Volume 9, No.3, May - June 2020

## **International Journal of Advanced Trends in Computer Science and Engineering**

Available Online at http://www.warse.org/IJATCSE/static/pdf/file/ijatcse70932020.pdf

https://doi.org/10.30534/ijatcse/2020/70932020

## A Novel Smart Meal Planner Website with Online Store and Dietician Consultancy-for this Modern Era - from the Human-**Computer Interaction Practitioners' Perspective**

J. Vellingiri<sup>1</sup>, Andrew Suraj<sup>2</sup>, Jagadeesh Gopal<sup>3</sup>, Gitanjali J<sup>4</sup>

<sup>134</sup>School of Information Technology and Engineering, Vellore Institute of Technology, Vellore, Tamil Nadu-632 014, India. vellingiri.j@vit.ac.in <sup>2</sup>School of Computer Science and Engineering, Vellore Institute of Technology, Vellore, Tamil Nadu-632 014, India.

#### ABSTRACT

In this modern world where there is very limited time and a lot of health problems are identified for various age groups and proper intake of food is very essential, we are not taking care of our food intake due to proper lack and suggestions of dieticians. Till now peoples seeing dieticians and fitness trainers are belongs to rich sector, not for the common people. Hence we decided to make a good website which gives diet solutions, help and guidance to all age groups through free online on the basis of their health problems, age or the condition or the exercises. And also with an online diet store which helps everyone to get fresh organic food directly in a prepared way as a programme oriented by a good diet support. This is really essential and helpful for many people of this generation as health and diet are key factor and we cannot approach a specialist or get the prescribed food directly in the required time.

Key words: Diet management, Food cart, Dietician Consultancy, HCI principles.

#### 1. INTRODUCTION

"MY DIET PLANNER" is an online healthcare consultation and E-commerce (food) website specifically targeted to people who are self-conscious of their lifestyle and the diet they are taking. This is a website focused on simplicity, ease for users (user-friendly), resource optimization, and easy maintenance.

Basically, this website provides instant online solutions to diet intake to be followed and healthy food to be prescribed on basis of the age groups, health conditions or various schisms and disease curing diet ailments. It is for all age groups infants, growing children, physique development of teenagers, middle aged and old people [1]. Also we have an online cart which has specified diet plans as a Keto diet which can be delivered accordingly like (SWIGGY) instead of wasting people's time to acquire specific food again repeatedly [2]. I am providing some add-ins later on like user review and feedback, doctor consultations (in rare cases) and soon.

This has a deeper touch with human-computer interaction as diet is one of the most interactive and required and thought about part of this perspective of people of this generation. Some of the main objectives and features are: Designing an online healthcare consultation and E-commerce(food) website specifically targeted to people who are selfconscious of their lifestyle and the diet they are taking website which has easy navigation, shopping facility, modernized methods, optimized methods and using current trends and technology, user friendly, suitable for all age groups, responsive and scalable, an amazing online website with recipes, diet consultations, online diet plans and organic store and free consultation service via searching the problem the customer wants in the data provided, mostly error free and practically implemented to our maximum extent.

#### 2. RELATED WORKS

### **Participants and Age Groups of Website Targets**

Ladies alongside men, ought to appreciate an assortment of invigorating nourishments from the entirety of the nutrition types, including entire grains, natural products, vegetables, sound fats, low-fat or trans-fat dairy and lean protein. Be that as it may, ladies additionally have extraordinary supplement needs, and during each phase of a lady's life, these necessities change.

Explicit food items can profit those in old consideration homes and assist them with keeping up their wellbeing and memory on the off chance that they're expended as a major aspect of a solid way of life. Eating a particular sort of food won't assist you with relieving an illness or forestall dementia; however a sound eating regimen pressed with nutritious nourishments has its benefits [3]. Specific items can profit those in older consideration homes and assist them with keeping up their wellbeing and memory on the off chance that they're expended as a feature of a solid way of life.

