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Homework 3 - Project

**The Cognitive NET**

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Technology changes very rapidly and it is hard to keep up with it, but one thing that has not changed are the protocols and network used by the internet. The Cognitive network is new system proposed to improve upon the internet because the current state is approaching its limit. The author Antonia Liotta speaks on how the traffic being generated by the current system is causing network hardware like switches to fail, this is due the way bits currently travel which is **packet switching**.

Packet Switching breaks down data into packets, which are then sent to its destination by a path determined by the switch. This causes each packet to arrive at different times and then be reassembled at its destination. (The Cognitive NET: Antonia Liotta Pg 3). The problem with packet switching is that it does not take into consideration the “origin” of these packets and what their purpose is. For example packets being sent for a video file which require more attention will be treated the same as packets for an email.

The author introduces the idea of new system “The Cognitive Network”. This system would resolve the issues of packet switching by differentiating between packet origins and giving higher priority to some packets over others. This new network raises some questions:

* **Where would you use this type of network?** An example of where this type of network will be used is when a high demand of video bits are being requested. You need to have a higher priority when sending these packets because you want the video to play as smoothly as possible. Lag can occur if packets from the video arrive at different times.
* **How would this system help one improve the existing networks?** It will improve above the previous system of networks because it will reduce congestion of routers/switches when packets are sent. This is possible because video packets or something of more bits that demands higher level of service to improve video quality will be able to be processed at a faster rate than something less demanding like doing basic office work; retrieving an email or doing a google search.

This paper also raised some questions relating to my course TCET 4140 Network Management:

* **How do you see this paper in the context of this course?** This paper directly relates to our Network Management course because it could mean drastic changes to the way we manage networks and its components. What we are learning in class today could be completely new material in the future.
* **How did this paper impact your understanding of network designs?**  This paper helped reinforce my knowledge of how bits of information travelled across a network and how improvements need to be made because it is becoming outdated.
* **Which reference did you find most useful in clarifying unknown terms or concepts discussed in the paper?** The main source I used for understanding certain terms in this paper was <http://compnetworking.about.com/od/networkprotocols/f/packet-switch.htm> . There was no specific author listen for the page. The source gave detailed information on how packet switching works in a network.

This paper exposed me to the current state and protocols used by our internet network and how this outdated system is reaching its limits. Our current network is considered “dumb” because it does not differentiate between packets being sent. This will cause congestion because emails will get the same attention a video requires. Liotta was clear in explaining possible directions we can turn to resolve these issues. The Cognitive network or the “smart” network talked about in this article will be able to identify the origin of the packets and give priority to those with higher demand ex. Video. This Cognitive network is compared to the human brain because it would be able to learn, improve, and fix itself over time.