Doctor App: A life saving Mobile Application

Mayank Aggarwal, Akshay Mathur , Yatin Karel

Gurukul Kangri University,Haridwar,India.

Abstract-**Mobile applications and services make things simpler fulfilling our daily needs for information, communication, entertainment or leisure. Mobile Applications have brought a new revolution. The widespread adoption and use of mobile technologies is opening new and innovative ways to improve health and health care delivery. Mobile applications (apps) can help people manage their own health and wellness, promote healthy living, and gain access to useful information when and where they need it. These tools are being adopted almost as quickly as they can be developed. According to industry estimates, 500 million smartphone users worldwide will be using a health care application by 2015, and by 2018, 50 percent of the more than 3.4 billion smartphone and tablet users will have downloaded mobile health applications[4]. "Doctor App" is a mobile application that is basically built on the idea that an app can keep you updated with all the health related news that has currently occurred in a particular region and helps you find the affordable, suitable medical services for you nearby. It is different from other medico applications in a way that it can predict with the disease one might have depending on the current season and location, and also provide precautions and remedies of that disease**

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INTRODUCTION

"Doctor App" is a mobile application that is basically built on the idea that an app can keep you updated with all the health related news that has currently occurred in a particular region and helps you find the affordable, suitable medical services for you nearby. It enables the user to search a doctor as per the category required like homeopathy, ayurvedic, affordability, patient reviews etc. available in the region. The app automatically tells you that what region are you in and during the current time of year what diseases are prone in this region and what are the associated home remedies or common medicines.

This app requires an active Internet connection for fetching the information. A GPS enabled smartphone for detecting the region. The app uses cloud storage for the data it requires.

BACKGROUND

Mobile apps are software programs that run on smartphones and other mobile communication devices. They can also be accessories that attach to a smartphone or other mobile communication devices, or a combination of accessories and software. [3]

Mobile medical apps are those apps that meet the definition of a medical device and are an accessory to a regulated medical device or transform a mobile platform into a regulated medical device.

Consumers can use both mobile medical apps and mobile apps to manage their own health and wellness, such as to monitor their caloric intake for healthy weight maintenance. For example, the National Institutes of Health's LactMed app provides nursing mothers with information about the effects of medicines on breast milk and nursing infants.[3]

The Radiation Emergency Medical Management (REMM) app gives health care providers guidance on diagnosing and treating radiation injuries. Some mobile medical apps can diagnose cancer or heart rhythm abnormalities, or function as the "central command" for a glucose meter used by an insulin dependent diabetic patient.

Some of the applications approved by FDA are shown in Table 1.

Table 1: Mobile Application approved by FDA[3]

App Name	Owner
Rhythmstat Xl	Data Critical Corp.
Mobile-Patient Viewer	Data Critical Corporation
Modification To: Pocketview Ecg Software	Micromedical Industries, Ltd.
Freestyle Tracker Diabetes Management System	Abbott Diabetes Care Inc.
Tm2005 Personal Medical Phone Center	Card Guard Scientific Survival, Ltd.
Spectrum And Spectrum With Master Drug Library	Sigma Intl.
Sd360 Digital Recorder/Sd360 Holter Digital Recorder	Northeast Monitoring, Inc.
Pill Phone	Vocel
Cg-6108 Arrhythmia Ecg Event Recorder	Card Guard Scientific Survival, Ltd.
Customized Sound Therapy (Cst)	Tinnitus Otosound Products, Llc
Avita Bluetooth Blood Pressure Monitor, Model: Bpm656zb	Avita Corporation
Cg-6108 Continuous Ecg Monitor And Arrhythmia Detector	Card Guard Scientific Survival, Ltd.
Cg-6108 Act-3l Continuous Ecg Monitor & Arrhythmia Detector	Card Guard Scientific Survival, Ltd.
Myglucohealth Glucose Monitoring Systems	Entra Health Systems, Ltd.
Airstrip Ob	Airstrip Technologies, Lp
Symcare Diabetes Management Program	Symcare Personalized Health Solutions, Inc
Medicalgorithmics Real-Time Ecg Monitor And Arrhythmia Detector, Model Pocketecg	Medicalgorithmics Sp Z.O.O.