Eating certain nourishments while restricting others can help individuals with diabetes deal with their glucose levels. An eating routine wealthy in vegetables, natural products, and restorative proteins can have huge advantages for individuals with diabetes. A social insurance proficient, for example, a specialist or dietitian, can work with individuals who have type-1 diabetes or type-2 diabetes to locate the most valuable food decisions that work for them.

This is basically a good website which gives diet solutions and helping and guidance to all age groups free online on the basis of their health problems age or the condition or the exercises they are performing and also with an online diet store which helps everyone to get fresh organic food [4] directly in a prepared way as a programme oriented by a good diet support.

This is a highly disciplined project and the intended audience and reading suggestions are web page logo designers, healthy food bloggers, dietician workforce, front end designers, database managers, online market store experts, advertisers, customers, nutritionists, and domain holders and financial stakeholders are the eye audience and people of all age groups conscious about healthy diet and lifestyle along with exercises or ailing conditions are the required scope of audience who are afflicted by this project[6].

## 3. ENHANCED WEBSITE DEVELOPMENT AND CONTENT WITH IMPORTANT FUNCTIONALITIES

It is user friendly and suitable for all age groups and one of the most required pages needed right now, it saves a lot of money and time and helps in building an improvised lifestyle. It is created using HTML, CSS, JavaScript as the front end design language, PHP as server language, and SQL as the backend query language. It will have a rich and latest design with constant surveillance [5]. This is a website focused on simplicity, ease for users (user-friendly), resource optimization, and easy maintenance.

- Cross platform support: Offers working help for the vast majority of the known and business working frameworks. (Space holders and holding time).
- User account: The framework permits the client to make their records in the framework and give highlights of refreshing and reviewing profiles. (customers and accreditations of them)
- Number of clients being bolstered by the framework: Though the number is definitely not referenced however the framework can bolster countless online clients one after another.
- Administrators: deal with the site with a group of specialists.
- Search: search is essentially neighborhood web index dependent on watchwords.
- Discussion Forum: Provides clients with a stage to talk about and help each other with their issues.
- Ticketing framework: Allows client to present his issue to the administrator on the off chance that his issues are not tackled by FAQs [9] and conversation discussions and bulletins
- FAQs segment: Frequently solicited segment contain answer from issue which Our eating regimen site client habitually faced.(questionnaires)

- Online store: Online diet store with diet plans and food (packed fresh) according to the deliverables and plan opted by the customer.(cart and transaction, payment details) your intended interest group is through reliable blogging, we have a blog.
- Blogs: One of the best approaches to construct brand mindfulness, while giving persistent and valuable substance to your intended interest group is through reliable blogging, we have a blog.
- Diet Blogging in a reasonable manner for private ventures to direct people to our website, improve inbound promoting endeavors and draw in progressively point of view customers.(Details of time and client blogged)
- Book appointment with nutritionist: online consultations and suggestions made by availability. (Booking details)
- This has a fully functioning shopping cart, booking services, social media accounts attached, with its own YouTube channel, music, diet plans, food carts, company meet tickets, live chat and call services.
- Built own company ambition with company logo and website
- Intro page and introduction and purpose.

# 4. THE WEBSITES PERSPECTIVE IN TERMS OF THE HCI GUIDELINES

- Efficient drop menu tab for easier user access, all social media icons in a place for easier contacts, catchy login tab with good modeled UI, shopping cart icon for users interested only in shopping, modern bootstrap templates for impressing all age groups [7] [10].
- Live chat icon at every scroll up-down of page, for better communication of clients .Comment section for users to provide feedback
- Interactive blog section: with consulting dietician, interface
- Facebook, email signup options for easier signup and easier access of user and mail service to send up dates.
- Built own company ambition with company logo and website introduction.
- Page and introduction and purpose.
- Website with intro tab templates, modern bootstraps and customers menu with dropdown options: profile, settings, customers' wallet, bookings, account details, and logout option.
- Effective social handle bar and newsletter for all users of age groups.
- Newsletters can be utilized to publicize or to just impart new thoughts and occasions to supporters.
   Organizations can without much of a stretch associate with their partners, including investors, clients, workers and citizenry, through printed and

computerized pamphlets. Live instagram handle feed, to all customers to increase influence on instagram community too [11].

