**#Importing Libraries**

import numpy as np

import pandas as pd

from sklearn.preprocessing import MinMaxScaler

from keras.models import Sequential

from keras.layers import Dense, LSTM

**#Importing nutrition dataset**

dataset = pd.read\_csv('Nutrition data.csv')

**#Viewing Dataset**

Dataset

**#Data preprocessing**

**#Label Encoding**

from sklearn import preprocessing

label\_encoder = preprocessing.LabelEncoder()

dataset['Recommended food']= label\_encoder.fit\_transform(dataset['Recommended food'])

dataset['Recommended food'].unique()

**#Checking for Null values**

dataset.isnull().sum()

**#Data normalization**

from sklearn import preprocessing

import pandas as pd

d = preprocessing.normalize(data)

df\_min\_max\_scaled= pd.DataFrame(d)

df\_min\_max\_scaled.head()

**#Splitting data**

from sklearn.model\_selection import train\_test\_split

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X,y,test\_size=0.3)

**#Model building**

model = Sequential()

model.add(LSTM(50, return\_sequences=True, input\_shape= (X\_train.shape[1], 1)))

model.add(LSTM(50, return\_sequences= True))

model.add(LSTM(50, return\_sequences= False))

model.add(Dense(25, activation=’softmax’))

model.add(Dense(1))

#**Model compiling**

model.compile(loss='binary\_crossentropy', optimizer='adam', metrics=['accuracy'])

**#Model fitting**

model.fit(X\_train, y\_train, epochs=3, batch\_size=64)

print(model.summary())

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**GUI codes:**

import tkinter as tk

from tkinter import ttk

import random

class tkinterApp(tk.Tk):

# \_\_init\_\_ function for class tkinterApp

def \_\_init\_\_(self, \*args, \*\*kwargs):

# \_\_init\_\_ function for class Tk

tk.Tk.\_\_init\_\_(self, \*args, \*\*kwargs)

# creating a container

container = tk.Frame(self)

container.pack(side = "top", fill = "both", expand = True)

container.grid\_rowconfigure(0, weight = 1)

container.grid\_columnconfigure(0, weight = 1)

# initializing frames to an empty array

self.frames = {}

# iterating through a tuple consisting

# of the different page layouts

for F in (StartPage, Page1, Page2):

frame = F(container, self)

# initializing frame of that object from

# startpage, page1, page2 respectively with

# for loop

self.frames[F] = frame

frame.grid(row = 0, column = 0, sticky ="nsew")

self.show\_frame(StartPage)

# to display the current frame passed as

# parameter

def show\_frame(self, cont):

frame = self.frames[cont]

frame.tkraise()

# first window frame startpage

class StartPage(tk.Frame):

def \_\_init\_\_(self, parent, controller):

tk.Frame.\_\_init\_\_(self, parent)

# label of frame Layout 2

label = ttk.Label(self, text ="Nurtition Suggestion For Women Sports Players and Active Youth",font=('Century 20 bold'))

label.grid(row = 0, column = 4, padx = 10, pady = 10)

# putting the grid in its place by using

# grid

label = ttk.Label(self, text="Enter the details given below",font=('Century 15 italic'))

a = ttk.Label(self ,text = "Name").grid(row = 2,column = 2, padx = 10, pady = 10)

c = ttk.Label(self ,text = "Weight").grid(row = 3,column = 2, padx = 10, pady = 10)

d = ttk.Label(self ,text = "Height").grid(row = 4,column = 2, padx = 10, pady = 10)

e = ttk.Label(self ,text = "Are you an Athlete").grid(row = 5,column = 2, padx = 10, pady = 10)

entry1 = ttk. Entry(self).grid(row = 2,column = 3)

entry3 = ttk. Entry(self).grid(row = 3,column = 3)

entry4 = ttk. Entry(self).grid(row = 4,column = 3)

label.grid(row = 1, column = 4, padx = 10, pady = 10)

button1 = ttk.Button(self, text ="Yes",

command = lambda : controller.show\_frame(Page2))

# putting the button in its place by

# using grid

button1.grid(row = 5, column = 3, padx = 10, pady = 10)

## button to show frame 2 with text layout2

button2 = ttk.Button(self, text ="No",

command = lambda : controller.show\_frame(Page1))

# putting the button in its place by

# using grid

button2.grid(row = 6, column = 3, padx = 10, pady = 10)

# second window frame page1

class Page1(tk.Frame):

def \_\_init\_\_(self, parent, controller):

tk.Frame.\_\_init\_\_(self, parent)

label = ttk.Label(self, text ="Active Youth",font=('Century 20 bold'))

label.grid(row = 0, column = 4, padx = 10, pady = 10)

label = ttk.Label(self, text ="Select Your Age",font=('Century 15 italic'))

label.grid(row = 1, column = 4, padx = 10, pady = 10)