App Name	Owner
Glucophone Blood Glucose Test System, Model Igm-0025	Infopia Co., Ltd
Cg-6108 Act-Il Continuous Ecg Monitor And Arrythmia Detector	Card Guard Scientific Survival, Ltd.
Modification To: Cg-6108 Act-3l Continuous Ecg Monitor And Arrhythmia Detector, Model Fg-00084	Card Guard Scientific Survival, Ltd.
Diabetesmanager System, Diabetesmanager-Rx System Model Version 1.1	Welldoc, Inc
Airstrip Remote Patient Monitoring (Rpm) Remote Data Viewing Software, Version 3.1	Airstrip Technologies, Lp
Wavesense Diabetes Manager Model Version 1.3.4	Agamatrix
Aidera Diasend System	Aidera Ab
Mobius Ultrasound Imaging System	Mobisante, Inc.
Mobile Mim	Mim Software Inc.
Fully Automatic Electronic Blood Pressure Monitor Model Kd-931	Andon Health Co.,Ltd
Airstrip Remote Patient Monitoring (Rpm)	Airstrip Technologies, Lp
Cg-5108 Act-3l Continuous Ecg Monitor And Arrhythmia Detector	Card Guard Scientific Survival Ltd.
Dash Knee	Brainlab Ag
Withings Blood Pressure Monitor	Withings
Airstrip Remote Patient Monitoring (Rpm) Remote Data Viewing	Airstrip Technologies, Lp
Resolutionmd Mobile Model Rmb-Mob-2x	Calgary Scientific, Inc.
Reka E100	Reka Pte Ltd
Welldoc Diabetes Manager System And Diabetes Manager Rx System	Welldoc, Inc
Carestream Pacs	Carestream Health, Inc.
Iglucose System	Positiveid Corporation
Mobile Mim	Mim Software Inc.
Ibgstar Blood Glucose Monitoring System, Ibgstar Diabetes Manager Application, Rev D	Agamatrix Inc
Smartheart	Shl Telemedicine International Ltd.
Welldoc Diabetes Manager System And Diabetes Manager Rx System	Welldoc, Inc
Orthosize	Orthosize Llc
Pixel App	Gauss Surgical, Inc.
Surgicase Connect	Materialise N.V.
Proteus Ingestion Confinmation Systems	Proteus Biomedical, Inc.
Kd-936 Fully Automatic Wireless Blood Pressure Monitor	Andon Health Co.,Ltd
Fully Automatic Wireless Blood Pressure Wrist Monitor	Andon Health Co., Ltd
Beam Brush/Beam App	Beam Technologies, Llc
Pixel App	Gauss Surgical, Inc.
Asthmapolis System	Reciprocal Labs Corporation
Airstrip Remote Patient Monitoring (Rpm) Remote Data Viewing	Airstrip Technologies, Lp
Bodyguardian System Bodyguardian Control Unit Bodyguardian Connect	Preventice, Inc.
Bioharness	Zephyr Technology Corporation
Aycan Mobile	Aycan Digitalsysteme Gmbh
Vestibular Analysis Apparatus	Capacity Sports, Llc
Withings, Smart Body Scale	Zhongshan Transtek Electronics Co., Ltd.
Alivecor Heart Monitor For Iphone	Alivecor, Inc.
Panoptic	Welch Allyn, Inc.
Myvisiontrack(Tm)	Vital Art And Science Incorporated
Resolutionmd Mobile 3.1 Model Rmd-Mob-31	Calgary Scientific, Inc.
Intuition	Terarecon, Inc.
Mobilect Viewer	Nephosity, Inc.
Rhythmstat Xl	Data Critical Corp.
Mobile-Patient Viewer	Data Critical Corporation
Modification To: Pocketview Ecg Software	Micromedical Industries, Ltd.
Freestyle Tracker Diabetes Management System	Abbott Diabetes Care Inc.

Every year new microbes come into existence giving rise to new disease Table 2 gives an illustration of some of the microbes and the year in which they were found.

Table 2 : Different types of Microbe source[2]

S.No	Year	Microbes	Disease
1	1975	Parvovirus B-19	Fifth Disease
2	1976	Cryptosporidium Parvum	Cryptosporidiosis
3	1977	Ebola Virus	Ebola Haemorrhagic Fever
4	1977	Legionella Pneumophila	Legionnaire's Disease
5	1977	Hantaan Virus	Korean Haemorrhagic Fever
6	1977	Campylobacter Jejuni	Gastroenteritis (Food Poisoning)
7	1980	Human T-Lymphotropic Virus I (Htlv-I)	T-Cell Leukemia/Lymohoma
8	1981	Toxin Producing Strains Of Staphylococcus Aureus(Golden Staph)	Various Infections
9	1982	Escherichia Coli O157:H7	Food Poisoning
10	1982	Htlv-Ii	Lymphoma
11	1982	Borrelia Burgdorferi	Lyme Disease
12	1983	Human Immunodeficiency Virus	Aids
13	1983	Helicobacter Pylori	Duodenal And Gastric Ulcer And Stomach Cancer
14	1985	Enterocytozoon Bieneusi	Microsporidiosis Diarrhea
15	1986	Cyclospora Cayatanensis	Diarrhoea
16	1988	Hepatitis E Virus	Hepatitis
17	1989	Ehrilichia Chafeensis	Human Monocytic *Ehrilichiosis*
18	1989	Hepatitis C Virus	Liver Cancer (Hepatocellular Carcinoma)
19	1991	Guanarito Virus	Venezuelan Haemorrhagic Fever
20	1992	Vibrio Cholerae O139	Cholera
21	2003	Influenza A (H5n1)A	Avian Influenza
22	2009	Influenza A(H1n1)	Swine Flu
23	2012	Novel Coronavirus	Severe Respiratory Infection