- We have a YouTube channel appended; one great motivation to include video and a YouTube channel to your site is to give the crowd increasing content. At the point when individuals get a great deal of good substance that is tackling their issues, they stay longer and like to return and visit all the more regularly. Regardless of whether through YouTube promotions or through a video seminar on your site, it makes increasing content or an item that gives you another pay source which is in every case great [12].
- Blog posts: Food and orders for women oriented diet; interactive blog menu for interaction and easier user access, separate blog and food plans for diabetes patients vegetarian and non-vegetarian blogs separately.
- An easy to use shopping basket is crucial to the point that can cause clients to conclude whether to really purchase those picked things or not. The more advantageous it is to make alterations in the web based shopping basket; the all the more willing purchasers are to pay cash on the chosen stuff.
- The shopping cart products we provided for all meal plans, with categorization, it also has all minute details of, products, their description and with prices, discounts, and delivery options with locations, and enabled overseas purchases.
- All transactions are allowed withy cards, online and PayPal, customers: checkout using various payment gateways, like online card payments, PayPal and cash on delivery.
- These are the various services offered, by us basically, this website provides instant online solutions to diet intake to be followed and healthy food to be prescribed on basis of the age groups, health conditions or various exercises and disease curing diet ailments.
- Schedule consultations with payments wit expert dieticians online, with 24hr reply service to clear your doubts.
- A web gathering, or message board, is an online conversation website where individuals can hold discussions as posted messages called an internet forum. They vary from visit rooms in that messages, organization site contact subtleties structure for client inquiry accommodation,
- Extra shopping area to promote our brand in the same website, also if possible to open a chef book store along with food and grocery store, music for food tracks, company meet scheduler with email sender and recipient and ticket booking service for company and outdoor large meetings.
- Tickets for the meet, and email and statistical analyzer, with ticket prints and PDF generator for all, just like movie tickets.
- We have provided a self-email service for the

- website which is, essential after traffic develops and we have made taxation services available as of now, but might be needed later for getting profit and income.
- We have included a search box, or live chat respondents, personnel, which we need to hire bots or staff.
- All the feed now is categorized according to the user searches, which is very essential which makes them explore the website further more.
- Website with intro tab templates, modern bootstraps and customers menu with dropdown options:
- Profile settings, customers' wallet, bookings, account details, and logout option.

#### 5. HOW THIS WEBSITE IS GOING TO BEIDEAL

## 5.1. We will expect and assume the client's psychological Model

The greater parts of clients are working the interface simply dependent on their nature[13] [14]. So, when they come across a button, they will figure this will be activated to address their issues. But if this button gets triggered in some other operation rather than user's expectation, it must be a bad design, we are going to modify if any for the diet website.

# 5.2. We are going to address the client's issues at a Noteworthy level

The most fundamental standard of operation configuration is to address the client's issues. To decide the client's prerequisites are a chief's fundamental work, there are numerous ways and devices to assist us with distinguishing the client's needs. For models, watching client conduct, dissecting information, building client situations and the sky is the limit from there: by directing reviews and improving structure with assistance of designers.

## **5.3.** We are improving consistency

Consistency is an essential guideline in the item configuration process. It requires that inside the equivalent or natural capacities and scenes, to utilize the steady execution, Operation, and feeling in an (or a classification) item. The reason for consistency is to diminish the client's learning costs, the client's psychological expenses, and the likelihood of Misuse in a particular sort of item or an industry that can frame a more extensive scope of "steady" and get everybody's acknowledgment.

## **5.4.** Less is more

Initially proposed by planner Ludwig mies van der rohe, it is a structure theory that advances straightforwardness and restricts over enhancement. This standard has a long History and prompted a wide range of understandings in numerous ventures. So we will diminish over beautification or over shaded formats assuming any.

