

# FOOD WASTE MANAGEMENT USING INVENTORY ROUTING PLANING

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## ABSTRACT

The amount of food waste generated within the country frequently increasing, the misuse of food on every stage of the food life-cycle has become a serious environmental, social, and money issue. Immense amount of food is wasted a day in hotels and restaurants. The waste at wedding halls, a celebration hall etc. is also mammoth. In a country, an enormous society is deprived of basic amenities and don't get meal for just once, such wastage is intolerable. it's an underestimation that there are many orphanage operating towards serving to the folks happiness to under-privileged society and wish to a minimum of give them with clean minimum necessities like food and shelter. The proposed methodology says that if we will connect these 2, in such the simplest way that these orphanage will get the "food to be wasted" without hassle, and also the hotels/restaurants/party-halls realize these food seekers without any additional effort then it'll serve a bigger cause and can be an enormous service to humanity. Using the innovative technologies, we will bridge the gap. Now a day, good phone's are obtainable at an extremely reasonable price and are the most effective way to keep folks and agencies connected.

## I. INTRODUCTION

In the country wherever the business status has reached during a stage that heaps of available edible food is heaved away as waste in each stage of the promoting. Food wastage is calculable 25 % of the available amount of

succulent food. The food is important energy difficult product cluster and resource. The interference of food waste is done by tributary to avoid wasting resources to cut back environmental impact during all stages of selling system. No one intends to waste food within the starting, some state of affairs in promoting behaviour and individual cause the waste product. People waste edible food as an accomplishment implicational our population. Food throwing may be an uncomfortable issue everywhere. The street and trash bins depot have a lot of food as a clue to prove it. The functions and party halls of hotels eject out such a lot food. Undivided community evolution setup is up to 40 % food is composed is starved. Fifty thousand crore amount of food is thrown and wasted every time. "World atmosphere Day" operation conducted during this year is on subject "Think Eat Save".

The operation is predicated on anti-food diffusion and bread loss. The politics action is answerable to poor folks facing complication in food these days. The civilization and traditions are enjoying a lead role in drama of wasting edible food. The large wedding conducting consists of largest dinner of selection foodstuff. The succulent food which is wasted may be reorganizing for human utilization. Throwing on the market and edible waste food is merely nourished by somebody else and is sheer wastes of resources. Orphanage works as food collectors, collects food and spread dry food and overdone food from donor to community centres (needy people). The approach deals with grouping the waste product by orphanage and donating to wish folks (charity homes),

considering the kinds and sources of food. The approach support orphanage to collect surplus waste product from donor and give that food to poor folks.

## II. RELATED WORK

**Paper Name:** Parallel control and Management for Intelligent Transportation Systems: concepts, Architectures, and Applications

**Author:** Fei-Yue Wang, Fellow, IEEE.

Paper Explanation: Abstract—Parallel control and management are planned as a brand new mechanism for conducting operations of advanced systems, particularly those that concerned quality problems with each engineering and social dimensions, such as transportation systems. This paper presents a summary of the background, concepts, basic strategies, major problems, and current applications of Parallel transportation

Management Systems (PtMS). In essence, parallel management and management may be a data driven approach for modelling, analysis, and decision-making that considers each the engineering and social quality in its processes. The developments and applications described here clearly indicate that PtMS is effective to be used in networked advanced traffic systems and is closely associated with rising technologies in cloud computing, social computing, and cyber physical–social systems. an outline of PtMS system architectures, processes, and elements, together with OTSt, DynaCAS, aDAPTS, iTOP, and TransWorld is given and mentioned. Finally, the experiments and examples of real-world applications are illustrated and analysed.

**Paper Name:** Intelligent freight-transportation systems: Assessment and the contribution of operations research

**Author:** Teodor gabriel Crainic a,\*, Michel Gendreau b, Jean-Yves Potvin

Paper Explanation—, whereas it's definitely too early to create a definitive assessment of the effectiveness of Intelligent Transportation

Systems (ITS), it's to not size up of what has been achieved and to think concerning what might be achieved within the close to future. In our opinion, ITS developments have been up to currently mostly hardware-driven and have LED to the introduction of many sophisticated technologies within the transportation arena, whereas the event of the software component of ITS, models and decision-support systems above all, is insulant behind. To succeed in the total potential of ITS, one should so address the challenge of making the foremost intelligent usage possible of the hardware that's being deployed and therefore the large wealth of information it provides.

