

How to Cite:

Dhurandhar, P., Tamrakar, A., & Patra, J. P. (2022). A review on GIS-based online information system for rural development in Chhattisgarh. *International Journal of Health Sciences*, 6(S2), 8226–8231. <https://doi.org/10.53730/ijhs.v6nS2.7086>

A review on GIS-based online information system for rural development in Chhattisgarh

Pallav Dhurandhar

M. Tech. (Scholar) Department of Computer Science & Engineering, Shri Shankaracharya Institute of Professional Management and Technology, Raipur, Chhattisgarh, India

Corresponding author email: pallav.dhurandhar@SSIPMT.com

Anand Tamrakar

Assistant Professor, Department of Computer Science & Engineering, Shri Shankaracharya Institute of Professional Management and Technology, Raipur, Chhattisgarh, India

Email: a.tamrakar@SSIPMT.com

Dr. J P Patra

Professor, Department of Computer Science & Engineering, Shri Shankaracharya Institute of Professional Management & Technology, Raipur

Email: patra.jyotiprakash@gmail.com

Abstract---Geographic statistics gadget primarily based on the internet is also called Web GIS that is the most up-to-date improvement era of GIS. Its architecture is based on the existing generation of internet/Intranet. internet-GIS presents greater extensively geographic and spatial information carrier through broadly the usage of the internet resources, so it's miles the primary trend of GIS's improvement on the contemporary global. Web-GIS is the final result of the net era that was carried out inside the improvement of GIS. The abrupt growth of net makes net generation be the green international statistics era publishing. consequently, by publishing geographic data on the net by using the use of the internet era, we can skim thru the geographic statistics in the net-net's web page from any node of the WWW, and might retrieval and cope with diverse statistics, which gives realistically feasible generation for the open and percentage of geographic statistics.

Keywords---GIS, rural development, information, review.

Introduction

Geographical records system (GIS) is a generation that offers the approach to collect and use geographic information to help in the improvement of Agriculture. A digital map is common of an awful lot more value than the identical map published on a paper because the virtual model may be combined with other resources of facts for analyzing information with a graphical presentation. The GIS software program makes it feasible to synthesize huge quantities of different facts, combining exclusive layers of records to manipulate and retrieve the statistics in a greater useful way. GIS gives an effective means for agricultural scientists to be a better provider to the farmers and farming network in answering their questions and helping in a higher choice-making to put into effect making plans activities for the development of agriculture. The essential input information for any GIS is digitized maps, snapshots, spatial statistics, and tabular facts. The tabular statistics is commonly typed on a pc the use of relational database management gadget software program. before geographic data can be utilized in a GIS it ought to be converted into a suitable digital layout. The DBMS system can generate numerous items along with index era on statistics objects, to hurry up the facts retrieval utilizing a query. Maps may be digitized using a vector format in which the actual map points, traces, and polygons are stored as coordinates. statistics can also be input in a raster layout wherein records elements are stored as cells in a grid shape (the generation info is included in the following section). The technique of changing records from paper maps into laptop files is known as digitizing. cutting-edge GIS technology has the functionality to automate this system fully for large tasks; smaller jobs may require a few manual digitizing. The digitizing technique is labor-intensive and time-eating, so it is higher to use the statistics that exist already. oday many varieties of geographic facts already exist in GIS-well suited codecs. these facts can be obtained from records providers and loaded directly into a GIS.

Literature Review

XieHongyong et al. (2010) "offered via the evaluation of modern-day GIS and tourism making plans fame, a GIS-based tourism planning records device is designed. And the concrete attention of this layout software is also defined in detail. The GIS-based tourism-making plans records system can alternate the traditional planning technique to enhance tourism planning's scientific accuracy. The realistic effects show that this layout has the advantages of easy, without problems extensible, smooth to preserve and so forth, has a better sensible price" [2].

Prasenjit Bhowmick et al. (2014) "" provided fuzzy and Boolean good judgment based totally research for identifying web sites for groundwater synthetic recharge which may be very essential and essential to put in force with excessive accuracy and inside the feasible minimal time. the use of weighted values from Geographical statistics machine (GIS) surroundings and with the way of Fuzzy logic and Boolean logic on the thematic layers. the exact sort of synthetic recharge structure, like check dam, nallabund, gully plugging, and percolation ponds are decided on for artificial recharge. The conventional exercise in water harvesting takes into the attention of availability of land, suitability of a selected synthetic

recharge technique depending on nearby situations, and the area benefited. as a result, choices concerning the region and sort of recharge shape for water conservation can be made handiest after substantial geological and hydrogeological studies for regional scale. This leads to investing a considerable quantity of money and time in the identification of sites suitable for artificial recharge. The paper aims to study fuzzy and Boolean logic-based studies for identifying appropriate websites online for synthetic Recharge of Groundwater with the assistance of GIS and remote sensing techniques. in this paper, GIS-based on fuzzy and Boolean based modeling approach imparting effective equipment for identifying and classifying recharge zones with suitable systems via values ranging between zero to 1 "" [3].

