Fuzzy Systems and Soft Computing
ISSN : 1819-4362

EXPLORING SMART TECHNOLOGY IDENTIFICATION THROUGH CUTTING-EDGE TOOLS AND INNOVATIONS IN ARTIFICIAL INTELLIGENCE

Sharanabasappa Raikoti, Assistant Professor, Department of Computer Science, Government First Grade College, Chittapur-585211, Karnataka , India,

Abstract:
Humans consistently advance in the adoption of automation technology to attain their objectives with reduced time and cost. This demand drives us to seek innovative ideas and technology, which were more expensive two decades ago. Currently, smart technologies are readily accessible through applications, commonly referred to as smart apps. These applications utilize coded technology based on instructional frameworks, incorporating predefined terms and attributes. Collectively, they are categorized under artificial intelligence, aligning with human expectations. These Real-Time Agents operate at an unfathomable pace, providing optimal suggestions and solutions. The primary focus of this article is to discover AI-based apps now utilized to manage various client requests in everyday human interactions.
Keywords: Intelligent Technologies, Artificial Intelligence, Automation Systems, Real-Time Agents

1: INTRODUCTION:

Smart technologies are the prevailing trends in the current global landscape. The abbreviation "SMART" refers to "self-monitoring, analysis, and reporting technology." This technology endows objects traditionally considered lifeless with cognitive awareness by employing artificial intelligence, machine learning, and big data analysis. Smartphones, smart speakers, smart automobiles, doorbells, locks, refrigerators, phablets, tablets, smartwatches, smart bands, smart keychains, smart eyewear, and numerous other categories exemplify notable smart devices. Certain characteristics of smart technology continually cater to clients across several dimensions of behavior in nature. Smart technology offers numerous benefits, including

- Enhanced convenience via automation and voice control.
- Entertainment alternatives via streaming platforms.
- Energy conservation via optimal gadget utilization.
- Augmented security and safety via surveillance capabilities.
- Health monitoring for analytical data.

Recent smart technologies are designed and programmed for agent-based tools to manage complex requests and inquiries, both technical and non-technical. Smart Trends are referred to as Smart Applications or Cloned Applications in Artificial Intelligence Coding. Smart technology offers numerous benefits, including heightened convenience via automation and voice control, entertainment alternatives through streaming services, energy efficiency through optimized device usage, improved security and safety through monitoring capabilities, and health tracking for valuable insights. Smart contracts are currently utilized in critical areas such as the Internet of Things (IoT), lending, media, and healthcare. Presently, the tokenization of investment portfolio management, algorithmic stablecoins, and synthetic assets are key advancements in smart contract technology. Clinical trials are a specific kind of real-world smart contracts. Successful clinical trials rely on the inter-institutional exchange of data.

For instance, Walmart has tracked the origins of its items using the smart contracts of the BlockChain system. Additionally, smart technology is based on a few fundamental principles: Smart contracts rely on "if/when then..." statements to operate. These assertions are codified in the code, and the network of computers, or nodes, fulfill and confirm certain predetermined conditions in order for the contract's specified activities to be executed. The article from [1] "The NewYorkTimes" magazine dated "14-April-2023" serves as the basis for this discussion. Smart technology is the main focus. With the help of 35 distinct tiers of people's requests and low-cost financing, alias AI has

made its way to the doorsteps of the people to answer their problems. Interest in artificial intelligence surged after the public launch of "ChatGPT" in the fall of last year. Many people's everyday lives have been affected by AI models since then. No matter how flawed, "ChatGPT" and other AI technologies are simplifying people's lives in many ways, whether it's letting them code without learning to code, helping them save time at work, or even just making their lives more enjoyable. This isn't your typical DIY project: Some examples of the unanticipated uses of artificial intelligence (A.I.) in recent years include the development of alien-looking spaceship components and the use of algorithms to create novel chemicals.

