensitivity, intuition, empathy, imagination, spirituality, and a strong connection to the subconscious realm.

These zodiac signs play a crucial role in Vedic astrology, serving as a foundation for determining individual traits, compatibility between individuals, and making predictions about various aspects of life, including career, relationships, health, and spiritual growth.

4.11.3 Properties of Planets

सर्वात्मा च दीवानाथो मनः कुमुदबान्धवः ।
सत्त्वं कुजो बुधैः प्रोक्तो बुधो
वाणीप्रदायकः ॥३ : १३ ॥ [22, 24]

देवेज्यो ज्ञानसुखदो भृगुर्वीर्यप्रदयकः ।
ऋषिभिः प्राकृतनैः प्रोक्तश्छायासूनुश्च
दुःखदः ॥३ : १४ ॥ [22, 24]

Jupiter(Brihaspati) is the significator of wisdom. Venus(Shukra) is resposible for joy & ecstacy.

रविचन्द्रौ तु राजानौ नेता ज्ञेयो धरात्मजः ।
बुधो राजकुमारश्च सचिवौ गुरुभार्गवौ ॥३ : १५ ॥ [22, 24]

Mars(Mangal) is responsible for the strength of a native which leads to the emotion of anger. Rahu

the study of planets holds great significance in understanding an individual's horoscope and predicting future events. Vedic astrology recognizes nine celestial bodies as planets, including the Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn, Rahu, and Ketu. Here's a brief introduction to each of these planets in the context of Vedic astrology:

Sun (Surya): The Sun represents the self, vitality, authority, and leadership. It symbolizes the soul and is considered the king among the planets.

Moon (Chandra): The Moon represents emotions, mind, instincts, and nurturing qualities. It influences the individual's emotional well-being and intuition.

Mercury (Budha): Mercury is associated with communication, intellect, logic, and adaptability. It governs speech, learning, and mental abilities.

Venus (Shukra): Venus is the planet of love, beauty, art, and harmony. It governs relationships, attraction, creativity, and material pleasures.

Mars (Mangal): Mars signifies energy, passion, courage, and assertion. It governs ambition, drive, physical strength, and competitiveness.

Jupiter (Guru): Jupiter is considered the most benefic planet in Vedic astrology. It represents wisdom, knowledge, expansion, abundance, and spirituality.

Saturn (Shani): Saturn is associated with discipline, responsibility, hard work, and karmic lessons. It teaches patience, endurance, and signifies limitations and life challenges.

Rahu: Rahu is a shadow planet and represents material desires, obsession, illusions, and worldly attachments. It signifies ambition and can bring sudden changes.

Ketu: Ketu is the other shadow planet and represents spirituality, detachment, mysticism, and karmic lessons. It signifies liberation and can bring unconventional experiences.

Each planet's placement, aspects, and interactions with other planets in an individual's birth chart play a crucial role in determining their personality traits, strengths, challenges, and life events according to Vedic astrology.

4.11.4 Dashas & Transits

विकलानाम् कला षष्ट्या तत्षष्ट्या भाग उच्यते ।

तत्त्रिंशता भवेद् राशिर् भगणो द्वादशैव ते ॥१ : २८ ॥ [20, 21]

60 Vikalas make one kala and 60 kalas make one degree(°) or one amsa. 30°(degrees or amsa) make one rashi(one zodiac sign) and twelve such rashies(zodiac signs) make one revolution(bhagana) of the zodiac.

Graha(Planet)	Angular Speed(°/Day)	Time For One Zodiac Sign
Surya(Sun)	1	1 Month
Chandra(Moon)	13	2.25 Days
Brihaspati(Jupiter)	1/12	1 Year
Shani(Saturn)	1/30	2.5 Years
Budh(Mercury)	1	1 Month
Shukra(Venus)	1	1 Month
Mangal(Mars)	2/3	1.5 Month
Rahu	-1/18	18 Months
Ketu	-1/18	18 Months

Table 1: Time required by all planets to complete one zodiac sign

Table 2 represents the time required by all nine planets to complete one zodiac sign which is calculated in chapter 1, verse 29 to 34 of Surya Siddhanta [20, 21].

Effect of dashaas of the different planets in Chapter number 53 of BPHS.

The planetary vibrations reflected or refracted along with solar radiations to the earth are of varying intensities as per planetary distance, size, and movement in the solar system. These vibrations impact our sensory nerves, mental attitudes, and moods. Thus, it's very likely that these planetary vibrations supply the energies to the body cells though our nerves. Since these vibrations differ in wavelength intensity and frequency as per the planetary properties and motion; these vibrations supply different sensory stimuli which impacts the human unconscious and personality at the time of birth [16].