FEATURES

It helps one to identify the disease he is suffering from based on the symptoms he has noticed. Now he can choose the kind of treatment he prefers such as Homeopathy, Allopathy or Ayurvedic.

1. Next step is to find out the best Doctor of that particular disease nearest to his location. This can be easily done with the easy and light search filter option of the Doctor App. Doctor App search filter includes area, affordability(based on cost of treatment), type of treatment and the patient reviews for all the major and minor hospitals.
2. Not only this, Doctor App helps one to search the home remedies of any particular disease and gives one all possible diseases having particular symptoms.
3. It is very important to keep yourself protected from the diseases that may be caused as a result of seasonal change. Doctor App alerts you of all such diseases and provides you the precautions and cures for that.
4. Not only this a person migrating from one state to another do not has to worry for the health related issues as Doctor App keeps you updated with the health related issues in that area. It automatically traces your location and provides you the required medical information.
5. Doctor App accesses all data from cloud. So it is very fast. And due to its lightweight designed interface it is very quick in response and very easy to use.

SAMPLE DATABASE

The people are prone to diseases due to change in seasons some of the reasons why seasonal disease attack are listed below:

- Greater indoor crowding in winter
- Greater opportunities for transmission during school terms
- Reduced host immunity during the winter due to seasonal variation in vitamin D or melatonin
- Dried mucous membranes in certain seasons promoting pathogen invasion
- Increased pathogen survival in particular conditions of humidity and temperature

Table 3 shows types of diseases their causes and symptoms.

Table 3 : Sample database source cia.gov

S.No	Disease	Type Of Disease	Causes	Symptoms
1.	Hepatitis A	Viral Disease	Spread Through Consumption Of Food Or Water Contaminated With Fecal Matter, Principally In Areas Of Poor Sanitation.	Fever, Jaundice, And Diarrhea; 15% Of Victims Will Experience Prolonged Symptoms Over 6-9 Months
2	Hepatitis E	Water-Borne Viral Disease	Most Commonly Spread Through Fecal Contamination Of Drinking Water	Jaundice, Fatigue, Abdominal Pain, And Dark Colored Urine
3	Typhoid Fever	Bacterial Disease	Spread Through Contact With Food Or Water Contaminated By Fecal Matter Or Sewage	Sustained High Fevers; Left Untreated, Mortality Rates Can Reach 20%.