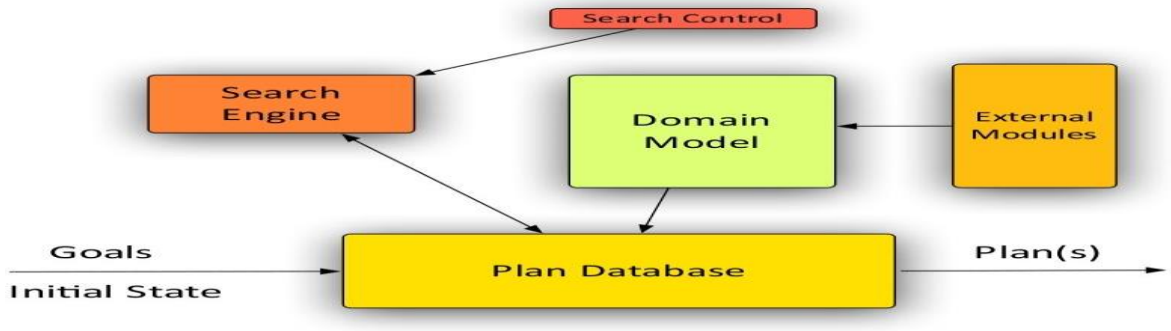

Figure 1: Generic Block Diagram of AI
Source: https://images.app.goo.gl/mWkbFNuue5ooooVj7

Expert systems handle 'n' distinct types of user requests in least amount of processing time, as shown in Figure1, which displays the core depiction of Artificial Intelligence (AI). Artificial intelligence refers to the ability of technology, especially computer systems, to mimic human intelligence. Some particular applications of AI include expert systems, machine vision, speech recognition, and natural language processing. The fundamental parts of an artificial intelligence system are its smart technology, which consists of built-in agents, and its environment. An agent can be either a person or a machine. An agent can be anything that can sense its environment through sensors and manipulate it through effectors. Section 2 will center on AI sector identification, Section 3 will cover smart framework tools, and Section 4 will conclude the discussion.

2. Identifying Sectors:

A computer is said to have artificial intelligence (AI) if it can mimic human intelligence in areas such as learning, planning, creativity, and other cognitive processes. The capacity to perceive one's environment, interpret data, resolve problems, and respond in a predetermined manner are all capabilities that technical systems can get through artificial intelligence. Measurement is the backbone of smart intelligence processes. The advent of AI has made it possible for machines to learn from their mistakes, adjust to novel inputs, and do tasks that were previously inconceivable to them. Deep learning and natural language processing are the mainstays of most AI instances that are brought up these days, including chess-playing machines and self-driving cars. [2] Among the core concepts of AI are reasoning, information, planning, learning, communication, perception, and the ability to move and manipulate objects. The field combines engineering and science to develop smart objects, most notably software for computers. look at the following diagram Data transfer, security, management, and efficient reporting to end users are all made possible by the way smart apps process requests using smart devices and other peripherals operating in tandem.