# button to show frame 2 with text

def on\_click1():

list = ["Wheat bread-white,Phalsa,Milk cows,Drumstick flowers Protein-15.9,Carbs-78.1,Calories-434,Calcium-361,Iron-4.5",

"Barley,Banyan tree figs,Leeks Protein-15, Carbs-98.6 ,Calories-485, Calcium-440, Iron-3.67",

"Varagu,Wood apple,Ipomoea leaves,Pears Protein-18.6, Carbs-99 ,Calories-402, Calcium-275, Iron-5.54"]

list1 = ["Ragi,Broad beans,Papaya ripe Protein-12.4, Carbs-86.4, Calories- 408, Calcium-411, Iron-5.8",

"Arrow root flour,Amarnath leaves caudatus,Egg hen Protein-16.7, Carbs- 85.1 ,Calories- 533, Calcium-270, Iron-3.1",

"Maize dry,Amarnath species(Koyakeerai),Parsnip Protein- 15.2, Carbs-94.7, Calories-480, Calcium-352, Iron-5.3"]

list2 = ["Wheat flour refined,Milk buffalos,Brinjal Protein-16.7, Carbs-82.9,Calories-489, Calcium-261, Iron-3.88",

"Wheat semolina,Amarnath viridis,Bitter gourd small Protein-17.7,Carbs-89.2, Calories-446, Calcium- 374, Iron-4.25",

"Wheat vermicelli,Ari fish Protein-24.6 ,Carbs- 81.8, Calories-441, Calcium-402, Iron-4.07"]

print("-------------------"+ '\n',"A HEALTHY NUTRITION SUGGESTION MODEL" + '\n',"-----------------"+ '\n',

"Suggested Food intake per day for Active Youth 9-13"+ '\n',"-----------------"+ '\n',

"BREAKFAST"+ '\n',random.choice(list)+ '\n',"LUNCH"+ '\n',random.choice(list1)+ '\n',"DINNER"+ '\n',random.choice(list2)+ '\n',"HAVE A NICE DAY")

# layout2

button4 = ttk.Button(self, text ="1.Age: 9-13",

command = lambda :[on\_click1()])

# putting the button in its place

# by using grid

button4.grid(row = 2, column = 1, padx = 10, pady = 10)

# button to show frame 2 with text

# layout2

def on\_click2():

list=["Barley,Milk buffalos,Avocado pear,Beetroot Protein-19.2, Carbs-84.2, Calories-711, Calcium-364.3, Iron-4.76",

"Wheat bread-white,Coconut milk,Banyan tree figs,Pink beans Protein-16, Carbs-79.6, Calories-791, Calcium-444, Iron-4.2",

"Wheat-vermicelli,Carrot,Egg hen,Mulberry Protein-24, Carbs-99.2, Calories-622, Calcium-232, Iron-6.82"]

list1=["Varagu,Curd cows milk,Yam oridinary,Parupu keerai,Broad beans Protein-19.7, Carbs-105, Calories-555, Calcium-372, Iron-10.9",

"Rice raw milled,Egg duck,Bengal gram leaves Protein-23.8, Carbs-93.1, Calories-623, Calcium-420, Iron-7",

"Rice parboiled milled, Field beans tender,Avocado pear,Drumstick flowers Protein-15.5, Carbs-93.6, Calories-659, Calcium-280, Iron-4.35"]

list2=["Wheat flour refined,Channa buffalos milk Protein-24.4, Carbs-81.8, Calories-679, Calcium-528, Iron-4.9",

"Arrow root flour,Channa cows milk,Ambada Protein-19.2, Carbs-88.8, Calories-647, Calcium-251, Iron-5.1",

"Wheat bread brown,Milk cows,Parsnip,Mahua Protein-14.7, Carbs-99.3, Calories-531, Calcium-283, Iron-3.13"]

print("-------------------"+ '\n',"A HEALTHY NUTRITION SUGGESTION MODEL" + '\n',"-----------------"+'\n',"Suggested Food intake per day for Active Youth(14-18)" + '\n',"-----------------"+ '\n',"BREAKFAST"+ '\n',

random.choice(list)+ '\n',"LUNCH"+ '\n',random.choice(list1)+ '\n',"DINNER"+ '\n',random.choice(list2)+ '\n',"HAVE A NICE DAY")

# layout2

button5 = ttk.Button(self, text ="2.Age: 14-18",

command = lambda :[on\_click2()])

# putting the button in its place by

# using grid

button5.grid(row = 3, column = 1, padx = 10, pady = 10)

def on\_click3():

list=["Ragi,,Mutton muscle,Wood apple Protein-32.9, Carbs-90.1, Calories-656, Calcium-290, Iron-5.78",

"Arrow root flour,Egg duck,Milk buffalos Protein-17.8, Carbs88.1, Calories-624, Calcium-280, Iron-3.3",