# 5.5. We are going to utilize increasingly basic language rather than specialized terms

Clients are not an originator or an engineer, the vast majority of them don't comprehend the plan Concept and improvement process, the language and content of the item should be Easy to comprehend and near general client's considerations.

## 5.6 We are going to structure for functional than the artful

Good-looking interface won't just please the client yet in addition mirror the redesign iterations of the item. Notwithstanding, it ought to be noticed that the functionary of item Design is a higher priority than the style. We can't lose the essential activity to Achieve superfluous magnificence. By and large, we ought to comply standard typical Operation standards: which we are utilizing the whole required drop down menu office, yet we will improve our eating dirt management site more.

# 5.7.We are attempting to lessen the clients' extent of making him think Much...

This guideline is all through the client experience structure. My comprehension is to utilize the least complex approach to assist clients with accomplishing their objectives in the briefest time. That is a Good client experience item, so we will do that.

#### 5.8. Intuitive

Right working parts must stand apart clearly and can pass on the right Information to clients. Likewise, the client can work the interface dependent on his/her background and nature, no additional learning.

## 5.9. We are already: providing feedback

The "correspondence" among individuals and machines is basically the procedure of Information transmission. The procedure of data conveys and get back will frame a successful connection and shared comprehension [19]. So the convenient powerful input And clarification are especially significant.

# 6. PRESENT CONTEXT & REVIEW OF EXISTING SYSTEMS: AND HOW MY IDEA OF THIS STARTUP COULD CHANGE THEWORLD

The present diet oriented websites are basically, totally blogs or only food/recipe channels or online separate diet consultancies. There are E-commerce websites and online shops supplying food, but this website is an innovative startup of combining all these in one place. A Perfect diet manager with dietician consultancies, online food cart with items suggested by dietician or required by required customer, online YouTube channel for cooking healthy recipes associated, with attached nutritionist and chef blogs and dietician service appointments. Basically it's a broad viewed - road map to a perfect diet manager, according to health conditions/age/requirements of customers with all in one services at one place. It is an innovative startup - Refer daily updated health diet blogs according to age group/disease requirement/training of fitness-get dietician/trainer appointment --- select your diet plan --- go to

online shopping — buy your timed plan food producers — get recommended YouTube channel for cooking/making the required recipes — get required chef books --- get your orders delivered and start your healthy regime!

#### 7. SOURCE OF DATA COLLECTION

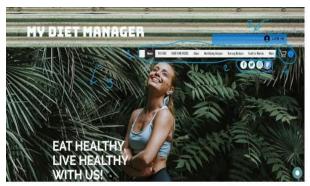
The information were acquired by legitimately/direct search and getting to the sites to be considered by means of the Internet. Two ventures were directed utilizing the picked catchphrases 'diet' and 'diet manager' 'food cart'. To dodge changes in the outcomes and keep up the Page-Ranking acquired from the Google propelled search, we picked to show 100 outcomes for every page and put away the references got from the hunt in PDF position, with a hyperlink for each reference, so we could re-get to the site whenever. So also, we likewise spared a duplicate of the picture of the Page-Rank of the initial two screens in JPG [15] [16] [17]. In this examination, we considered the Page-Rank condition, along with Google's inspecting deception. ('Google searches/crawls the World Wide Web and computes its gauge, comparable to the quantity of significant sites, by to what extent it took to locate the initial thousand sites). This will help the assortment of a substantial example from which to lead a legitimate report.

#### 8. RESULTS

## Website login frequency and usage patterns

Members visited the site a normal of 15.5 times over the half year preliminary. By and large, there were 150 hits to the site every month, with Recipes and 'Food safety' being the most-and least-visited segments, separately showed in Table 1. For both the overall website and its different sections, the number of visits decreased over the course of the study (data not shown) and the Figure 13 shows the graphs on based on the above statistics.