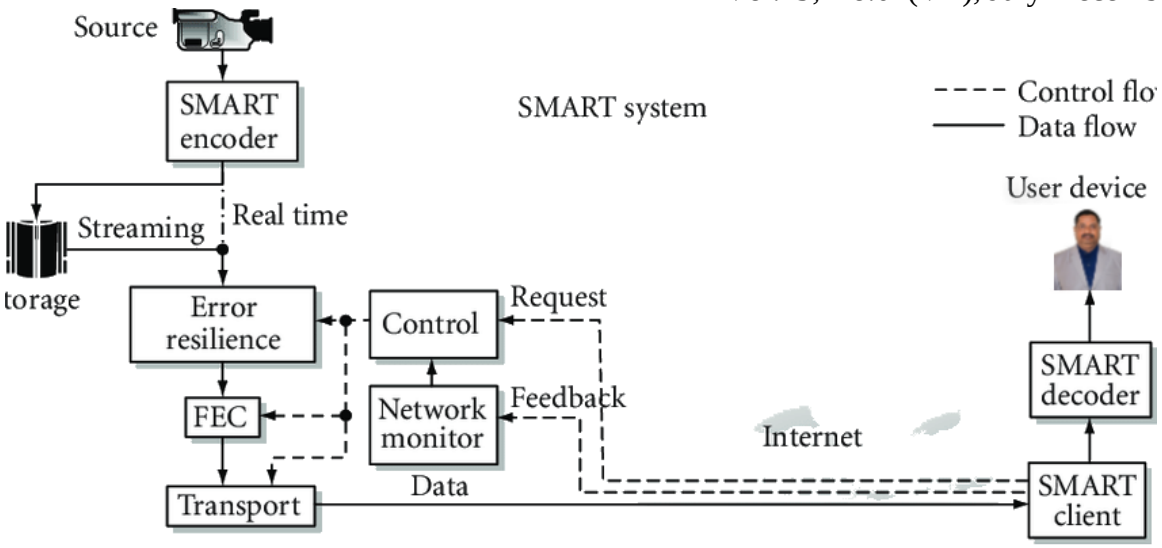

Figure 2: Smart Application Process Flow
Source: https://www.researchgate.net/figure/The-block-diagram-of-the-SMART-system_fig3_234784948

In order to gather information in a variety of formats, such as textual responses, visually appealing audio animation patterns, and small-agent videos, smart applications serve as external nodes that users engage with through front-end applications. We found that some of the most important areas are concerned with the development of AI applications and the breadth of their approach to handling people's requests. Gardening, cooking, gift-giving, and spaceship peripherals are the first and foremost topics covered.

2.1:AI-GARDEN PLANNING:

A new age in the perception, creation, and construction of our physical environments is being ushered in at the crossroads of architecture and artificial intelligence (AI). the third An integral component of this change is the generative model community, which includes influential figures in the field of architecture such as ChatGPT and Bard. It looks at how generative AI has affected architectural engineering in a variety of domains, including structural engineering, building systems, construction management, building codes and regulations, building materials and technologies, sustainability, and environmental design. Generative AI provides new ways to optimize building structural design, which is essential for structural integrity. With the help of AI, structural engineers and architects can work together to create buildings that are both functional and visually stunning. Efficient system design is critical for long-term viability and practicality. Generative AI is crucial for predicting when a project may encounter problems, distributing resources wisely, and increasing overall efficiency. Understanding the impact of AI on construction processes can provide valuable insights into the evolving responsibilities of construction managers and the game-changing potential of AI-driven methods. For garden landscape planning, boundary limitation planning, and on-campus landscape point measurement, the most well-known AI applications are ChatGPT and DALL-E. Using parameters like perimeter range and distance calculations, AI algorithms may recommend the best locations for trees and plants on a campus based on factors like soil temperature and density.

2.2 AI FOR MEAL PLANNING:

Computers play an increasingly important role in modern life, with an increasing number of once manual processes being handled by various computer systems. With the proliferation of powerful computing resources, machine learning methods have found more and more applications in these systems, which have amassed and will continue to amass massive volumes of data. They thrive here and are the backbone of many sophisticated systems. Computers play an increasingly important role in today's society, with an increasing number of processes being automated and managed by different computer systems. With the increase in computing power, machine learning techniques have also become more widely used, and these systems continue to gather massive amounts of data. In this setting, they flourish and provide the building blocks for numerous intelligent systems. [4] Some artificial intelligence (AI) tools for managing meal planning requests are proposed in this finding article. These tools include

2.3: MEALS.AI:

A large number of recipes can be generated by this program with only a few simple instructions. The icing on the cake is that it provides visually appealing images of each dish it creates, so you can better anticipate what to expect. Simple Meal Prep: With a single click, you can whip up a few of recipes and Meals AI will handle the rest. Diverse Food Choices: Provide for a variety of dietary restrictions, such as those pertaining to dairy, gluten, veganism, and vegetarianism. Maximize Your Ingredients: Make delectable dishes with little ingredients by utilizing dishes AI's innovative ideas. Customized Timing: Choose the amount of time you want to spend cooking each dish based on your preference for slow or fast cooking. Easily whip up dishes with a festive theme to celebrate important events with the help of Meals AI.