"Wheat semolina,Milk buffalos,Pomegranate,Carrot Protein-16.7, Carbs-106.1, Calories-588, Calcium-261, Iron-5.68"]

list1=["Rice raw milled,Amarnath leave stem,Singhala Protein-28.6, Carbs-95.6, Calories-561, Calcium-368,, Iron-4.3",

"Sanwa milled,Hilsa,Snake gourd,Curd Protein-29.3, Carbs-71.81, Calories-613, Calcium-256, Iron-8.71",

"Panivaragu,Passion fruit,Butter milk,Cluster beans,Spinach Protein-19.4, Carbs-97, Calories-596, Calcium-257, Iron-4.34"]

list2=["Wheat bulgur,Egg duck,Parsely Protein-21.3, Carbs-91.5, Calories-618, Calcium-477, Iron-6.3",

"Wheat flour whole,Cluster beans,Bread fruit,Milk cows Protein-20, Carbs-100.5, Calories-628, Calcium- 330, Iron-7.2",

"Wheat vermicelli,Egg hen,Cho cho marrow,Ambada,Mulberry Protein-24.4, Carbs-99.6, Calories-649, Calcium-333, Iron-7.9"]

print("-------------------"+ '\n',"A HEALTHY NUTRITION SUGGESTION MODEL" + '\n',"-----------------"+ '\n',

"Suggested Food intake per day for Active Youth 18-30" + '\n',"-----------------"+ '\n',"BREAKFAST"+ '\n',

random.choice(list)+ '\n',"LUNCH"+ '\n',random.choice(list1)+ '\n',"DINNER"+ '\n',random.choice(list2)+ '\n',"HAVE A NICE DAY")

# layout2

button6 = ttk.Button(self, text ="3.Age: 18-30",

command = lambda :[on\_click3()])

# putting the button in its place by

# using grid

button6.grid(row = 4, column = 1, padx = 10, pady = 10)

button7 = ttk.Button(self, text ="Back",

command = lambda : controller.show\_frame(StartPage))

# putting the button in its place by

# using grid

button7.grid(row = 5, column = 3, padx = 10, pady = 10)

# third window frame page2

class Page2(tk.Frame):

def \_\_init\_\_(self, parent, controller):

tk.Frame.\_\_init\_\_(self, parent)

label = ttk.Label(self, text ="Young Athlets", font = ('Century 20 bold'))

label.grid(row = 0, column = 4, padx = 10, pady = 10)

label = ttk.Label(self, text ="Select Your Age",font=('Century 15 italic'))

label.grid(row = 1, column = 4, padx = 10, pady = 10)

# button to show frame 2 with text

# layout2

def on\_click4():

list=["Panaiviragu,Pomogranate,Field beans,Mutton muscle Protein-34.4, Carbs-91.6, Calories-648, Calcium-384, Iron-5.92",

"Ragi,Egg heb,Potato,Cat fish,Lime sweet musambi Protein-44.4, Carbs-107.3, Calories-721, Calcium-464, Iron-7.18",

"Milk buffalos ,Passion fruit,Jowar,Parsnip Protein-16.9, Carbs-113.2, Calories-612, Calcium-295, Iron-6.8"]

list1=["Rice parboiled handpound,Horse gram,Butter milk Protein-31.3, Carbs-114.5, Calories-675, Calcium-327, Iron-4.67",

"Sanwa milled,Jew fish,Tamarind leaves,Bean Scarlet runner Protein-39.4, Carbs-113.5, Calories-680, Calcium-385 12.7",

"Varagu,Cluster beans,Red gram dal,Curd Protein-36.9, Carbs-116.5, Calories-890, Calcium-379, Iron-5.2"]

list2=["Wheat bread brown,fig red,Peas dry,Pink beans Protein-32.8, Carbs-104.3, Calories-656, Calcium-334, Iron-4.75",

"Maize dry,Singhala,Bengal gram leaves Protein-39, Carbs-94.2, Calories-606, Calcium-448, Iron-7.9",

"Tapioca,Horse mackerel,Water chestnut dry Protein-35.3, Carbs-107,Calories-586, Calcium-477, Iron-5.3"]

print("-------------------"+ '\n',"A HEALTHY NUTRITION SUGGESTION MODEL" + '\n',"-----------------"+ '\n',"Suggested Food intake per day for Young Athlets(9-13)"+ '\n',"-----------------"+ '\n',"BREAKFAST"+ '\n',

random.choice(list)+ '\n',"LUNCH"+ '\n',random.choice(list1)+ '\n',"DINNER"+ '\n',random.choice(list2)+ '\n',"HAVE A NICE DAY")

# layout2

button8 = ttk.Button(self, text ="1.Age: 9-13",

command = lambda :[on\_click4()])

