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Role of Operation Research in Internet of Things

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Abstract

In this paper major role of Operations research (OR) in Internet of Things(IoT) for innovative management and for monitoring widely dispersed processes. The Operations research (OR) is an analytical method of problem-solving and decision-making that is useful in the management of organizations. In operations research, problems are broken down into basic components and then solved in defined steps by mathematical analysis. Internet of Things (IoT) imaginative organization, the defining feature of the program. Through IOT, the introduction of different tools and cloud resources will boost performance, which means network of the things that we use in our daily life. It is interconnection among different devices like television, washing machine, mobile phones, headphones and other electronic appliances. These appliances are connected in a network and can talk to each other. The IoT is a giant network of connected "things".

Keyword: IoT, Operational Research,Simulation,Optimization,decision-making.

INTRODUCTION TO OPERATION RESEARCH:-

Operation Research was born during Second World War in U.K., and was used for military strategy. During World War II, a group of scientists, having representatives from mathematics, statistics, physical and social sciences were entrusted to the study of various military operations. This team was very successful and greatly contributed to the meticulous handling of entire operation and related problems of the operation.

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Characteristics of Operations Research

- **Optimization:**
  Operations Research is to provide better performance in any given situation , collection of mathematical principles and methods used for solving quantitative problems in many disciplines, including physics, biology, engineering, economics, and business.
- **Simulation:**
  Improve the overall result, you must be sure that the selected method is going to be beneficial it is known as Simulation.
- **Probability and Statistics:**
  Probability is all about chance. Whereas statistics is more about how we handle various data using different techniques. Operation Research involves intensive use of statistical and mathematical.

Applications of Operation Research

- Healthcare Management and Hospital Administration
- Financial Management**,** Budgeting and Investments
- Government Development / Public Sector Units
- Energy and Environment
- Marketing and Revenue Management

- Agriculture
- Telecommunication Networks
- Military Defenses
- Supply Chain Management
- Purchasing / Procurement / Logistics
- National Plans / Budgets

Internet of Things:

The Internet of Things (IoT) is an extension of the Internet in which large numbers of "things", including sensors, actuators and processors, in addition to human users, are networked and able to provide high resolution data on their environment.

Responsibilities in Operation Research:

- ✓ Provide research on specific topic areas to support project teams' work
- ✓ Define business problems within an organization and use statistical analysis, simulations, predictive modeling, or other methods to analyze it and develop practical solution
- ✓ Gather information from members of the organization, including workers and management, who can contribute information about problems and possible solutions
- ✓ Research to come up with possible solutions
- ✓ Recommend strategies to management and other decision-makers
- ✓ Track and analyze key metrics and report on them
- ✓ Evaluate the effectiveness of decision
- ✓ Assist in planning projects including scheduling and budgets
- ✓ Write reports and memos to explain findings and make recommendations.
- ✓ Operations research analysts are responsible for applying analytical and mathematical methods to assist businesses and organizations in making better, more informed decisions and solving problems. They have numerous duties, including data and information collection, problem identification, solution development, statistical analysis and practical solution implementation.

Role in OR with IoT :

It is still at an early stage of development, and many problems/research challenges must be solved before it is widely adopted. Many of these are technical, including interoperability and scalability, as billions of heterogeneous devices will be connected, but deciding on how to invest in the IoT is a challenge for business, and there are also major social, legal and ethical challenges, including security and privacy of data collection, which must be resolved. As the future IoT will be a multi-national, multi-industry, multi-technology infrastructure, In this paper the global standardization efforts that are underway to facilitate its worldwide creation and adoption. The main purpose of the paper is to give a broad survey, based on published literature, of the methods of Operations Research (OR)the IoT. It is suggested that OR has a role to play in balancing the technical and non-technical research challenges which confront the IoT.

CONCLUSION:

The research paper can be Concluded by highlighting on the importance of Operation Research is discipline of applying advance analytical methods to help make better decision by using techniques such mathematical modeling to analyze complex make more effective and built more productive system &This method is based on Operations Research and utilized to determine maximum uncertainty values based on data from IoT devices.

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