METHOD AND APPARATUS FOR SWITCHING BETWEEN VARIOUS TRANSMISSION RATE PREDICTORS

IITM Technology Available for Licensing

Problem Statement

- Rate adaptation through various Transmission Rates (TR) have played an important role in exploiting the instantaneous channel capacity by transmitting bits at a rate that is optimally suited to the current channel conditions.
- A **rate adaptation metric**, which reflects the channel capacity, is computed at the User Equipment (UE), and is quantized and fed back to the evolved Node B (eNB).
- The UE also provides an **Acknowledgement/Negative Acknowledgement (ACK/NACK) response indicating whether packets are successfully decoded by the UE at a particular transmission rate** selected by the eNB. Based on the ACK/NACK response and CQI feedback, the eNB adjusts the transmission rate such that QoS parameters are met.
- However, there are multiple QoS parameters such as BLER, throughput, latency, or the like, which need to be optimized.
- Thus, there is a need of having a method which can meet the **overall QoS requirements of each UE through a transmission rate predictor** having simple architectural and time complexity respectively.

Technology Category/ Market

Category - Information & Communication Technology (ICT), Wireless Networks
Applications - Multi-Armed Bandit (MAB) Algorithm, Data Transmission, Wireless Networks.
Industry - Data Networks, IT, Software

Market - Global data transmission services market was valued at USD 133,789.3M in 2021 and is expected to reach USD 204,020.1M by 2029, registering a **CAGR of 4.8%** during 2022-2029.

TRL (Technology Readiness Level)

TRL – 3/4, Technology validated in lab.

Technology

A method and an apparatus for **switching between various transmission rate predictors** as a restless MAB problem (refer Fig. 1, 2& 3).

Method

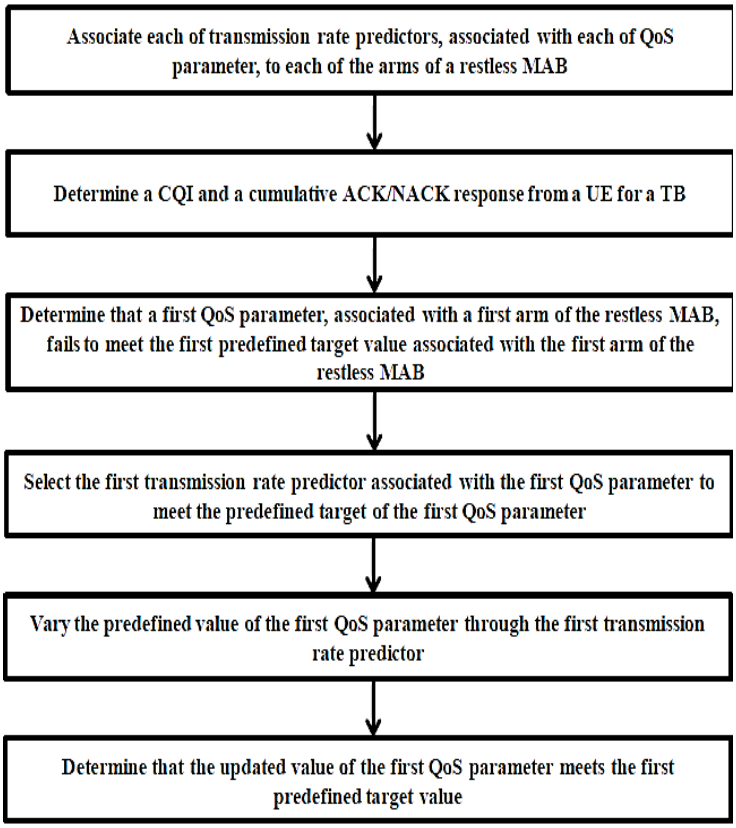

Fig. 1. Flowchart depicting a proposed method.

