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Research Paper: Artificial Intelligence in Medical: JEEV AI

Rohit Katyal

Artificial intelligence is one of the most discussed topics of the present time.The burning question of today about artificial intelligence is "will it be beneficial or dangerous for a human being". This MODEL analyzes the benefits of artificial intelligence in medicine. It examines how artificial intelligence assists the medical field as well as how patient's health is affected using this popular phenomenon in diagnosing diseases, patient's treatment, reducing errors, and virtually being present with the patients.In this model we have the data of previous patients and have created a machine learning model that tells what is the probability of a person suffering from that skin disease and after running the machine learning algorithm we have make an model as Dermatologists examine skin lesions by visual inspection and dermoscopy, similarly we have used our JEEV AI device to do skin lesion examination based on AI algorithms and machine vision. So we have created a SMS based chat bot through which user can send his feedback on his skin health conditions to our best crowd sourced doctors, Three-Stage Healthcare support system in covid time so people can get their skin problems solved at home by getting best treatment in covid time
Keywords: Artificial Intelligence, Machine Learning, Jeev AI, Skin Diseases

I. INTRODUCTION

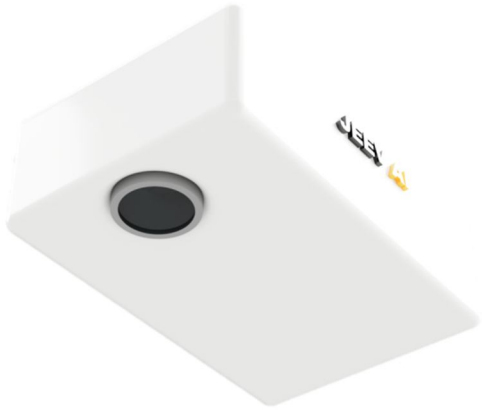
Artificial Intelligence is the ability of a computerized machine to think and work like human beings. Artificial Intelligence plays a very vital role in the field of medical, as we can make machines for Personalized medication,Better diagnosis and Advance treatment plans. Artificial intelligence in Medical is a term used to describe the use of machine-learning algorithms and software, or Artificial Intelligence (AI), to create a model that do analysis, presentation and comprehension of complex medical and health care data like humans. Specifically, AI is the ability of computerized machine algorithms to approximate conclusions based on the input data. Medical Imaging an important part of Artificial Intelligence plays an important role in modern medicine. It allows us to visualize and examine the human body in depth which demonstrate the structures inside our body in great detail. Nowadays, medical devices are constantly becoming more advanced in terms of — cost, precision, and safety — to improve the medical experience and the healthcare facilities

AI in medicine can be categorized into two sub types:

1) *Virtual Part:* The virtual part ranges from applications such as electronic health record systems to neural network-based guidance in treatment and decisions making .
2) *Physical Part:* The physical part deals with robots assisting in performing surgeries , intelligent prostheses (such as glass eye, peg, leg, corrective, wooden leg) for handicapped people, and elderly care.

The most affected community by the covid are the marginal groups as they don't have proper health and food facilities to take care upon them and their families.So,due to which an unfocused problem of infectious skin diseases spreading in marginalized communities with zero-support system during covid time.And in covid time most(80-85%) of hospital beds are reserved for covid patients.Due to which patients with other severe health diseases are not getting proper treatment.So for some advancement in the field of medical and to overcome the problem of infection, we came up with an model named as JEEV AI , This help us in predicting the skin diseases that are spreading in marginal community without any proper healthcare facility, so to overcome that we came up with our model JEEV AI

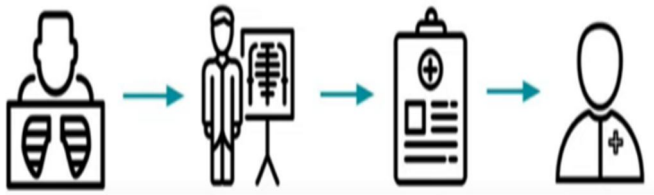
Our MODEL analyzes the benefits of artificial intelligence in medicine. It examines how artificial intelligence assists the medical field as well as how patient's health is affected using this popular phenomenon in diagnosing diseases, patient's treatment, reducing errors, and virtually being present with the patients. In this model we have the data of previous patients and have created a machine learning model that tells what is the probability of a person suffering from that skin disease and after running the machine learning algorithm we have make an model as Dermatologists examine skin lesions by visual inspection and dermoscopy , similarly we have used our JEEV AI device to do skin lesion examination based on AI algorithms and machine vision.