S.No	Disease	Type Of Disease	Causes	Symptoms
4	Malaria	Vectorborne Disease Acquired Through The Bite Of An Infected Arthropod	Single-Cell Parasitic Protozoa Plasmodium; Transmitted To Humans Via The Bite Of The Female Anopheles Mosquito	Fever, Chills, And Sweats Accompanied By Anemia; Death Due To Damage To Vital Organs And Interruption Of Blood Supply To The Brain; Endemic In 100, Mostly Tropical, Countries With 90% Of Cases And The Majority Of 1.5-2.5 Million Estimated Annual Deaths Occurring In Sub-Saharan Africa.
5	Dengue Fever	Vectorborne Disease Acquired Through The Bite Of An Infected Arthropod	Mosquito-Borne (Aedes Aegypti) Viral Disease	Sudden Onset Of Fever And Severe Headache; Occasionally Produces Shock And Hemorrhage Leading To Death In 5% Of Cases.
6	Yellow Fever	Vectorborne Disease Acquired Through The Bite Of An Infected Arthropod	Mosquito-Borne Viral Disease	Severity Ranges From Influenza-Like Symptoms To Severe Hepatitis And Hemorrhagic Fever; Occurs Only In Tropical South America And Sub-Saharan Africa, Where Most Cases Are Reported; Fatality Rate Is Less Than 20%.
7	Japanese Encephalitis	Vectorborne Disease Acquired Through The Bite Of An Infected Arthropod	Mosquito-Borne (Culex Tritaeniorhynchus) Viral Disease	Acute Encephalitis Can Progress To Paralysis, Coma, And Death; Fatality Rates 30%.
8	African Trypanosomiasis	Vectorborne Disease Acquired Through The Bite Of An Infected Arthropod	Paraasitic Protozoa Trypanosoma; Transmitted To Humans Via The Bite Of Bloodsucking Tsetse Flies;	Malaise And Irregular Fevers And, In Advanced Cases When The Parasites Invade The Central Nervous System, Coma And Death; Endemic In 36 Countries Of Sub-Saharan Africa; Cattle And Wild Animals Act As Reservoir Hosts For The Parasites.
9	Plague	Vectorborne Disease Acquired Through The Bite Of An Infected Arthropod	Bacterial Disease Transmitted By Fleas Normally Associated With Rats Person-To-Person Airborne Transmission Also Possible	Fever, Headache, And Painfully Swollen Lymph Nodes; Disease Progresses Rapidly And Without Antibiotic Treatment Leads To Pneumonic Form With A Death Rate In Excess Of 50%.
10	Chikungunya	Vectorborne Disease Acquired Through The Bite Of An Infected Arthropod	Mosquito-Borne (Aedes Aegypti) Viral Disease	Similar To Dengue Fever; Characterized By Sudden Onset Of Fever, Rash, And Severe Joint Pain Usually Lasting 3-7 Days, Some Cases Result In Persistent Arthritis.
11	Leptospirosis	Water Contact Diseases Acquired Through Swimming Or Wading In Freshwater Lakes, Streams, And Rivers:	Bacterial Disease That Affects Animals And Humans; Infection Occurs Through Contact With Water, Food, Or Soil Contaminated By Animal Urine;	High Fever, Severe Headache, Vomiting, Jaundice, And Diarrhea; Untreated, The Disease Can Result In Kidney Damage, Liver Failure, Meningitis, Or Respiratory Distress; Fatality Rates Are Low But Left Untreated Recovery Can Take Months.
12	Meningococcal Meningitis	Respiratory Disease	Bacterial Disease Causing An Inflammation Of The Lining Of The Brain And Spinal Cord; One Of The Most Important Bacterial Pathogens Is Neisseria Meningitidis Because Of Its Potential To Cause Epidemics	Stiff Neck, High Fever, Headaches, And Vomiting; Bacteria Are Transmitted From Person To Person By Respiratory Droplets And Facilitated By Close And Prolonged Contact Resulting From Crowded Living Conditions, Often With A Seasonal Distribution; Death Occurs In 5-15% Of Cases, Typically Within 24-48 Hours Of Onset Of Symptoms; Highest Burden Of Meningococcal Disease Occurs In The Hyperendemic Region Of Sub-Saharan Africa Known As The "Meningitis Belt" Which Stretches From Senegal East To Ethiopia.