# 9. SOME IMPROVED DEVELOPMENTS ACCORDING TO MODERN ERA-FEATURES MAKING OUR WEBSITE SPECIAL ARE:



1.EFFICIENT DROP MENU TAB FOR EASIER USER ACCESS.
2.ALL SOCIAL MEDIA ICONS IN A PLACE FOR EASIER CONTACTS.

Figure 1: Introduction Page

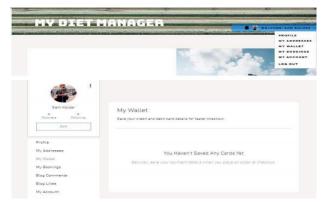
Figure 1 shows the introduction page of this web site design which includes the feature of Efficient Drop Menu TAB for easier user access.

Figure 2 shows the dietician blog corner where leading famous dieticians giving their diet plan. Figure 3 shows the, modern bootstraps and customers menu with dropdown options.

#### INTERACTIVE BLOG SECTION: WITH CONSULTING DIETICIAN, INTERFACE.

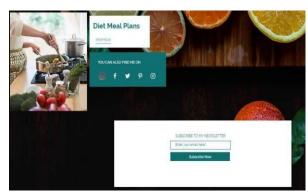


Figure 2: Dietician Blog Corner



**Figure 3:**Website with Intro Tab Templates, Modern Bootstraps and Customers Menu with Dropdown Options

Figure 4 shows effective social handle bar and newsletter for all users of age groups. Figure 5 shows live instagram handle feed, to all customers to increase influence on instagram community.



**Figure 4:** Effective Social Handle Bar and Newsletter for All Users of Age Groups



**Figure 5:** Live Instagram Handle Feed, To All Customers to Increase Influence on Instagram Community

Figure 6 shows YouTube channel attached with this website to enhance the usability. Figure 7 shows efficient shopping cart of the website. A user-friendly shopping cart is so vital that can make customers decide whether to actually buy those chosen items or not. The more convenient it is to make adjustments in the online shopping cart, the more willing buyers are to pay money on the selected stuff.



**Figure 6:** YouTube channel attached: (collaboration with tasty)

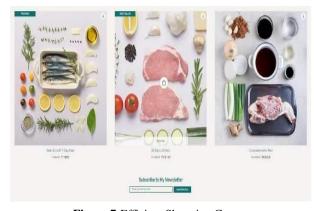


Figure 7: Efficient Shopping Cart

Figure 8 shows about dietician services and appointment booking options of a website. Figure 9. shows appointment scheduler which is the place users can get appointment with famous dieticians.

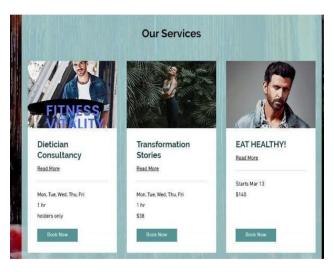


Figure 8: Dietician Services and Appointment Booking



Figure 9: Appointment Scheduler

Figure 10. shows discussion forum facility available for customers and Figure 11. Shows company website contact details form for customer query submission.

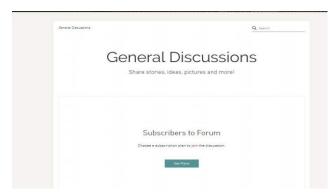


Figure 10: Discussion Forum for Customers

Figure 12 shows companies meet scheduler with email sender and recipient and ticket booking service for company and outdoor large meetings.



