Predictive channel allocation scheduler for wireless and cellular networks

*Technology #proxy69*

Wireless and cellular networks use scheduling algorithms to allocate network resources to users. The technology is a scheduling algorithm that utilizes predictions of mobile user data rates to achieve higher data throughput and more fair allocation of resources amongst users than is possible with existing Proportional Fair (PF) scheduling algorithms. The algorithm can employ different heuristics to balance throughput performance and fairness with robustness to prediction error.

**Proportional fair channel scheduling optimized to robustly predict mobile data rates significantly improves fairness and throughput performance in wireless and cellular networks**

Wireless network scheduling algorithms typically employ PF methodologies that attempt to provide high throughput while maintaining fair allocation of resources amongst users. These algorithms, however, can only ensure optimal allocation under the assumption that received wireless signal strength fluctuates rapidly and users remain associated with their respective network access points for relatively long periods of time. Since these assumptions do not accurately characterize use of wireless networks by mobile users (where changes in received signal strength change slowly and users join and leave access points relatively rapidly), resource allocation by existing scheduling algorithms is suboptimal. The technology remedies this problem by capitalizing upon the empirical observation that a mobile user’s observed channel state is highly reproducible to robustly predict user data rates; these predictions enable more optimal dynamic allocation of channels in mobile wireless networking environments.

The technology’s ability to increase throughput by 15% to 55% over current PF schedulers while improving allocation fairness has been confirmed with trace-based simulations.

**Lead Inventor:**

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Applications:

- Scheduling cellular telephone access in 2G, 3G, 4G, and LTE networks
- Scheduling mobile device access in wireless networks

Advantages:

- Can boost data throughput by mobile wireless/cellular network users by up to 55%, compared to existing scheduler algorithms
- Increases wireless resource allocation fairness

Patent Information:

Patent Pending (US20150181596)

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Related Publications:


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