2.4: MEAL-PRACTICE:

Meal Practice is an AI tool that offers a variety of items that can assist with nutrition and meal planning. easy-to-use interface to start, just choose a protein, a cuisine, and the number of servings, and the app will show you recipes that have been highly rated. Join a community of individuals who share your tastes and interests, and then work together to create your own recipes by modifying existing ones, saving them, and sharing them with others. What you need and how to make it: The user interface provides a list of the required components along with instructions on what to do once you have them. Personal menu planning: Stock up on ingredients that will last you a whole week and whip up some delicious homemade dinners. The bulk of the characteristics.

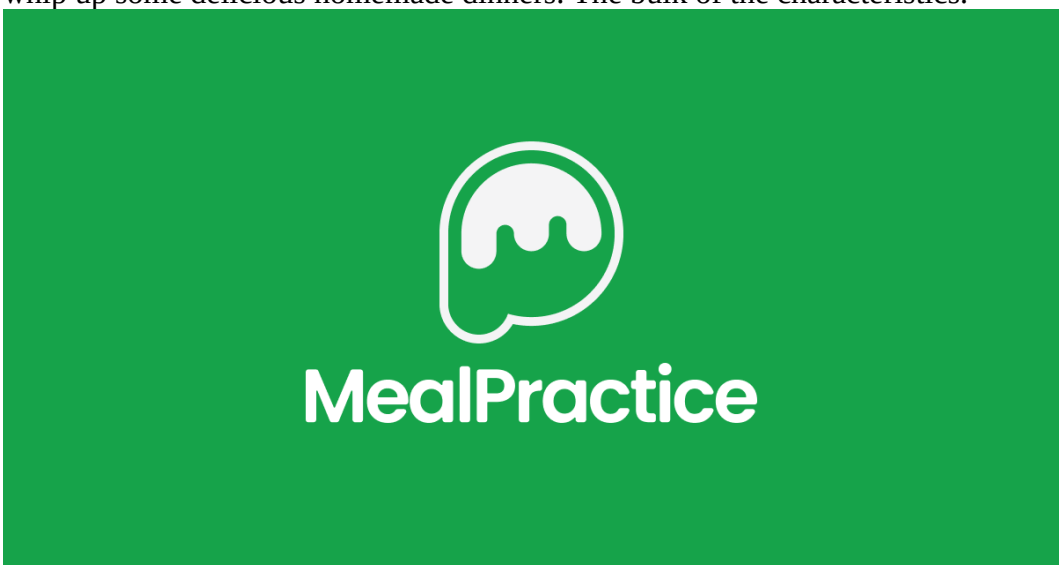

Figure 3: AI Tool MealPractice

Sample code of AI MealPractice code Given below Here’s the first day of a week’s meals:

Session	Food Items
Breakfast	Gluten-free oatmeal with banana and honey
Snack	Fresh fruit (apples, bananas, oranges)
Lunch:	Grilled cheese sandwich on gluten-free bread with tomato soup
Snack:	Gluten-free crackers with hummus
Dinner:	Slow-cooked beef stew with gluten-free biscuits

Table-1: Sample code of MealPractice AI Tool.

3: SMART FRAMEWORK TOOLS:

Developers can create AI apps with the help of artificial intelligence frameworks, which are software tools. This technological revolution is starting to rely on them more and more. One needs an in-depth knowledge of AI to appropriately investigate the AI ecosystem and realize its potential. What we call "AI tools" are actually pieces of software that use AI algorithms to do certain tasks and solve problems. The marketing, financial, healthcare, and education sectors are just a few that can benefit

from AI solutions' ability to automate operations, analyze data, and improve decision-making. The following are some of the strong framework tools that AI has discovered.

Data flow graphs are the building blocks of models in TensorFlow, an open-source deep learning framework. It makes it possible to build massive neural networks with many layers. Tensors are just a common technique to store data in deep learning. For more dimensional data representation, you can use tensors, which are essentially multi-dimensional arrays. In deep learning, high-dimensional data sets are commonly used, where each dimension represents a different feature of the collection. For many Deep Learning Model implementations, there is a Python package known as TensorFlow. The word "tensor" denotes a representation of data as a multi-dimensional array, while the phrase "flow" indicates a series of operations performed on data.