Intellectual Property

- IITM IDF Ref. **1360**
- **IN 428576 - Patent Granted**
- **PCT/IN2017/050043**

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Key Features / Value Proposition

1. Current invention offers a technique for **combining multiple prediction algorithms** to achieve certain targets optimally.
2. This patent may be used by **Base-station vendors or by mobile equipment manufacturers** to control parameters based on MCS prediction.
3. In case of any hardware implementations **various networking devices or external I/O devices may be connected to the computing environment** to support the implementation through the networking unit and the I/O device unit.

Fig. 2. illustrates an eNB, transmitting data at various transmission rates.

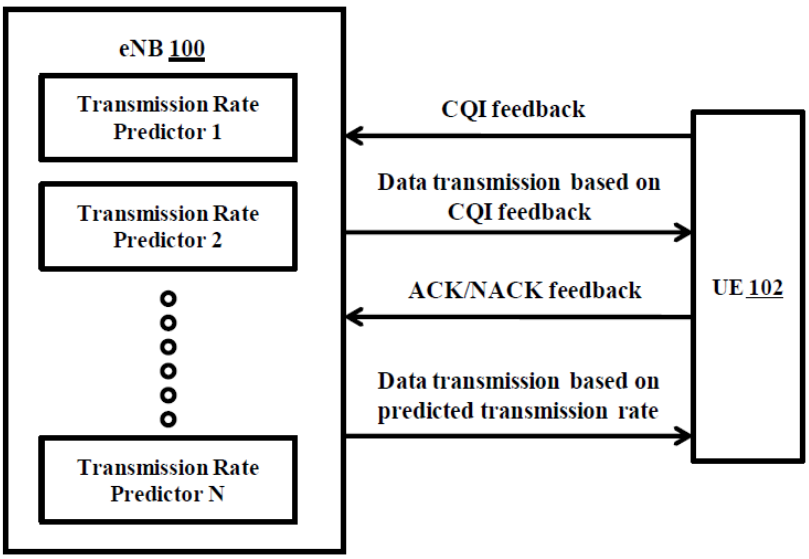
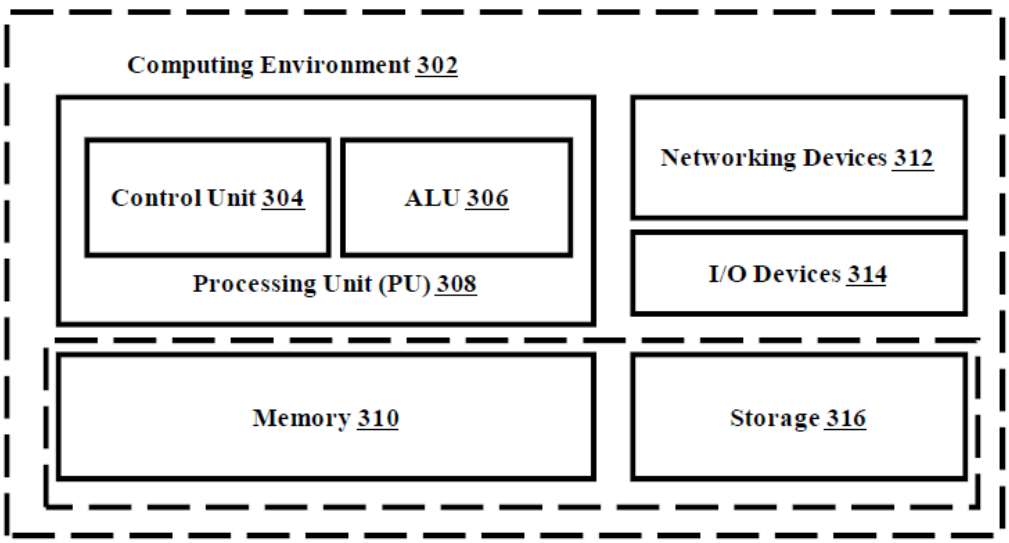


Fig. 3. illustrates a computing environment implementing the proposed method.



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