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🌐 Systematic Literature Review for operational research on humanitarian cause

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Abstract

This systematic review investigates the use of artificial intelligence (AI) algorithms in locating facilities for humanitarian causes, focusing on issues related to the mobility of refugees and stateless individuals. The study includes a detailed description of the data collection conducted in the consulted articles, as well as a qualitative and quantitative analysis of the results obtained.

Troubleshooting

Context

1   Human mobility is one of the most intriguing phenomena of the present days. The movement of people around the world has increased in recent years. This has placed groups around the globe in adverse situations. Known as refugees and stateless persons, these are individuals who find themselves forced for some reason to leave their homes in search of better living conditions. These reasons can be diverse. Climate disasters and political persecution can be cited, which ultimately represent a risk to one's own safety.

      For this reason, this study aims to clarify how this human movement occurs. Understanding how people begin and end this change, and understanding how computing has contributed to this mobility process.

Team of researchers

2

A	B	C
Name	Function	Affiliation
Rodrigo C. Thom de Souza	Doctoral supervisor	UFPR and UEM
Leonardo S. S. da Rocha	PhD student	UEM
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UFPR - Universidade Federal do Paraná (Federal University of Paraná)
UEM - Universidade Estadual de Maringá (State University of Maringá)

Goal

3   To identify primary studies in the literature that propose the application of AI algorithms for assignment (and optimization) problems applied to the location of facilities that address humanitarian causes such as issues related to human mobility of refugees and stateless persons.

Research Questions

4   RQ1 - What is the optimization task (e.g. facility location, designation, etc.)?

      RQ2 - What are the variables (e.g. demographic data) and the objective function?

RQ3 - What is the mathematical modeling approach?

RQ4 - What are the optimization algorithms?

RQ5 - What are the future research directions and gaps?

Data bases

5 The databases defined for querying and gathering data for this research are:

IEEEXplore

Elsevier (Scopus)

ACM Directory

Search the sources

6 Keywords, strings, or descriptors

6.1 The string of research

("facility location" OR "assignment problem") AND ("refugee" OR "refugees" OR "migrant" OR "migrants" OR "humanitarian")

Criteria

7
- They must be articles available in full on the databases mentioned in item 5;
- Publications must be in English;
- They must meet the search criteria and be available for download;
- Studies that address one or more research questions listed in item 4 will be retained.

7.1 Inclusion criteria

- The published works must be available in scientific databases;
- Searches will be conducted in the English language;
- Recent studies published from 2020 onwards.
- The works must address facility location or assignment problem applied to humanitarian causes of refugees and stateless persons;
- Articles containing the terms described in item 6.1

7.2 Exclusion criteria

- Works that are not available for download will be disregarded;
- Works that are not in the databases defined for this study will be excluded;
- Works published before 2020 or after 2023 will be excluded;
- Works that do not clearly present the methods used will be disregarded;

- Works that do not provide datasets/mathematical models will be excluded;
- Articles that do not present facility location from the perspective of refugees and stateless individuals will be disregarded.

Quality of primary studies

8   An important aspect of this study is to work with publications made in journals and/or conference proceedings where peer review occurs.

Selection of primary studies

9   The articles in the databases mentioned above will be selected based on the search string. The identified works should be read in the following manner:

a) By title and abstract
b) By introduction and conclusion
c) By bibliographic references
    c.1 - Identify the most cited articles and author(s).

a - In this step, articles should be selected based on their title and abstract. It is important to consider the selection and exclusion criteria throughout this process, as they will assist in deciding whether to keep an article or not.
b - In this step, after the selection made in the previous step, articles should be read for their introduction and conclusion. Again, this reading should consider the inclusion and exclusion criteria.
c - Finally, it is important to identify in the remaining articles which articles and authors are most cited. This is important as it will assist in identifying who is researching the topic and who has a relevant publication volume.

Information extraction

10   The data extraction strategy is based on full-text reading of the articles. This stage should be carried out by the lead author. However, data such as publication date and bibliographic information must be previously and compulsorily collected, and they should be included in a spreadsheet built with the help of an appropriate tool, containing the set of selected articles.
The author should then synthesize the work, elaborating on their reflections on the content and conclusions of the studies read.

Summarization

11   Write a systematic review article with a description of the data collection conducted in the consulted articles, including qualitative and quantitative analysis.

References

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