Different part of India has suffered from different types of diseases at different time. The image 1 below shows such a distribution.
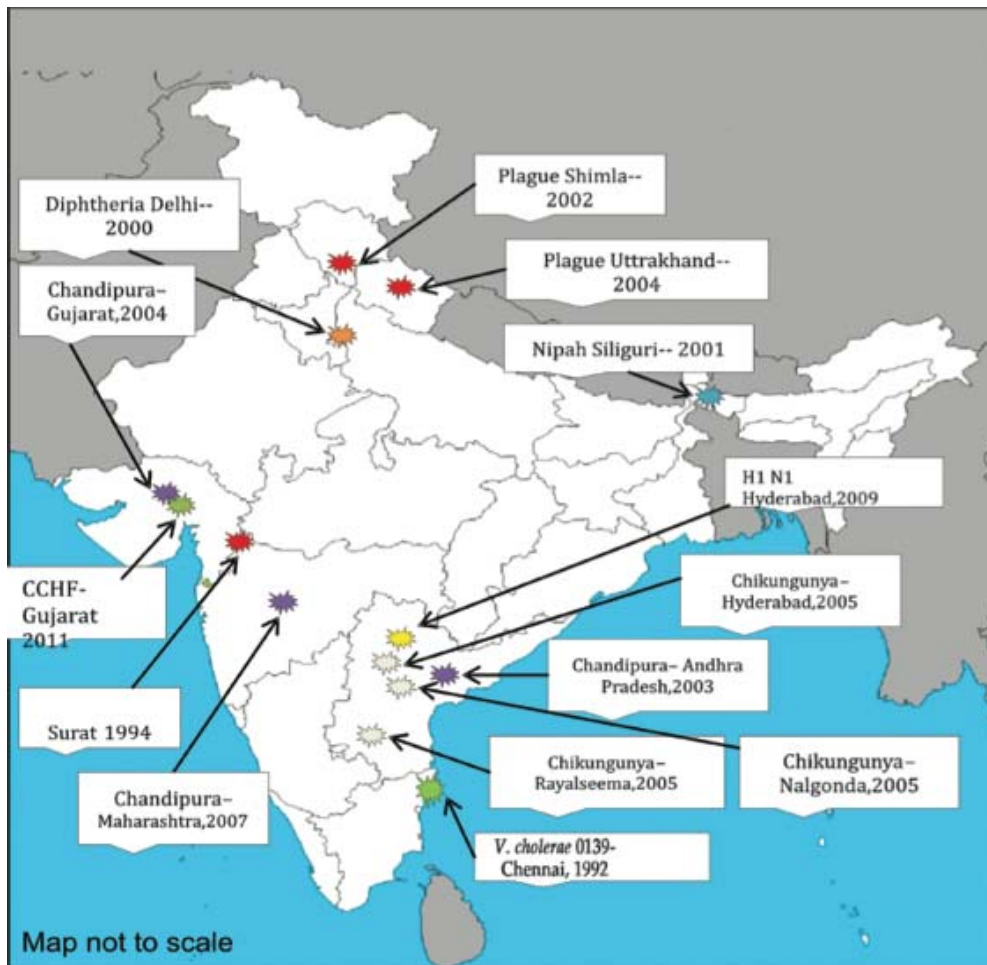
Image1 : Source [2]

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DEVELOPMENT

The Idea behind the "Doctor App" is to provide information related to health problems, for example remedies, precaution, cure to common diseases, seasonal diseases, regional diseases. Information related to Doctors at any time and at any location. For this, sort of research is required to collect data. In starting we are targeting three cities Haridwar, Dehradun and Jammu. The collected data will be put over the cloud so that we can scale up at any time when required. Once the data is gathered in the database, the app queries for the data and the requested information is supplied over the app. The user can query
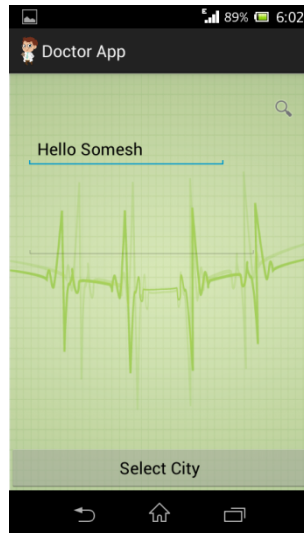.

based on particular disease, regional or seasonal disease. Can also query for the doctors in a particular location or based on the specialty of the doctor. The app is also synchronized with the news Update related to health in your current locality (get through the GPS).

The basic structure of the app consists mainly of three activities. The first activity is the splash screen or the welcome screen that runs for 3 seconds and displays an image (along with a message) when the user starts the app. The second activity is the main activity which starts after 3 seconds of splash screen.
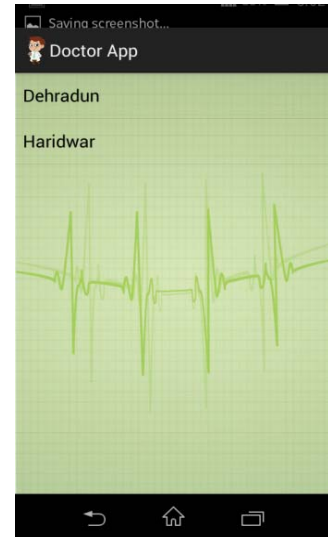
The main activity consists of a search tab, a text display and a button to select the desired city. The third activity starts when the user taps the button to select his desired city. The third activity has a list of cities whose data are stored in the doctor app's cloud storage. When the user selects his desired city the app redirects you to the main activity i.e. the second activity with the information (Fetched from the cloud storage as requested) like the nearby doctors, news related to health, common diseases or epidemic in that particular city. Users can search for the common diseases symptoms, precautions and their remedies. Can also enter the symptoms of a disease and can get name of the disease that corresponds to the symptoms along with their remedies

Sanp Shot of the app.

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CONCLUSION

The docotor app would be very helpful in making life more healthy.A person can get all the realted information in a simple touch.In future we intend to add more features like information through regular sms and data to be more extensive.

REFERENCES

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[4] www.research2guidance.com