# putting the button in its place by

# using grid

button8.grid(row = 2, column = 1, padx = 10, pady = 10)

# button to show frame 3 with text

# layout3

def on\_click5():

list=["Wheat vermicelli,Mulberry,Egg duck,Red gram tender,Beet root Protein-44.8, Carbs-115.1, Calories-741, Calciuum-348, Iron-9.09",

"Wheat germ,Sweet potato,Phalsa,Milk buffalo,Plaintain stem Protein-36.6, Carbs-111, Calories-674, Calcium-435, Iron-10.71",

"Bajra,Date fresh,Singhi,Double beans Protein-37.6, Carbs-115.9, Calories-751, Calciuum-324, Iron-12.76"]

list1=["Samai,Red gram dal, Ray Protein-50.9, Carbs-129.7, Calories-713, Calciuum-304, Iron-15.3",

"Rice parboiled milled,Sarputi,Horse gram whole Protein-44.8, Carbs-118.5, Calories-768, Calciuum-416, Iron-9.21",

"Italian milled,Rajma,Kovai Protein-36.4, Carbs-124.6, Calories-685, Calciuum-331, Iron-8.28"]

list2=["Wheat bread white,Channa cows milk,Moth bean Protein-49.7, Carbs-109.6, Calories-840, Calciuum-421, Iron-10.6",

"Wheat flour refined,Milk cows,Green gram whole Protein-38.2, Carbs-125, Calories-749, Calciuum-271, Iron-7.3",

"Barley,Carrot leaves,Bengal gram dal Protein-40.7, Carbs-129.6, Calories-785, Calciuum-536, Iron-15.6"]

print("-------------------"+ '\n',"A HEALTHY NUTRITION SUGGESTION MODEL" + '\n',"-----------------"+ '\n',"Suggested Food intake per day for Young Athlets(14-18)"+ '\n',"-----------------"+ '\n',"BREAKFAST"+ '\n',

random.choice(list)+ '\n',"LUNCH"+ '\n',random.choice(list1)+ '\n',"DINNER"+ '\n',random.choice(list2)+ '\n',"HAVE A NICE DAY")

# layout2

button9 = ttk.Button(self, text ="2.Age: 14-18",

command = lambda :[on\_click5()])

# putting the button in its place by

# using grid

button9.grid(row = 3, column = 1, padx = 10, pady = 10)

def on\_click6():

list=["Wheat bread white,Sethapal,Milk cows,Ground nut cake Protein-53.5, Carbs-118.6, Calories-802, Calcium-461, Iron-5.61",

"Egg hen,Sapota,Green gram whole,Wheat germ Protein-67.2, Carbs-125, Calories-967, Calcium-282, Iron-11.65",

"Wheat flour whole,Rajma,Egg duck Protein-48.5, Carbs-130.8, Calories-868, Calcium-378, Iron-12.5"]

list1=["Liver goat,Mahua,Bean scarlet runner,Amarnath species(koyakeerai),Italian millet Protein-43.9, Carbs-118.7, Calories-744, Calcium-435, Iron-8.13",

"Rice raw milled,Horse gram ,Puti Protein-46.5, Carbs-119.3, Calories-773, Calcium-406, Iron-8.77",

"Bajra,Black gram dal,Broad beans,Curd cows milk Protein-43.6, Carbs-127.3, Calories-816, Calcium-395, Iron-13.4"]

list2=["Wheat flour refined,Moth beans,Egg hen,Harfarwrie Protein-48, Carbs-199.4, Calories-883, Calcium-365, Iron-15",

"Wheat semolina,Water chestnut, dry,Jew fish(pallikora),Cauliflower Protein-46.4, Carbs-147.7, Calories-808, Calcium-333, Iron-10.3",

"Jowar,Wood apple,Soyabean brown Protein-60.7, Carbs-111.6, Calories-794, Calcium-395, Iron-14.98"]

print("-------------------"+ '\n',"A HEALTHY NUTRITION SUGGESTION MODEL" + '\n',"-----------------"+ '\n',"Suggested Food intake per day for Young Athltes(18-30)"+ '\n',"-----------------"+ '\n',"BREAKFAST"+ '\n',

random.choice(list)+ '\n',"LUNCH"+ '\n',random.choice(list1)+ '\n',"DINNER"+ '\n',random.choice(list2)+ '\n',"HAVE A NICE DAY")

# layout2

button10 = ttk.Button(self, text ="3.Age: 18-30",

command = lambda :[on\_click6()])

# putting the button in its place by

# using grid

button10.grid(row = 4, column = 1, padx = 10, pady = 10)

button11 = ttk.Button(self, text ="Back",

command = lambda : controller.show\_frame(StartPage))

# putting the button in its place by

# using grid

button11.grid(row = 5, column = 3, padx = 10, pady = 10)

# Driver Code

app = tkinterApp()

app.mainloop()