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# Scheduling Algorithms for Efficient Sensor for Self Deployment in Mobile Sensor Networks

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## ABSTRACT

We investigated the optimal scheduling problem for systems with reconfiguration delays, time-varying channels, and interference constraints. A user, with limited channel sensing capability, chooses one channel to sense and decides whether to use the channel (based on the sensing result) in each time slot. We explore how a smart sender should exploit past observations and the knowledge of the stochastic properties of these channels to maximize its transmission rate by switching opportunistically across channels. We prove that a frame-based Max-Weight scheduling algorithm that sets frame durations dynamically, as a function of the current queue lengths and average channel gains, is throughput-optimal.

**Keywords:** Queueing, Reconfiguration Delay, Scheduling, Switching Delay, Time-Varying Channels.

## I. INTRODUCTION

Time delay has been the major problem in the wireless networks. This time delay occurs due to the frame length of the message. When a message is transmitted from the source to the destination, the message has to reach the respected person or the system in time. If this doesn't reach in the allotted time then there is said to be a delay in the message. This delay can cause the work process to achieve its target or goal in an unusual manner and can also make the process to get slower.

This delay in the operation can cause the optimal scheduling problem to occur and this optimal scheduling problem can be investigated using the concepts of reconfiguration delays, time-varying channels and interference constraints. The messages from node to node transfers generally in an active path. If a delay is occurred in it, then it is said to take the inactive node. This problem can be solved using the Frame based Max-weight Algorithm.

## II. METHODS AND MATERIAL

### EXPERIMENTAL STUDY

Here we consider an active path and a inactive path. In the active path, the normal messages are transferred from source to the destination. In the inactive path, the delayed messages are transferred. As this delay occurs in the transfer, the whole of the process gets delayed and so to avoid this, the following process are undergone. The Frame based Max-weight algorithm is applied to the inactive path messages and the frame length is reduced and based on that, the time slot is allocated.

This Time slot determines the messages in the process and allows the messages in the inactive node to be corrected and send it into the active nodes to process and transfer the messages quickly from source to the destination. This process removes the error occurred in the messages and also the time-delays in the messages. Here the stability region is characterized in the close form for the case of the channel process. The data request is sent from the destination and the data response is received from the source system. The below architecture explains the overall sequence.

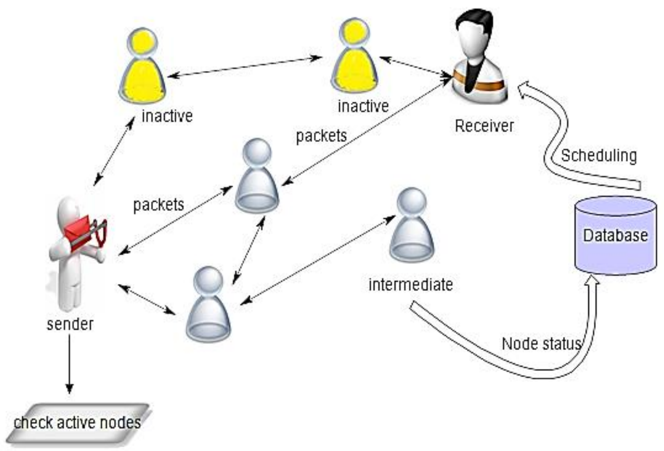


**Figure 1.** Architecture Diagram

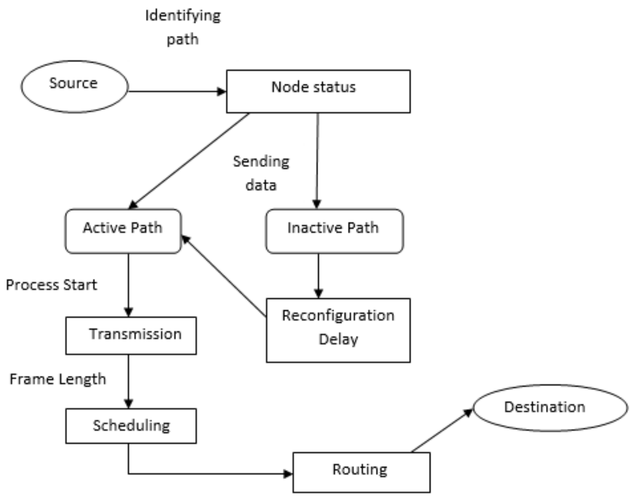


**Figure 2.** Workflow Diagram

The normal message with a correct frame length and no time delay can be sent through the active path and it reaches the destination in correct time with no time delay. These messages are generally sent and received by the data request and response method from the source to the destination. If the time frame has more length or the time delay is more, then the message is said to take the inactive path from the source to the destination.