Planetary positions influence on psychology

Vedic astrology, also known as Jyotish, is an ancient system of astrology that originated in the Indian subcontinent. It is considered one of the oldest astrological systems in the world and has its roots in the Vedas, the ancient sacred texts of Hinduism. Vedic astrology is one of the most important limb(Vedanga) out of the total six limbs(Vedangas) found in the ancient Indian scriptures. The origins of Vedic astrology can be traced back to around 1500 BCE, during the

late Vedic period. It is classified into the three major branches or disciplines known as the Siddhanta, Samhita and Hora. These branches provide different approaches and methods for studying and practicing astrology.

- **Siddhanta:** Siddhanta deals with all the mathematical calculations of space & time which is involed in the study of planets, stars, comets and contellations present in the space. It is also referred as the Astronomy in modern days.

- **Samhita:** Samhita, also known as Muhurtha, is the branch of Vedic astrology that deals with collective or mundane astrology. It focuses on predicting and analyzing events and phenomena on a broader scale, such as natural disasters, weather patterns, political developments, and societal events.

- **Hora:** Hora or horarian astrology is the branch of Vedic astrology that specifically deals with individual horoscopes or birth charts (Jataka).

अथ खेटा रविश्चन्द्रो मङ्गलश्च बुधस्तथा ।
गुरुः शुक्रः शनि राहुः केतुश्चैते
यथाक्रमम् ॥३ : ११ ॥ [22] [24] मेषो वृषश्च मिथुनः
कर्कसिंहकुमारिकाः ।
तुलालिश्च धनुर्नक्रे कुम्भो मीनस्ततः
परम् ॥४ : ३ ॥ [22] [24]

Sun, Moon, Mars, Mercury, Jupiter, Venus, Saturn, Rahu, and Ketu, these are mentioned in order, one by one.4.11.4 Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius and Pisces are the twelve contellations also known as the zodiac signs.4.11.4 However, the main source of all these things are the four basic elements which are the Fire, Water, Wind, Earth & Sky.

4.11.5 Significance of Houses

4.11.6 Properties of Zodiac Signs

However, describing all the shlokas here is not possible but properties of the twelve zodiac signs are described in shloka number 7 to 23 of BPHS [22] [24] which are interpreted by the astrologers as follows: Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius and Pisces.

4.11.7 Properties of Planets

सर्वात्मा च दीवानाथो मनः कुमुदबान्धवः ।
सत्त्वं कुजो बुधैः प्रोक्तो बुधो
वाणीप्रदायकः ॥३ : १३ ॥ [22] [24]

देवेज्यो ज्ञानसुखदो भृगुर्वीर्यप्रदयकः ।
ऋषिभिः प्राकृतनैः प्रोक्तश्छायासूनुश्च
दुःखदः ॥३ : १४ ॥ [22] [24]

Jupiter(Brihaspati) is the significator of wisdom. Venus(Shukra) is resposible for joy & ecstacy.

रविचन्द्रौ तु राजानौ नेता ज्ञेयो धरात्मजः ।
बुधो राजकुमारश्च सचिवौ गुरुभार्गवौ ॥३ : १५ ॥ [22] [24]

Mars(Mangal) is responsible for the strength of a native which leads to the emotion of anger. Rahu

4.11.8 Combinations of Planets with Zodiac Signs

Effect of different combinations of planets along with the zodiac signs on psychology of human emotions. However, instead of considering the zodiac signs, one can consider the 27 nakshatras for detailed calculations but for simplicity, we are considering the zodiacs here.

4.11.9 Dashas & Transits

विकलानाम् कला षष्ट्या तत्षष्ट्या भाग उच्यते ।
तत्त्रिंशता भवेद् राशिर् भगणो द्वादशैव
ते ॥१ : २८ ॥ [20] [21]

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Shukra(Venus)	1	1 Month
Mangal(Mars)	2/3	1.5 Month
Rahu	-1/18	18 Months
Ketu	-1/18	18 Months

Table 2: Time required by all planets to complete one zodiac sign

Table 2 represents the time required by all nine planets to complete one zodiac sign which is calculated in chapter 1, verse 29 to 34 of Surya Siddhanta [20] [21].

Effect of dashaas of the different planets in Chapter number 53 of BPHS.

