Utilization of Digital Technologies in the Environmental Field (Water Resources) in the Korea

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Smart Water Management
AI and Smart Water Management

AI helps to collect and analyze the real time data of water quality and quantity.

AI plays a big role in learning and predicting patterns in data.

Important factors in predicting and understanding water quality changes, causes of pollution, measures to improve water quality.

AI also plays an important role in automating water management systems.

Based on data received from smart sensors, AI optimizes water supply.

When contamination is detected, decision is automatically made.

AI is a key part of smart water technology.
Various types of smart water technology

1. Remote Sensing: Satellite images and drones

2. Smart sensors: Collecting water quality and quantity data in real time

3. Analysis of Big Data: Analyzing large amounts of water quality and quantity data

4. Cloud computing: Storing and processing large amounts of water resources data

5. AI and Machine Learning: Recognizing and learning complex patterns

6. IoT: Integration of Sensors, devices, networks and software
Application of Smart Water Technology
– Water Management -

Understanding water usage patterns through smart metering and AI-based prediction models

Preventing water shortages and increasing efficiency based on Supply optimization
Application of Smart Water Resources Technology
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• Forecasting climate change and water flow by using smart sensors and data analysis
• Predicting and preparing against flood or drought
Application of Smart Water Resources Technology - Detection and Management of Pollution

Real-time monitoring of water quality by using smart sensors

Immediate Response after real-time detection of pollutant
Current Market Scale of Smart Water Resources Technology

From about 20 billion USD in 2021, it will reach to 30 billion USD within 2025

Increasing demand for smart water resources technology due to urbanization, water shortages, climate change, etc.

Applicable to efficient use of water, detection of pollution, prediction of flooding/drought, etc.;

Increasing demand in various industries and public sectors

It is expected to be more than a 30 billion USD by 2025
Market Growth of Smart Water Resource Technology

- From 2021 to 2025, the average annual growth rate is about 8-10%
- Causes of growth: The need for efficient water management, development of smart sensors and data analysis, and response to water shortages caused by climate change and urbanization
- Role: Improving water management efficiency, detecting pollution, forecasting floods and droughts
- Application: agriculture, manufacturing, energy, public services
- The result: effective water management, achieving sustainable water use goals
Research Trend in Smart Water Resource Technology

- **IoT sensors**: Real-time monitoring of water quality, quantity and spill
- **Big Data**: Prediction of supply and demand, pollution detection, management of spill and loss
- **AI & Machine Learning**: Pattern recognition, predictive modeling, support for decision making
- **Sustainability**: Reuse of water, efficient use, conservation strategies
Cases of Smart Water Management with AI Application
Types of IoT devices in the water sector

1. Smart Mitering
   1. Real-time water usage monitoring and remote data transmission
   2. Analysis of usage patterns, detection of leaks, and calculation of charges according to usage

2. Censor
   1. Various censors for water quality, level and flow amount
   2. Monitoring and transmission of water quality, level and flow data

3. Data Logger
   1. Collection and storing of data from network
   2. Use for analysis or transmission to real-time central system transmission

4. Gateway
   1. Multiple IoT devices are connected to the network
   2. Supporting data transmission for distant sensors

5. Drone
   1. Utilization of monitoring and maintenance work in large-scale water resource facilities;
   2. Use for water sampling, facility inspection, etc.;

6. Conclusion
   Various IoT devices are a key element of efficient and sustainable smart water management
Prospect of Smart Water Management Technology

1. Importance of Technology
   Smart water technology plays an important role in changing the way water resources management.

2. Integration of Technology
   Through the integration of technologies such as IoT, Big Data, AI, etc., it helps improve water use efficiency and solve water shortage problems.

3. New Paradigm
   The introduction and development of smart water technology provides a new paradigm for water resource management.

4. Challenges
   There are challenges such as data security, technical gaps, ethical considerations, etc.

5. Prospect
   More development to overcome challenges and provide sustainable water management solutions will be expected; the importance of responsible adoption and utilization of technology will be emphasized.
Thank you for your attention

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