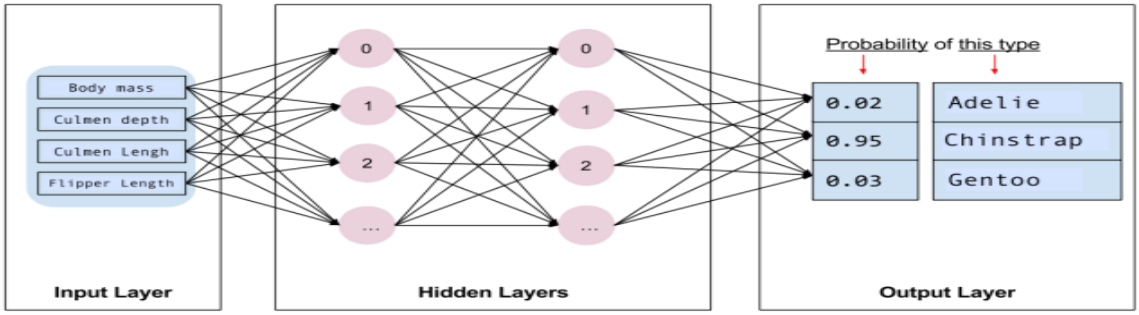

Figure 4: Tensor Flow Representation

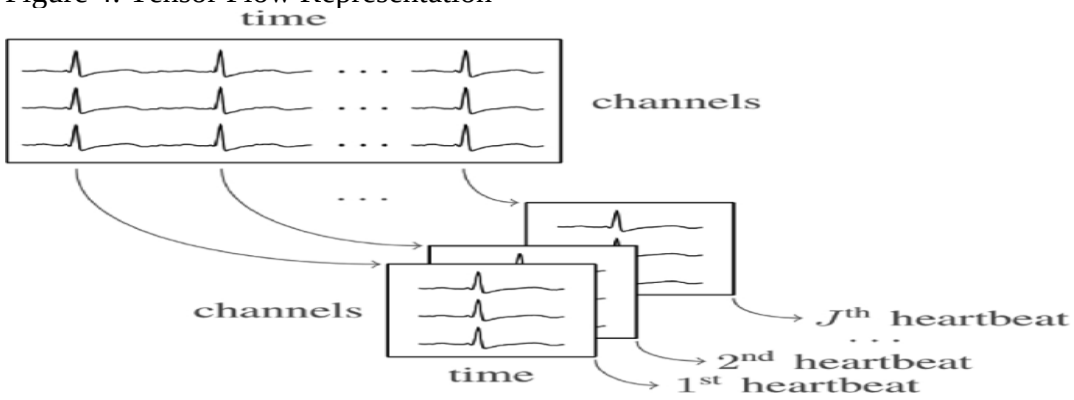

Figure 5:TensorTool Process Flow

The two main phases in writing a TensorFlow program are (i) constructing or building and (ii) creating the actual program. Run computational graphs or maintain them. Computational graphs are sets of TensorFlow operations that are structured like nodes in a graph. Upon receiving one or more tensors as input, each node produces a tensor as an output. Using the letters a, b, and c, I will illustrate a simple computational graph.

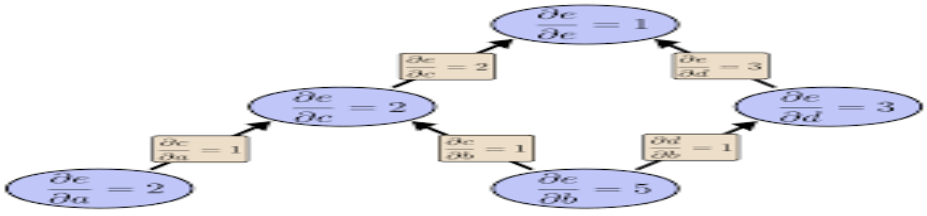

Figure 6: Computational Graph

A computational graph is a useful tool for describing operations with constant nodes, which take zero as input and output the values they've held. "A" and "B" are the example's constant nodes; they have the values "5" and "6" respectively. Node c stands in for the operation of multiplying constant node 'a' by 'b'. Consequently, the execution of "node c" will cause the "const" nodes "a" and "b" to multiply. Computational graphs provide an additional perspective on the mathematical tricks pulled off by a "TensorFlow" application. greater computing performance can be achieved by carrying out tasks allocated to different nodes of 'a' Computational Graph simultaneously. Here is a short sample of the code for the next portion of the "Tensorflow" operation:

```
import tensorflow as tf
 # Build a graph
a = tf.constant(5.0)
b = tf.constant(6.0)
```

