Context-Aware Reinforcement Learning-Based Mobile Cloud Computing for Telemonitoring

ABSTRACT

- Mobile cloud computing (MCC) has been extensively studied to provide pervasive healthcare services in a more affordable manner.
- Through offloading computation-intensive tasks from mobile to cloud, a significant portion of energy can be saved to extend the mobile battery life, which is critical to maintaining continuous and uninterrupted healthcare services.
- However, given the ever-changing clinical severity, personal demands, and environmental conditions, it is essential to explore context-aware approach capable of dynamically determining the optimal task offloading strategies and algorithmic settings, with the goal of achieving a balanced trade-off among energy efficiency, diagnostic accuracy, and processing latency.
- To this aim, we propose a model-free reinforcement learning based task scheduling approach to adapt to the changing requirements.

EXISTING SYSTEM

- Mobile cloud computing (MCC) has been extensively studied to provide pervasive healthcare services in a more affordable manner.
- Through offloading computation-intensive tasks from mobile to cloud, a significant portion of energy can be saved to extend the mobile battery life, which is critical to maintaining continuous and uninterrupted healthcare services.
- In our previous work, we modeled the ever changing clinical priorities, personal demands and environment conditions as the Markov processes.

CONTINUE

- All clinical diagnosis and treatment procedures, monitoring of patient's vital signs and physiological parameters have played significant roles, especially for ensuring the safety of patients.
- However, most of these monitoring procedures in the conventional clinical settings are either costly and unaffordable, or less user friendly and in-convenient.

PROPOSED SYSTEM

- We propose a cloud-based mobile e-health calorie system that can classify food objects and further compute the overall calorie of each food object.
- They not only offloaded heavy computational functions of the system to the cloud, but also employed an intelligent cloud-broker mechanism to strategically and efficiently utilize cloud instances to provide accurate and improved time response results.
- we propose a model-free reinforcement learning based task scheduling approach to adapt to the changing requirements.

HARDWARE REQUIREMENTS

- Processor - Pentium –III
- Speed - 1.1 Ghz
- RAM - 256 MB(min)
- Hard Disk - 20 GB
- Floppy Drive - 1.44 MB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA

SOFTWARE REQUIREMENTS

- Operating System : Windows 8
- Front End : Java /DOTNET
- Database : Mysql/HEIDISQL

CONCLUSION

- In this study, we aim to improve the efficacy and efficiency of mobile cloud computing in healthcare services and in particular, health tele-monitoring, through a synergistic, multi-objective optimization of three most significant performance metrics: battery life, diagnostic accuracy, and processing latency.
- The proposed context-aware, model-free Q-learning method can automatically determine the most rewarding of floading strategy and algorithmic setting.
- Our investigations here provide potential solutions for addressing challenges of future personalized and context-aware healthcare.

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