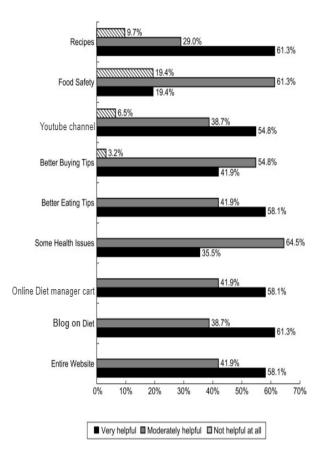
Figure 11: Company Website Contact Details Form for Customer Query Submission



Figure 12: Outdoor Large Meetings

Table 1: Report on Diet Manager

Self-reported <sup>a</sup> specific sections [n(%)]		Report on "My Diet Manager" – by Andrew Suraj		
Website Section	Rated as Very Helpful	Visited once or more from month(n=31)	Actual Visit per Month (average)	Actual No. of visits over 1 month
Overall Website	18(58.1)	27(87.1)	150	900
Recipes	19(61.3)	28(90.3)	135	810
Blog on diets	19(61.3)	16(51.6)	31	186
Better Eating Tips	18(58.1)	17(54.8)	43	258
Online my diet manager cart	18(58.1)	14(45.2)	30	180
YouTube Channel	17(54.8)	11(35.5)	28	168
Better Buying Tips	13(41.9)	12(38.7)	36	216
Some Health Issues	11(35.5)	11(35.5)	27	162
Food Safety	6(19.4)	6(19.4)	13	78
<sup>a</sup> Based on evaluation questionnaires and statistical summaries				



**Figure 13:** Graphs on Based on the Above Statistics

#### 10. CONCLUSION

In this modern world where there is very limited time and a lot of health problems are identified for various age groups and proper intake of food is very essential. Till now we have seen dieticians and fitness trainers only for celebrities' and the rich but not for common people. Hence we decided to make a good website which gives diet solutions and guidance to all age groups free online on basis of their health problems age or the condition or the exercises they are performing. And also with online diet store which helps everyone to get fresh organic food directly in a prepared way as a programme oriented by a good diet support.

This is really essential and helpful for many people of this generation as health and diet are key factor and we cannot approach a specialist or get the prescribed food directly in the required time. Hence using the principles of HCI we have designed a online healthcare consultation and E-commerce (food) website specifically targeted to people who are self-conscious of their lifestyle and the diet they are taking website which has easy navigation, shopping facility, modernized methods, optimized methods and using current trends and technology, user friendly, suitable for all age groups, responsive and scalable. The use of HCI websites will be a lot more useful and powerful for the years to come; people will prefer HCI oriented websites in a more conceived manner.

#### REFERENCES

- Rocto Guardiola-Wanden-Berghe, Josefa D. Gil-Pe'rez, Javier Sanz-Valero & CarminaWanden-Berghe, "Evaluating the quality of websites relating to diet and eating disorders", Health Information and Libraries Journal, Vol. 28, PP. 294–301,2011.
- Lynn L. DeBar, John Dickerson and Mikel Aickin, "Using a Website to Build Community and Enhance Outcomes in a Group, Multi- Component Intervention Promoting Healthy Diet and Exercise in Adolescents", Journal of Pediatric Psychology, Vol. 34(5), PP. 539– 550, 2009.
- 3. A.Papadaki and J. A. Scott, "Process evaluation of an innovative healthy eating website promoting the Mediterranean diet", Health Education Research, Vol. 21(2), PP. 206-218, 2006.
- Jasur Hasanov and Haliyana Khalid, "The Impact of Website Quality on Online Purchase Intention of Organic Food in Malaysia: A WebQual Model Approach", The Third Information Systems International Conference, Putra Business School, Information Systems International Conference (ISICO2015), Science Direct, Vol. 72, PP. 382-389, 2015.
- Sangeeta Karmokar, Harminder Singh and Felix B. Tan, "Using Multidisciplinary Design Principles to Improve the Website Design Process", Pacific Using Multidisciplinary Design Principles to Improve the Website Design Process, Pacific Asia Journal of the Association for Information Systems, Vol. 8(3), PP.17-44, 2016.
- Zhenhui (Jack) Jiang, Weiquan Wang, Bernard C.Y.
  Tan and Jie Yu, "The Determinants and Impacts of
  Aesthetics in Users' First Interaction with Websites",
  Journal of Management Information Systems, Vol.
  33(1), PP. 229–259, 2016.
- Boudhayan Ganguly, Satya Bhusan Dash, Dianne Cyr, Milena Head, "The effects of website design on purchase intention in online shopping: the mediating role of trust and the moderating role of culture", International Journal of Electronic Business, Inderscience, Vol.8 (4), PP. 302-330, 2010.
- 8. Avuthu Sai Meghana, Sudhakar S, Arumugam G, Srinivasan P, Kolla Bhanu Prakash, Age and Gender prediction using Convolution, ResNet50 and Inception ResNetV2, International Journal of Advanced Trends in Computer Science and Engineering, Vol. 9, Issue.2, March–April 2020, pp: 1328-1334 https://doi.org/10.30534/ijatcse/2020/65922020.
- Yellapragada SS Bharadwaj, Rajaram P, Sriram V.P, Sudhakar S, Kolla Bhanu Prakash, Effective Handwritten Digit Recognition using Deep Convolution Neural Network, International Journal of Advanced Trends in Computer Science and Engineering, Vol. 9, No.2, March–April:2020, pp:1335-1339