This is the physical architecture of our model.

II. THEORY

1) *Medical Imaging:* Medical Imaging an important part of Artificial Intelligence plays an important role in modern medicine. It allows us to visualize and examine the human body in depth which demonstrate the structures inside our body in great detail. Nowadays, medical devices are constantly becoming more advanced in terms of — cost, precision, and safety — to improve the medical experience and the healthcare facilities.



2) *Steps of Medical imaging:* 1) Imaging tools used for taking image 2) Radiologist to provide insights about the generated images 3) Picture archiving and communication system(PACS) to store generated image and patient data 4) Diagnostic Clinician to examine patients and render a diagnosis and treatment Imaging tools:- Diagnostic imaging tools help to narrow the causes of an injury or illness and ensure that the diagnosis is accurate. These techniques include X-Rays, computed tomography (CT) scans, and magnetic resonance imaging (MRI).Imaging tools are broadly divided into two categories: 2-Dimensional and 3-Dimensional imaging tools.
3) *2D Imaging:* An imaging technique where pictures are taken from a single angle only . Example:- X-Ray, Ultra Sound Scan, and Microscopy.
4) *3D Imaging:* An imaging technique where pictures are taken from different angles to create a volume of images and to make a 3D view . Example:- Computed Tomography (CT), Magnetic Resonance
5) *Robot Surgery:* Robotic surgery are types of surgeries that are done using robotic systems . It allows doctors to perform many types of complex procedures with more precision, flexibility and control than is possible with conventional techniques.Robotic surgery is done where there requires a high precision. There are 3 different kinds of robotic surgery systems: 1.Supervisory-controlled 2. Telesurgical controlled 3. Shared-control systems.

The main difference between each system is how a human surgeon must be involved when performing a surgical procedure. On one end of the spectrum, robots perform surgical techniques without the direct intervention of a surgeon. On the other end, doctors perform surgery with the assistance of a robot, but the doctor is doing most

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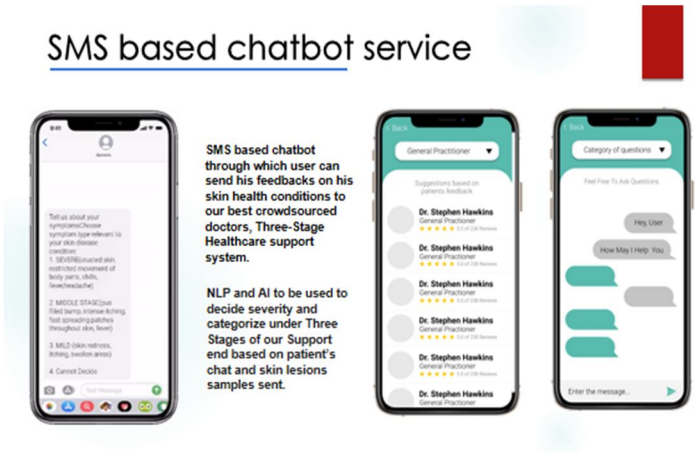
III. MODEL ARCHITECTURE AND DESCRIPTION

Our MODEL analyzes the benefits of artificial intelligence in medicine. It examines how artificial intelligence assists the medical field as well as how patient's health is affected using this popular phenomenon in diagnosing diseases, patient's treatment, reducing errors, and virtually being present with the patients. In this model we have the data of previous patients and have created a machine learning model that tells what is the probability of a person suffering from that skin disease and after running the machine learning algorithm we have make an model as Dermatologists examine skin lesions by visual inspection and dermoscopy, similarly we have used our JEEV AI device to do skin lesion examination based on AI algorithms and machine vision.