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4.11.10   Sudarshan Chakra

जन्मतो मृत्युपर्यन्तं वर्षमासदिनोद्भवम् ।
शुभं वाऽप्यशुभं सर्वं तच्छृणुष्वैकमानसः ॥७४ : ४ ॥ [23] [24]

Physical   Level   Mental   Level   Spiritual   Level
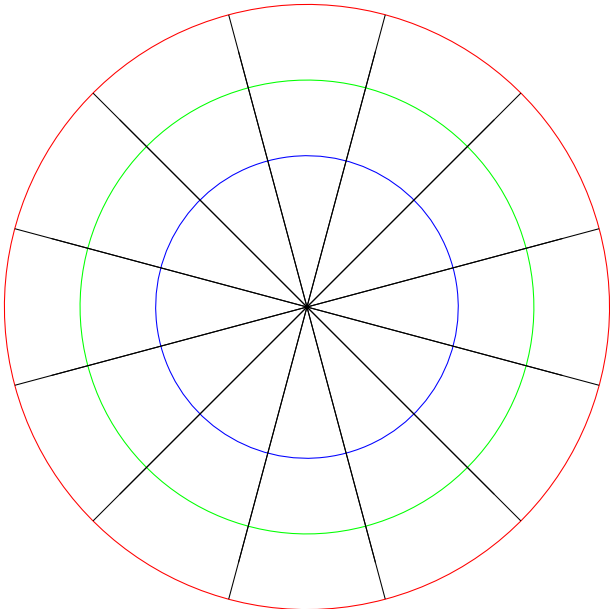
5   Analysis & Discussion

5.1   LSTM, The Conscious & Subconscious of AI

5.2   How to design the Unconscious of AI?

5.3   Cognitive Psychology & Dynamical Systems
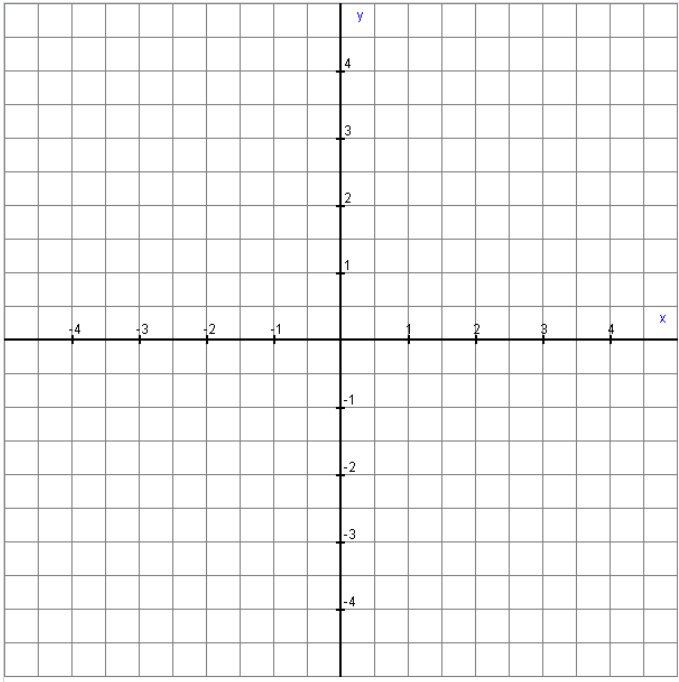
Figure 5: Conscious, Subconscious & Unconscious Mind

Figure 5 Representation of Conscious, Subconscious & Unconscious Mind.

$$F[n] = F[n-1] + F[n-2] \qquad (3)$$

5.4   Convergence, Divergence And Belief Systems

Belief system is a topic on which the more we talk, the less the words. This is what's the only reason due to which similarities and differences exists between the thoughts and mentalities of different people. This is what is responsible for influencing, changing, and strengthening our emotions.

Believing in something is called a belief system, and not believing in something is also a belief system in itself. Apart from this, if someone says 'I believe' and another says 'I don't believe,' one thing is common in both statements, and that is both the persons

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are in doubtful state that's why they are using the word 'belive'. Neither of the two persons will ever say, 'I believe that I have two hands' or 'I believe that the Taj Mahal is located in Agra' because they know that these two things exists in reality. The word 'belive' is always be used in the doubtful situations. It is used to justify whether a doubtful statement is a truth or a lie.