https://doi.org/10.30534/ijatcse/2020/6692202

- Donepudi Babitha, Jayasankar.T, Sriram V.P, Sudhakar S, Kolla Bhanu Prakash, Speech Emotion Recognition using State-of-Art Learning Algorithms, International Journal of Advanced Trends in Computer Science and Engineering, Vol.9, Issue.2, March-April 2020, PP:1340-1345, https://doi.org/10.30534/ijatcse/2020/67922020.
- 11. Murugan G, Syed Musthafa A, Abdul Jaleel D, Sathiya Kumar C, Sudhakar S, Tourist Spot Proposal System Using Text Mining, International Journal of Advanced Trends in Computer Science and Engineering, Vol.9, Issue.2, March–April 2020, pp: 1358–1364,
  - https://doi.org/10.30534/ijatcse/2020/70922020.
- N. Satheesh, P. Udayakumar, Sudhakar Sengan, Testing for IoT Devices and Software's and Effects of New Features on Security and Privacy by using Test Simulation, International Journal of Advanced Science and Technology, Vol. 29, No. 03, (2020), pp. 8715 – 8726.
- A.Pushpalatha, D.Prabha, S.Sudhakar, V.P.Sriram,
   P.Kevin Mario Gerard, S.Sanjay, A Study Of
   Detecting Malicious URL Using Convnet,
   International Journal of Scientific & Technology
   Research Vol.9, Issue 04, April 2020.
- Kanmani P, Priya V, Yuvaraj N, Sudhakar S, Sriram V P, Inaccuracy Correction Method for Moving Shapes and Shadows in Video Coding Object, International Journal of Scientific & Technology Research Vol.9, Issue 03, March 2020, PP: 4561-4566.
- Jagadeesh Gopal, Vellingiri J, Gitanjali J, Arivuselvan K, Sudhakar S, An Improved Trusted On-Demand Multicast Routing with QoS for Wireless Networks, International Journal of Advanced Trends in Computer Science and Engineering, Vol.9, No.1, January–February2020,PP:261-265, https://doi.org/10.30534/ijatcse/2020/39912020,
- R.Gowthamani, K.Sasi Kala Rani, E.Mohanraj, S.Sudhakar, Enhancing Security Through Blockchain Technology –A Quick Review, International Journal of Scientific & Technology Research, Volume 9, Issue 02, February 2020, pp: 5126-5129.
- S.Biruntha, S.Balaji, S.Dhyakesh, B.R.Karthik Srini, J.Boopala, S.Sudhakar, Digital Approach For Siddha Pulse Diagnosis, International Journal of Scientific & Technology Research Volume 9, Issue 02, February 2020, pp: 2140-2143.
- P.Deivendran, K.Anbazhagan, P.Sailaja, E.Sujatha, M.R ajesh Babu, S.Sudhakar, Scalability Service In Data Center Persistent Storage Allocation Using Virtual Machines, International Journal of Scientific & Technology Research Volume 9, Issue 02, February 2020, pp: 2135-2139.