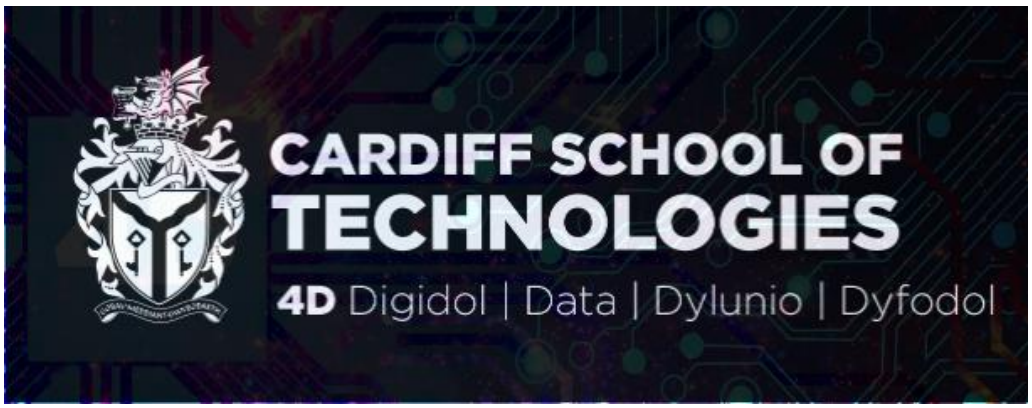

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PART 3 – REVIEW/REPORT

Critical Review of the article – Geospatial analysis of misinformation in COVID-19 related tweets.

Introduction

COVID-19 is one the major pandemic caused lose to everyone in the world. Social media played a major role for downplaying the corona virus spread. The article “Geo Spatial analysis of misinformation in COVID-19 related tweets” is discussed how the COVID pandemic spread increased with respect to the false information published through social media platform (twitter) in state and county level from May to June 2020 in USA. It only analyzed spatial data by considering geotagged COVID data from tweets.

Key Techniques

The key techniques of this article are discussed below

Multiscale geographically weighted regression: This technique is used to investigate the relationship between social media platform usage by people and geographic variation in the pandemic incidence with spatiotemporal data analysis. This technique summarized that there is a strong spatial relationship between social media activity and COVID-19 virus spread.

Poisson Multiscale geographically weighted regression: It is used for geographic modeling tool to explain variation of COVID spread over multiple scales.

Discourse analysis: The purpose of this analysis is to index how tweets downplayed the false information over social media platforms. Results said that spreading false information on Twitter exhibited greater resistance to pandemic management strategies.

Content analysis: It is used to classify the misinformation from twitter data collection. It categorized content into two parts: i) False information ii) Estimate the virus's severity.

Major contributions

As per Gander (2020) social media had a more negative than positive impact on public perception towards COVID-19. Geotagged data contains the information about locations and it is the best way to explain the spread over globe (Sui Goodchild, 2011).The georeferenced posts in social media (Tsou, 2015) explain the dynamic relationship between human emotions with respect to environment. The use of social media as a stand-in for investigating complicated social dynamics and human behavior geographically.

Tiger/Line, a database utilized by **ArcGIS Desktop,** is used to store the counties' data together with a shapefile representing their administrative boundaries.

In order to investigate both linear and non-linear correlation, the effect of restricting the population of random variables is removed while calculating the partial distance correlation coefficient for the number of tweets and the number of confirmed COVID cases.

To perform local regression in each location to know the model parameters GWR performed, and it gives a method for defining the factors that result in such a representation for particular locations as well as for evaluating if a model is a suitable representation or not (Fotheringham, Yang, & Kang, 2017; Oshan, Li, Kang, Wolf, & Fotheringham, 2019). The calculated R2 square is used to explain the COVID incidents variation rates from twitter data.