Now, we try to understand the belief system from a new perspective by momentarily setting aside all the discussions we have had so far about beliefs and belief systems. Consider the equation 4, it is the example of a geometric series that converges absolutely. This infinite series is related to some philosophical questions considered in antiquity, particularly to Zeno's paradoxes [25].

$$1 = \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} + ...$$

$$\implies \boxed{1 = \sum_{n=1}^{\infty} \frac{1}{2^n}} \tag{4}$$

Now, consider the equation 5 which is an infinite divergent series also known as the Ramanujan summation. Ramanujan summation is a technique invented by the mathematician Srinivasa Ramanujan for assigning a value to divergent infinite series. Although the Ramanujan summation of a divergent series is not a sum in the traditional sense, it has properties that make it mathematically useful in the study of divergent infinite series, for which conventional summation is undefined [26]. And in mathematics, whenever a value is undefined, then it means that we can consider or assign any value on it's place. However, in such situations, it is best to consider a special value that seems to be in accordance with the situation, without considering any other value, which is the most appropriate approach.

$$-\frac{1}{12} = 1 + 2 + 3 + 4 + 5 + ...$$

$$\implies \boxed{-\frac{1}{12} = \sum_{n=1}^{\infty} n} \tag{5}$$

The concept of convergence and divergence plays a very important role in the theory of dynamical systems because this is the concept by which the stability of a system is discussed. If the output of a system converges at a particular value, then the system is said to be a stable system, whereas if the output of a system diverges, then the system is said to be an unstable system. The behaviour of an unstable system is unexpected as it gives any random value on it's output.

Now, if we examine this mathematical concept of convergence and divergence carefully, then we can easily observe that our human mind also follows the same pattern, and works in a similar way. Whenever the biological neural networks present in our brain converges at some particular ouput, then only a believe about something is created in our mind. Contrary to this, if the output of the biological neural network present in the brain of a person diverges, then it will be a very dangerous situation because at that time, the mind of that individual will become unstable and behave unexpectedly as it can be observed in the cases of mental disorders.

Believe system plays a very significant role over the entire life of any individual. Whenever a new baby takes birth, its mind is like a blank sheet of paper. As the baby grows and interacts with its surrounding environment and situations, it begins to form beliefs about things in its mind, which we call its experience. Practically, we are able to identify, recognize and feel every smallest to the big things around us only due to our beliefs.

5.5 Quantum Level V/S Cosmic Level

5.5.1 Microscopic V/S Macroscopic

5.6 Vedic Astrology & Dynamical Systems

5.6.1 Birth Chart (An Initial Condition of Emotion Dynamics)

Astrology is like the snapshot of the unconscious mind. The chart representing the planetary positions at the time of the of a child which observed from the place of birth is said as the birth chart of that person. It is like a snapshot of the universe at the time of birth of the individual. If we consider the birth chart of an individual as an initial condition for it's neurodynamical system, then we can predict many things about the future behaviour of that particular individual. Apart from that, for simplicity and for the purpose of sentiment synthesis in this paper, we are only interested about the emotion dynamics of that person.

5.7 Artchitecture of EIM

5.7.1 Modelling of Plutchik's Wheel of Emotions

Vectorization Based Modelling Argand Plane Based Modelling

5.7.2 Design of the Unconscious Unit

Planetary Positions API Astrology Based Sentiment Mapping.

Figure 6: Plutchik's Wheel of Emotions Emojis

5.7.3 Intuition Programming

To develop intuition in machines, we have to consider an external source of input which will act as a controlling element for the system.

6 Conclusion & Outlook

The human mind is a very complex dynamical system that evolves over time in responses to the various inputs from the environment. The more we attempt to understand it deeply, the more we find ourselves entangled in questions. However, this pursuit provides us with new knowledge that leads to innovation and presents numerous challenges. The study of the human mind has been instrumental in the birth of artificial intelligence (AI), but there still exists a significant difference between AI and the human mind. To bridge this gap, psychology and Vedic astrology can play a crucial role, and by leveraging these theories, intuition-based AI systems could be developed in the future.

Summary

The human mind is a very complex dynamical system that evolves over time in responses to the various inputs from the environment. To understand this in simple words, let's imagine what will happen if human mind does not have any type of memory with it or it will act as a static system. What will be our experience in this case? How does it feel like? If it will be the case, then everything will be instantaneous for us. There is no happieness, no sadness no fear & no anger. There will be no emotions. There will be no experience of feeling anything due to the absence of memory. This will happen because our mind collects all the past experiences of our life as data in the memory and whenever will be a situation to deal, it extracts the information of the past experiences stored inside the memory, compares this information with the present input, and decides how to handle with and react in this situation. This task handling experience is stored again in the memory for the future processing.

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Appendix

List of Tables

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