A. Steps to follow

1) Firstly a person have to use JEEV AI for medical imaging where an image of its skin infection gets uploaded .
2) After image gets upload we have Machine Learning Algorithm stored in a chip that run inside that and identify which infectious skin disease the person is suffering from.
3) After identifying the disease it tells how serve the disease is by telling the stage(I,II,III)
4) After that the patient has to use our three stage healthcare bot and tell which disease he is suffering from and also have to tell its history of medical if he has.
5) After that the healthcare bot fitted with machine learning algorithm gives solution to patient by telling them medicines and how to cure it.



This III stage healthcare system help the patient to get its best treatment at the door step,where a person can took an appointment of doctor, contact to a doctor,or directly gets a solution from the device based on the stage and severeness of disease.

B. Our Three Stage Healthcare Support

Stage I	Stage II	Stage III
SEVERE symptoms noted for infectious skin disease	MODERATE symptoms of infectious skin disease	MILD symptoms of infectious skin disease
Asks user to use JEEV AI device to scan skin lesions	Asks user to use JEEV AI device to scan skin lesions	Asks user to use JEEV AI device to scan skin lesions
Arrange doctor calls for remote areas with no skin speciality unit	Connect to doctor by sending them skin lesions samples and detection result and get prescription for patient through SMS	JEEV AI suggest some healthy tips to minimize risk of spreading infections

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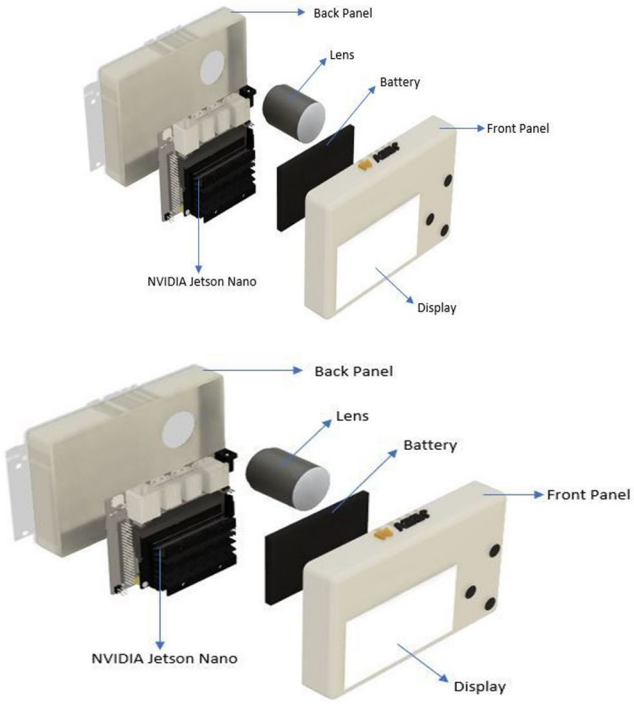
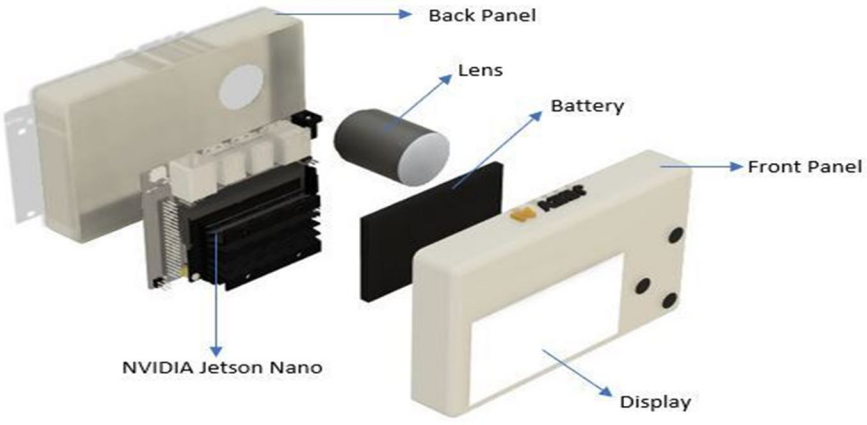
C. JEEV AI Edge Architecture

Our JEEV AI edge is made up of -

1) Front and back panel
2) Display Screen
3) Lens
4) Battery
5) NVIDIA Jetson Nano Chip