We believe that transportation designing and management disciplines, operations research above all, have a key role to play with relevance this challenge. The paper focuses on Freight ITS: business Vehicle Operations and Advanced Fleet Management Systems, town provision, and electronic business. The paper reviews main problems, technological challenges, and achievements, and illustrates however the introduction of higher operations research-based decision-support code may terribly significantly improve the final word performance of Freight ITS.

**Paper Name:** Intelligent logistics: Involving the client

**Author:** professional dancer McFarlane \*, Vaggelis Giannikas, Wenrong Lu

Paper Explanation— the role of provision in effective provide chain management is increasingly crucial, and researchers and practitioners have recently centered their attention in planning additional intelligent systems to handle today's challenges. In this paper, we specialize in one such challenge regarding rising the role of the client in provision operations. Above all, we determine specific developments within the systems governing core provision operations, which is able to enhance the client expertise. This paper proposes an abstract model for client

orientation in intelligent provision and describes variety of specific developments the authors are concerned in.

**Paper Name:** A Decomposition Approach for the Inventory-Routing downside

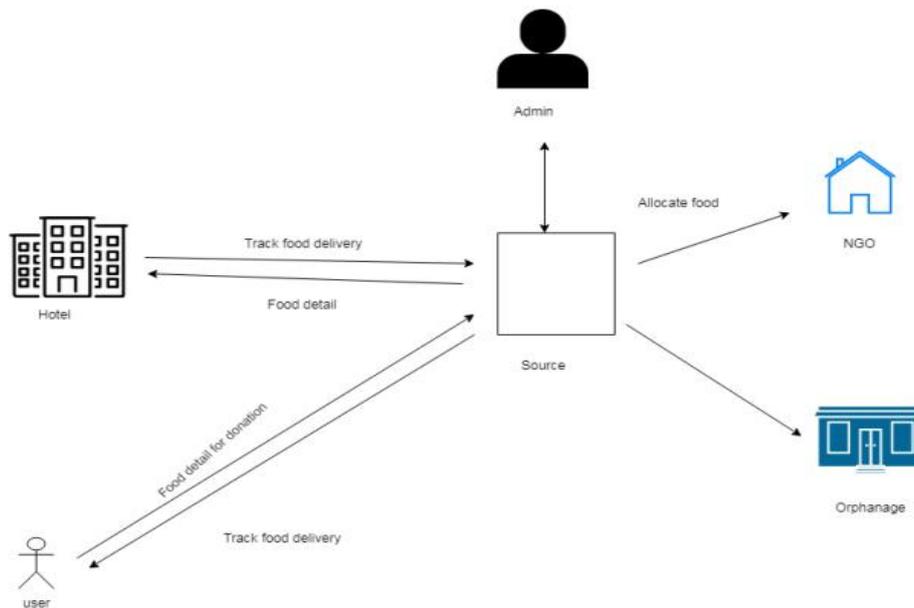
**Author:** Ann melissa campbell, Martin W. P. Savelsbergh

Paper Explanation— during this paper, we present an answer approach for the inventory routing problem. The inventory-routing downside may be a variation of the vehicle-routing problem that arises in things wherever a seller has the flexibility to create selections

about the timing and filler of deliveries, similarly because the routing, with the restriction that customers aren't allowed to run out of product. Author develop a two-phase approach supported moldering the set of decisions: A delivery schedule is made 1st, followed by the development of a group of delivery routes. The primary part utilizes whole number programming, whereas the second part employs routing and programming heuristics.

Author's focus is on making an answer methodology applicable for large-scale real-life instances. Machine experiments demonstrating the effectiveness of our approach are given.

### III. PROPOSED METHOD



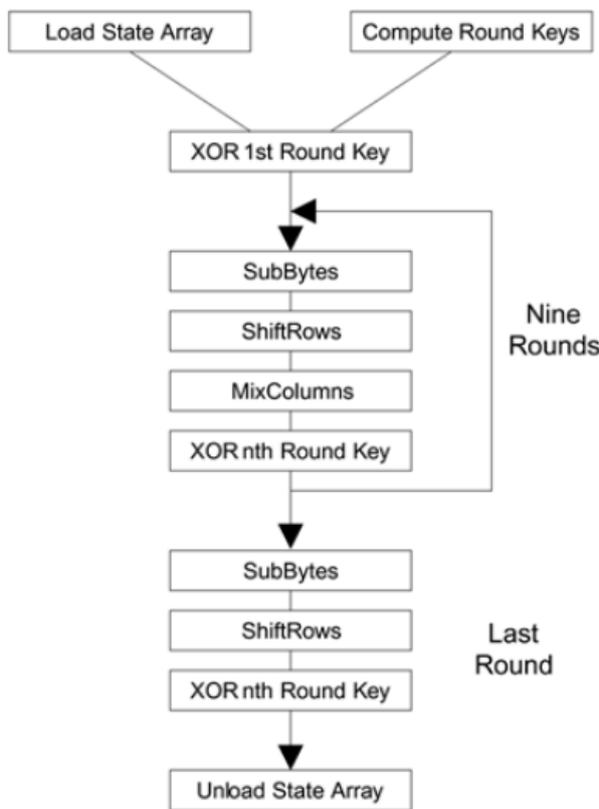
In propose system all orphanage, NGOs will register on application with respect to their locations. Registration will also contain basic information of all members, by which it will easy to recognize quantity of food required daily. Similar all hotels, caters, event organizers also get to register on website. Each hotel, caters will provide the quantity of food they can provide.