Satya Prakash Maurya et al (2015) "" studied Open supply software is a pc software program that can be freely used, changed, and distribute with the aid of everybody. The open-supply software program is made through many human beings or businesses and dispensed beneath licenses that observe the Open supply Definition. lately, open supply software has started gambling vital function in the industry, lecturers, and studies. In the previous couple of long time, the discipline of GIS has witnessed an excessive growth charge and is encompassed with various proprietary and open supply GIS software programs. In this paper, we can explore open supply GIS software and gift an evaluation of open supply software against the proprietary software available for GIS. Strengths, weaknesses and future scope of open supply GIS software might be discussed in detail. inside the final, salient comparison between most popular proprietary and open source GIS software particularly ArcGIS and QGIS could be completed"" [6].

P.D. Sreekanth et al. (2016) "" supplied the geographical technology can help in planning, tracking, and change of information between numerous corporations in Rural development management. This look describes the choice-making based on their present sources and competencies. An observation was undertaken in Telangana village, Chotuppall Mandal, Nalgonda district, Telangana country to illustrate the combination of village-degree spatial and non-spatial data into a beneficial tool referred to as geo-spatial village information gadget (GSVIS) for decentralized making plans. This simple and robust tool will help the decision-makers to generate various ecological and socio-monetary perspectives for figuring out villages for prescriptive and govt level planning. The examine also envisages destiny improvement and value of this community-level geospatial tool for grass-root making plans""[4].

R. K. Singh et al. (2018) proposed India is a country of villages, as most of the populace resides in villages. So the improvement of villages becomes a vital and integral part of the green improvement of the united states of America. Village facts gadget (VIS) is a gateway towards it. Village information machine (VIS) is an internet-primarily based statistics system, in which control of village associated facts takes vicinity in a technological environment. The objective of this utility is to permit worldwide availability of rural records in a single platform, which gives a mechanism for swift retrieval of village statistics in a scientific manner in virtual form to numerous stakeholders and therefore helps in the multi-dimensional development of the villages. Adobe Dreamweaver is used as a frontend tool to design a graphical person interface, the use of HTML and CSS for net

development. Interconnectivity takes region the usage of Java as a programming language. Oracle 10g is used as a backend for the design and improvement of the database and square is being used for query execution for efficient retrieval and update of the database. The cluster of four villages of Somesh war Tehsil of Alomar district of Uttarakhand state has been taken up as a pilot examines for this Village data system (VIS) "" [8].

Varsha Turkar et al. (2019) "" proposed Geographic information gadget (GIS) and faraway Sensing (RS) are domains which are identified globally with lot of on-going studies international-huge. In India, the scenario is just the opposite. those domains are less giant inside the subject of better training. This paper focuses on the issues that are widely widespread in GIS and RS education in India. Literature survey states that out of 789 Universities, 11,443 Stand-alone institutions and 658 independent colleges simplest 40 institutions offer GIS and RS guides. an online survey become conducted to examine the troubles faced with the aid of the instructors and newcomers. They have a look at the responses endorses the reality that in India it's far required to create recognition of those publications via including them within the university curriculum and offering vital schooling"" [7].

Anang Wahyu sejati et al. (2020) ""offered a web GIS software development framework through an open-supply software program which pursuits to provide reliable open statistics offerings, required for policymaking in city land-use making plans. The geodatabase model is comprehensively developed. It displayed a user interface the usage of QGIS, Map-Server, and Pepper, with open supply equipment with personal home page Map Script programming languages and incorporated DB-sq., to generate a whole digital map service with statistics on city land use coverage. The results of this net GIS improvement may be publicly used with spatial databases suitable for public consumption, and as decision aid structures for stakeholders, specially within the policy of urban land use planning. hence, this software can serve as a model for land-use monitoring structures based totally upon the precept of data disclosure towards clever metropolis and smart governance "" [1].

ElzbietaBieleck (2020) ""proposed the cognitive and highbrow structure of studies carried out inside the area of GIS-based land-use alternate modeling. An exploration of the web of technology database showed that studies in GIS spatial evaluation modeling for land use exchange started within the early 1990s and has endured considering that then, with extensive growth inside the 21st century. with the aid of technology mapping methods, specifically co-coupling, co-citation, and citation, as well as bibliometric measures, like impact indices, this takes a look at distinguishes the maximum eminent authors, establishments, nations, and journals in GIS-based land-use trade modeling. The outcomes showed that GIS-based evaluation of land-use exchange modeling is a multi- and interdisciplinary research subject matter, as meditated within the range of WoS studies categories, the most productive journals, and the topics analyzed. the best impact on the sector sciences within the discipline have may be attributed to EU Universities, especially from The Netherlands, Belgium, Switzerland, and fantastic Britain. but, China and the USA published the very best wide variety of research papers.