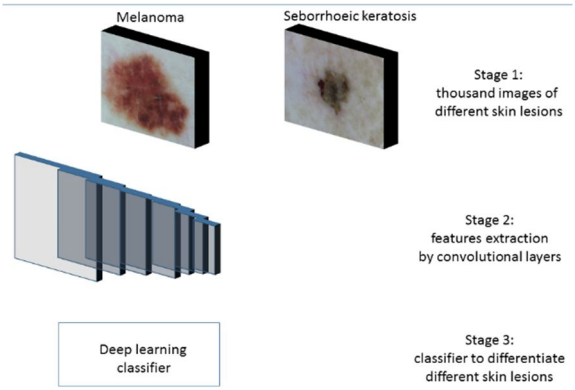


a) Front and back panel :- For Proving shape and establishing all hardware components
b) Display Screen:- For displaying the result.
c) Lens :- For image capturing used by NVIDIA Jetson chip to train model and examine the disease.
d) Battery:-For providing power for AI system to run. 5.)NVIDIA Jetson Nano Chip:-For storing Machine Learning Algorithm and to give solution to disease.



D. JEEV AI Skin Lesions Examination

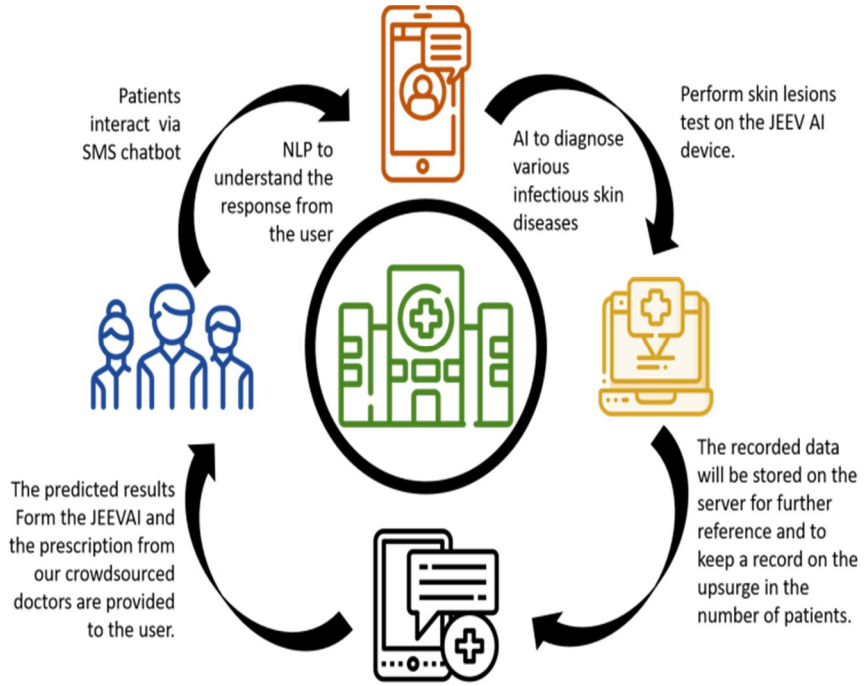
Dermatoscopy done in India is not as effective because for proper examining of skin lesion we need highly skilled and experienced dermatologists, and the hard truth is that we have very few specialists practicing dermatology. In India there's only 0.45 dermatologists per 1,00,000 population most of them available only in cities,but using our model we get 90%accuracy.



The above image shows 5 layers of our CNN model that we use in our model, we have used 5 layer CNN for better working of model and to get high accuracy. In the stage 1 we have a lot of images to test and train our model. In the 2 nd stage we are doing feature engineering for better results and accuracy.In the stage 3 CNN classifiers are used for differentiating various infectious skin disease. As, Dermatologists examine skin lesions by visual inspection and dermoscopy, similarly we have used our JEEV AI device to do skin lesion examination based on AI algorithms and machine vision.

E. Impact of our Model "JEEV AI"

Our model can aid early identification of infectious skin disease, suggest medical prescriptions and connect dermatologists remotely, building a support for telehealthcare services for skin care, bridging gap between private sector and NGOs The solution can also help us to identify which areas are getting cases worsened thus helping us to prepare for any potential outbreak.