According to the details uploaded by the donor parties the system will find the nearest area where it can deliver food to one or more parties.

An encryption algorithm will be used for security purpose.

System will figure out the nearest area using KNN and using inventory routing it will deliver the food to respective parties with minimum transportation cost. The distributor/NGO will save on distribution cost.

**AES Algorithm/Pseudo Code**



1. Derive the set of round keys from the cipher key.
2. Initialize the state array with the block data (plaintext).
3. Add the initial round key to the starting state array.
4. Perform nine rounds of state manipulation.
5. Perform the tenth and final round of state manipulation.
6. Copy the final state array out as the encrypted data (cipher text)

**Haversine /Pseudo Code**

Haversine is a waveform that is sinusoidal in nature, but consists of a portion of a sine wave superimposed on another waveform. The input current waveform to a typical on-line power supply has the form of a haversine. The haversine formula is used in electronics and other applications such as navigation. For example, it helps in finding out the distance between two points on a sphere. The haversine formula determines the great-circle distance between two points on a sphere given their

longitudes and latitudes. Haversine algorithm to calculate the distance from target point to origin point

1. R is the radius of earth in meters.  
 LatO = latitude of origin point, LongO = longitude of origin point  
 LatT = latitude of target point, LongT = longitude of target point

2. Difference in latitude = LatO-LatT  
 Difference in longitude = LongO -LongT

3. Difference in latitude in radians  
 Difference in longitude in radians

O = LatO in radians.  
 T = LatT in radians.

4.  $A = \sin^2(\frac{\Delta \text{lat}}{2}) + \cos(\text{LatO}) \cdot \sin^2(\frac{\Delta \text{lon}}{2})$

$\cos(T) \cdot \sin(\frac{\Delta \text{lat}}{2}) \cdot \sin(\frac{\Delta \text{lon}}{2})$

5.  $B = \min(1, \sqrt{A})$  Distance =  $2 * R * B$

**Verification**

Verification makes sure that the product is designed to deliver all functionality to the Customer.

- Verification is done at the starting of the development process. It includes reviews and meetings, walk-throughs, inspection, etc. to evaluate documents, plans, code, requirements and specifications.
- Suppose you are building a table. Here the verification is about checking all the parts of the table, whether all the four legs are of correct size or not. If one leg of table is not of the right size it will imbalance the end product. Similar behaviour is also noticed in case of the software product or application. If any feature of software product or application is not up to the mark or if any defect is found then it will result into the failure of the end product. Hence, verification is very important. It takes place at the starting of the development process.

### Validation

Validation is determining if the system complies with the requirements and performs functions for which it is intended and meets the organization's goals and user needs.

- Validation is done at the end of the development process and takes place after verifications are completed.
- It answers the question like: Am I building the right product?
- Am I accessing the right data (in terms of the data required to satisfy the requirement).
- It is a High level activity.
- Performed after a work product is produced against established criteria ensuring that the product integrates correctly into the environment.
- Determination of correctness of the final software product by a development project with respect to the user needs and requirements.

### IV. CONCLUSION

In this Paper The approach deals with collecting the food waste by orphanage and donating to needy people (charity homes), considering the types and sources of food. The approach support orphanage to collect surplus food waste from donor and donate that food to needy people. The sustenance approach serves to remain off from crevice between the nongovernmental organization and Donor. The approach unite these 2, in such a route, to the point that these NGOs will persuade the "nourishment to be squandered" without bother, and therefore the hotels/eateries/party-lobbies discover these sustenance seekers with no extra sweat thanks to transportation charges then it'll serve a additional noteworthy cause and can be a massive administration to mankind.

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