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Privacy in the Medical Internet of Things

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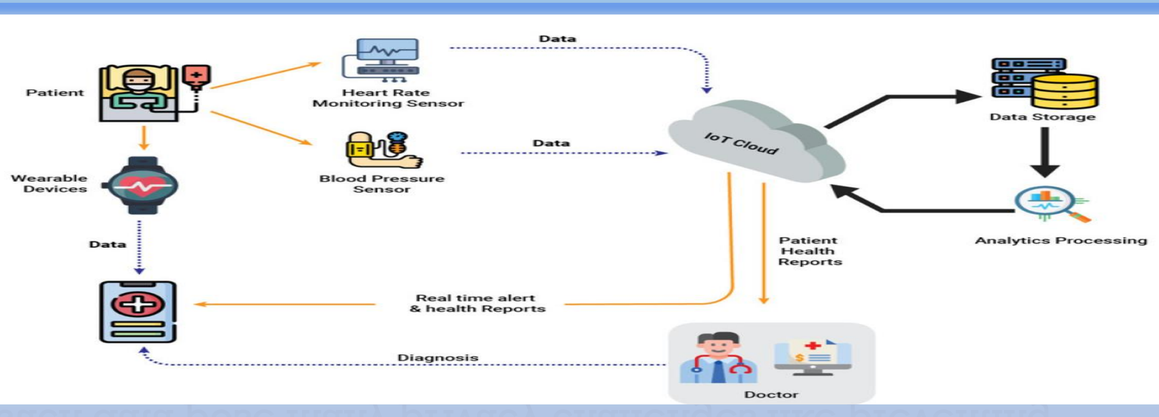
Introduction

- The Medical Internet of Things is exponentially growing, This technology is playing a more and more important role in public health and safety.
- Thanks to IoT technology, patients can be monitored continuously. They don't need any more to see their medical caregivers in many cases.
- A huge amount of medical data produced by IoT devices raises serious concerns regarding the privacy preservation of the patients during different stages of the data life cycle.
- On one hand, the collected data
- offer remarkable opportunities for data-driven analytics, personalized recommendations, and actionable insights.[1] On the other hand, the processing, utilization, and distribution of such data pose many privacy challenges like preventing individual identification, sensitive information disclosure, targeted profiling, and mass identity theft.[2]
- Privacy is "the claim of individuals, groups, or institutions to decide for themselves when, how and to what extent information about them is communicated to others" [3].
- The data life cycle has several stages: collecting, transmission, storage, and use phases.



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What are we going to address in this research?

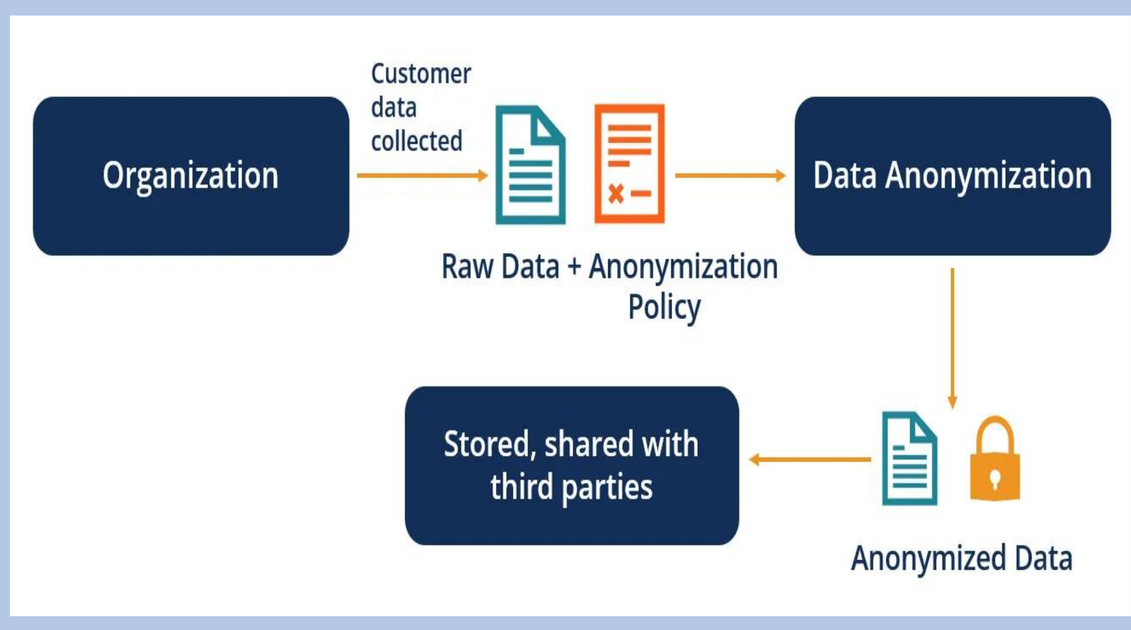
- This research aims to provide proper solutions that address privacy preservation issues surrounding medical data in IoT applications.

Challenges

- limited resources available in IoT devices have left medical data vulnerable to malicious attacks that can breach data privacy.
- Recently, due to advances in machine learning (ML) tools, privacy protection has become more challenging.

Solutions

- Existing privacy techniques can be categorized into two groups: data perturbation and data restriction
- Data perturbation: these techniques are a series of operations that modify or hide some sensitive parts of the original data to preserve privacy [2]. Noise addition and anonymization are two methods in this category.
- Data Restriction Techniques: these techniques are focused on restricting data use by blocking access or encrypting data. Data restriction techniques include access control and crypto-based methods.



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Industrial contributions

- In the medical industry, since patient information is so sensitive to disclose, the privacy preservation of medical data is becoming a challenging issue of the medical IoT. Thus privacy preservation is highly required to ensure a reliable medical IoT network.

References

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Host Institution

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