The above image show that how our system help in early detection of severe infectious skin disease and give solution to cure them with the help of Artificial Intelligence.

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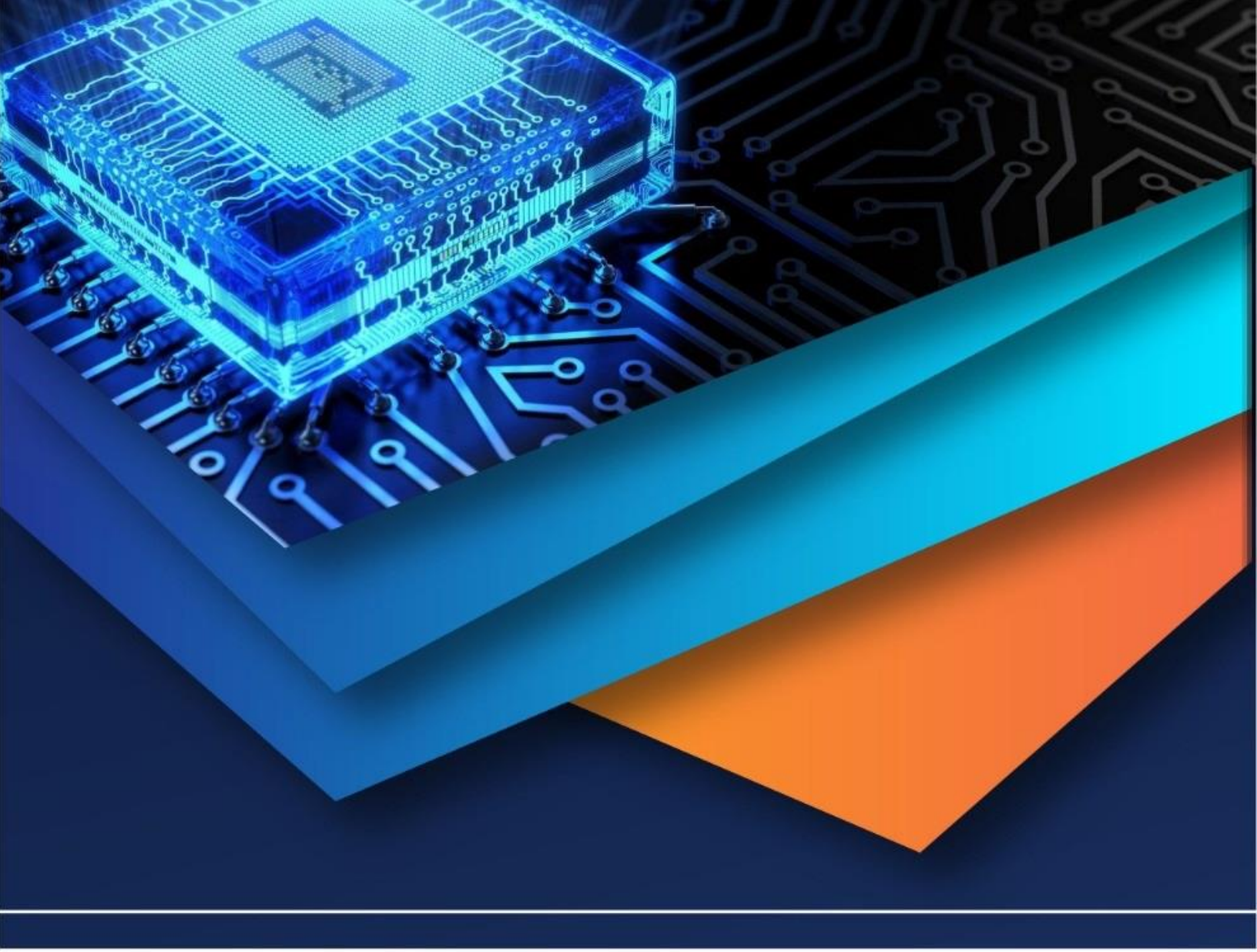

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