Here we discuss a method with time-varying channels and reconfiguration delay, where the inactive path messages are sent to the fault detection method, where the inactive path messages undergo algorithmic methods to convert the messages into the active path.

## III. RESULTS AND DISCUSSION

The entire process is linked in with a database, where the source message's nodes, name and password are stored up and the destination's node is also stored up by getting these from the user while sending the messages from the source to the destination. This is done basically by the Frame based Max-Weight scheduling algorithm which uses the scheduling techniques in it. This technique can be implemented using the Eclipse tool in which Java language is implemented. The JAR file is given as the output which is used to send and receive the messages from source to the destination.

This Scheduling follows a queueing model for networks with interference constraints and reconfiguration delays. Dynamic scheduling of such stochastic networks with interference constraints has been a very active process in this. Here we consider communication networks in the absence of time-varying channels, which can model wired networks, time-invariant wireless or satellite networks, or optical networks.

Here we show that a variable frame-based algorithm that keeps the current activation for duration of time based on the current queue lengths and average channels gains is throughput optimal. The basic intuition in this is that no policy can take advantage of the diversity in time-varying memoryless channels and achieve a greater rate than the average channel gain for each link.

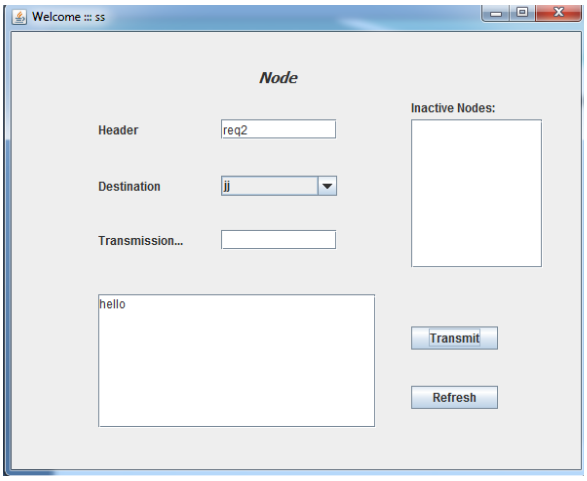


**Figure 3.** Source Message Sending

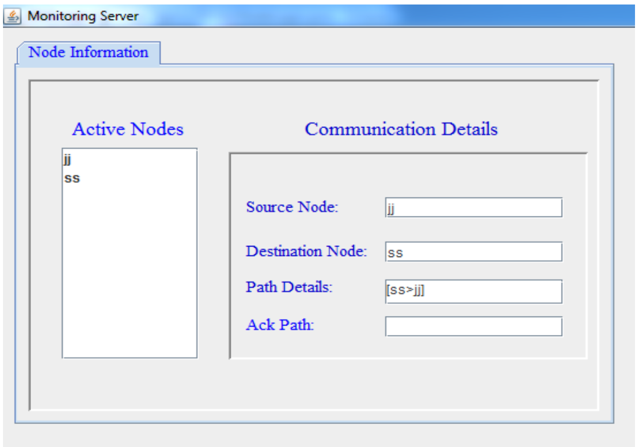

**Figure 4.** Monitoring server of the messages

## IV. CONCLUSION

The FBDC policy and state-action frequency approach provide a new framework for stability region characterization and throughput optimal policy development for general network control systems, with or without reconfiguration delays. This framework is a first attempt at developing throughput-optimal algorithms for systems with time-varying channels and switching delays, and hopefully it will provide insight into designing scalable algorithms that can stabilize such systems. The Myopic control policies we considered constitute a first step in this direction.

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## V. FUTURE ENHANCEMENTS

This system in future can be expanded and elaborated by intending to study the joint scheduling and routing problem in multi hopping networks with the time varying channels and as well as the reconfiguration delays.

## VI. ACKNOWLEDGEMENT

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