Critical points

The author explained entire paper on considering only geo tagged data analyzed. The conclusions are constrained by problems with the granularity of the data that was gathered (national wide). As a result, precise conclusions at the sub-county and individual levels are challenging. Data cleaning process is not effectively explained. For example, unable to clean hashtag and special character mixed data while data pre-processing. The possibility of vulnerable groups posting information about issues on social media is lower (Xiao & Huang 2015). The R2 square shows that urban centers and coastal locations have higher accuracy, but the author is criticizing that social activity may not be a good probing parameter to predict the COVID incidence rate in rural places.

Task 3.2: Report on the importance of geospatial analysis in different areas and how these areas are benefitting from geospatial analysis

The areas of applications for geospatial analysis are listed below

3.2.1 Telecommunication

Telecommunications is a rapidly expanding business, and these networks are linked to marketing tactics that begin with project management, planning, alignment, and network architecture. The entire world is serviced by sophisticated telecommunications networks that store vast amounts of data.

Importance of GIS in Telecommunication

Telecommunications overcame all obstacles with the help of GIS and became one of the enterprises with the quickest growth rates. **ArcGIS** is able to provide a full geographic system as well as the tools for establishing and maintaining global telecommunications networks with the aim of integrating people, workflows, and data (Team, E.T., 2022). GIS provides enhanced location awareness and immediate access to asset information. Provides highly efficient and identifies faulty circuits in the process (Anon, 2021). It increases the availability and consistency of infrastructure data along with spatial operational judgment. Projects can finish with less operational cost, future predictions are easy and it increases the speed of network issue resolution with effective resource allocation (www.unearthlabs.com, n.d.). Topological survey is done effectively by giving ideas to where and when network components need to be placed. GIS also used in Network synthesis and Network realization (Dair B & Oldfield B, 1996).

Challenges and Solutions

Analyzing large amount of data once may cause the system crash. GIS systems are high in cost. Expanding GIS in telecommunication is time consuming over the period. Adding GIS to the servers caused system issues due to unable to access all the layers of ArcGIS. The solution for this problem is to use cross-origin resource sharing which can enable the server. Once if any geo related damaged then entire system will be down because for

identifying and solving the issue will take much. Need to maintain proper secure databases.

Further Direction

GIS can provide 3D base maps for telecommunication sector which help in visualizations can be done effectively. Backhaul route optimization and service matching are two future improvements (Anon, n.d.). Geographic data may now be incorporated into the complex network design planning, optimization, maintenance, and activities are used by cellular telecommunications companies due to Hardcastle (Hardcastle GIS, n.d., 2022). In Future the creation of wireless Internet Map Server (IMS) services and portable GIS tools to make environmental monitoring and management activities easier (Tsou, 2004).

3.2.2 Education

Importance of GIS in Education

Spatial information will be gathered for improving educational policies, for invention of new methods which other country people included and for improving digital database. The GIS represents data more attractive than traditional methods. Representing the data in a map view will help educator to find or recognize unexpected or hidden information with inn the scope. Minor information also can get through GIS and future planning at various levels or units of analysis, such as national, regional, provincial/district, and local, can get more flexible assistance (Hite, S. J. (2008). Buffer analysis is used for schools for better view of school map (O'Kelly, Morton, 2000).

Challenges and Solutions

Perceived complexity means learning GIS is so difficult than explained. Software and Hardware are very difficult to build GIS system in small schools as the cost of the equipment is high. Building Software and Hardware for GIS system in small schools is very difficult as the cost of the equipment is high (Wiegnd, 2001). No academic time to explain GIS (Kerski, 2006). To run GIS tools school must be with appropriate access to

network. Studying GIS is not mandatory for school academic assessments (NRC, 2006) caused less skill improvement.

Educate the professors so that they can provide better teaching. Maintaining proper network will reduce the time consumption for students to analysis the spatial concepts. Improving the Pedagogic cultural agenda (Watson, 2001).

Further Direction

Combining GIS with technical structures to enable management by refugees. Possibilities for the establishment of an open, geographical citizen science program that are driven by interest and powered by the audience will increase the quality of education. In the future, open GIS will play a bigger role in determining both research and instructional priorities (Sui, 2014). Educational reform is necessary for supporting teaching with inquiry. Educational centres should be developed for GIS. Pricing policies for GIS in education should be re-examined.

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