Proposed Methodology

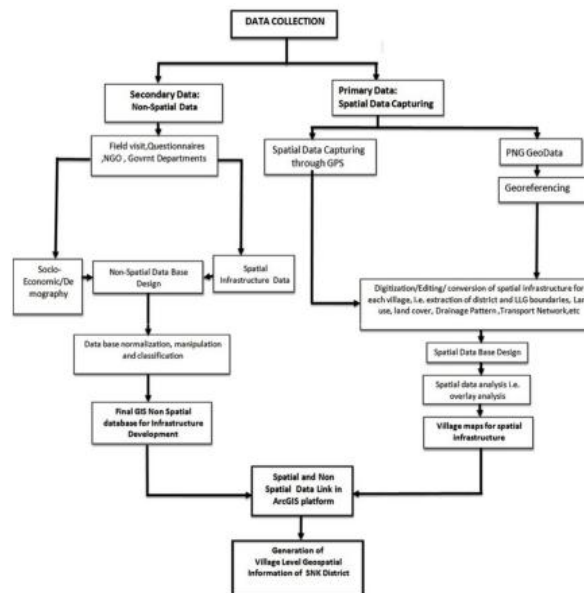
Data gathering, processing, analysis, and reporting are the four steps of our technique. Primary data was gathered by establishing control locations and conducting field surveys, while secondary data was gathered by using satellite pictures, Google maps, conventional maps, and census data. After gathering data, we used Auto CAD to convert the maps to vector format, which we then processed in the open source GIS programmer QGIS.

Data gathering

It was critical to understand the actual demands of the rural community as well as district administration in order to design a viable web-based GIS. As a result, conversations, surveys, and workshops for locals were held as part of the exercise.

Digitizing the data

The traditional village map, known as massive, was digitized using AutoCAD, and geographical entities such as buildings, polls, roads, and water bodies were drawn on the digital massive. We used GPS and field survey to locate control sites and perform a study of the community.



Block schematic (Figure 1)

User Management

The proposed web-based Rural GIS is a secure system built on Drupal, an open source content management system (CMS), and the PHP programming language. For creating different situations in the form of shape files, Quantum GIS software is employed. At various stages, different login ids have been offered.

Conclusion

Web based totally GIS are advanced from exceptional net maps and patron server structure to distributed ones. As such, internet reshapes all functions of facts structures including: amassing, storing, retrieving, reading, and visualizing statistics. moreover, disseminating spatial information at the net improves the decision-making techniques. The significance of internet-based GIS packages for government and examine the records they produce to set up their effect on efficiency, effectiveness and transparency of government agencies. The ability and functionality of faraway sensing and GIS for imparting cost and time-powerful useful resource database to prepare aid database using far flung sensing and GIS strategies to bolster various aspects of decentralized block stage planning via a coordinated approach. A GIS based totally information machine will assist the authorities in making plans, implementation and tracking of diverse rural improvement initiatives for development in unique fields at tons faster price which in flip will make the state technologically extra developed

References

1. Anang Wahyu Sejati , Imam Buchori, IwanRudiarto , Christopher Silver, KartikoSulistyo, "Open-Source Web GIS Framework in Monitoring Urban Land Use Planning: Participatory Solutions For Developing Countries", *Journal of Urban and Regional Analysis*, vol. XII, 1, 2020.
2. ElzbietaBielecka, "GIS Spatial Analysis Modeling for Land Use Change. A Bibliometric Analysis of the Intellectual Base and Trends", *Geosciences* 2020, 10, 421; doi:10.3390/geosciences1011042.
3. Prasenjit Bhowmick, S. Mukhopadhyay, V. Sivakumar, "A review on GIS based Fuzzy and Boolean logic modelling approach to identify the suitable sites for Artificial Recharge of Groundwater", *Scholars Journal of Engineering and Technology (SJET)*, 2014; 2(3A).
4. P.D. Sreekanth, N.H. Rao and K.V. Kumar, "Web based Geo-Spatial Village Information System", *Journal of Global Communication*, Special Issue 2016.
5. R. K. Singh, Deepika Bisht and R.C. Sundriyal, "Village Information System (VIS): A Step towards Rural Development in the Indian Himalayan Region", *International Journal of Basic and Applied Sciences*, Vol. 8. No. 1. 2018.
6. Satya Prakash Maurya, Anurag Ohri, Sachin Mishra, "Open Source GIS: A Review", *Proceedings of National Conference on Open Source GIS: Opportunities and Challenges Department of Civil Engineering, IIT (BHU), Varanasi October 9-10, 2015.*
7. Varsha Turkar, Sangita Chaudhari, Avila Naik, "Geographic Information System and Remote Sensing Education in India – Issues & Solutions", 978-1-5386-9154-0/19/\$31.00 ©2019 IEEE.
8. XieHongyong, Shi Xi, "GIS-Based Tourism Planning Information System Research", 978-1-4244-5586-7/10/\$26.00 2010 IEEE.