$c = a * b$

Keras:

A human-designed API is Keras. Keras simplifies the required APIs, ensures model consistency, and reduces cognitive strain by employing best practices. For most common use cases, Keras isn't designed for mechanical devices. Instead, it reduces the amount of user operations required by giving clear feedback when problems occur. Keras gives its developers a lot of leeway by incorporating low-level deep learning languages like TensorFlow and Theano. This makes it possible to implement anything specified in the base language.

Keras has always prioritized its users' needs. quick uptake by businesses. Its capacity to work with several backends and platforms means that all of the encoders can work together on the code. There is outstanding cooperation between the industry community and the current Keras research community. We support rapid prototyping. The CPU and GPU are both easily usable. It allows for the creation of any type of architecture, which is then used as the project's API down the road. Getting a hang of it is actually pretty simple. One thing that sets Keras apart is how easy it is to generate models.

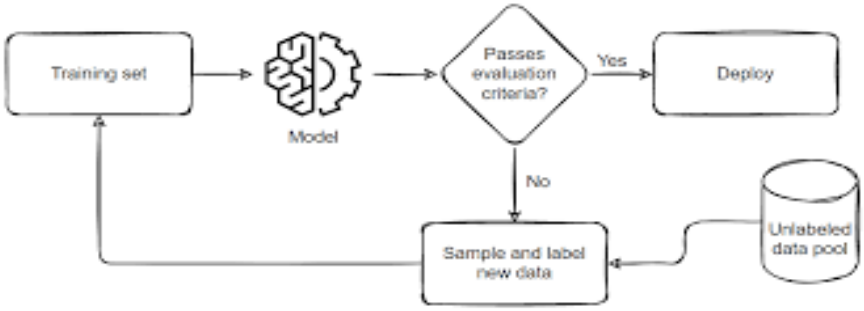

Figure 7: Keras ProcessModel

Make a network: In this step, we'll make a list of every link between our model's layers. Keras mainly recognizes two types of models: sequential and functional. Selecting the desired model type is the first step in defining the dataflow between them.

Assemble a system: Compilation cannot occur without first converting the code into a machine-readable representation. The model is used to accomplish this with Keras.executable function. Here we detail the steps needed to construct the model, including the metrics for evaluating its accuracy, the optimizer for reducing loss, and the loss function for calculating losses.

Assemble the network: Our model is fitted to the data using this after compilation is complete. This is how the model is taught to use our data.

Analyze the system We need to evaluate the model's error after model fitting. utilize model.predict() to utilize our model on new data and generate predictions.

Conclusion:

The paper's discussion of theoretical aspects concludes with a look at how Smart Technologies can help with real-world problems. It then moves on to analyze AI-based applications with respect to framework tools, demographic steps, and characteristics, and how these relate to current problems that people are facing. We will next focus on the framework model with implementation data sets for result computing at the next level of this study.

References:

1. Shukla, A., & Kumar, R. (2020). *Identification of Smart Technologies: A Review of AI-Based Methods and Applications*. Journal of Artificial Intelligence & Robotics, 22(4), 120-136.
2. Zhang, L., & Wang, X. (2023). *Leveraging Deep Learning and Neural Networks for Smart Technology Classification*. Journal of AI Innovations, 19(2), 78-95.
3. Li, Z., & Huang, M. (2024). *Emerging AI Innovations for the Future of Smart Technologies*. AI & Smart Systems, 18(1), 45-60.
4. Singh, A., & Gupta, V. (2022). *The Role of AI in Internet of Things: Identification and Management of Smart Devices*. International Journal of Smart Systems, 11(3), 30-47