

# Design Considerations for Space-Based Digital Systems

By Raymond Alejandro

Adviser : Dr. Hwang

Date : July 25<sup>th</sup>, 2008

Time : 11:00 A.M.

Location : S&T II Rm 230A

Satellites and spacecraft make up a small minority of the digital systems in the world today. However, they play a vital and ever increasing role in the everyday lives of billions of people. Whether it's a communications satellite for cellular phones or HDTV, a GPS satellite, or a military satellite to detect hostile ICBM launches they are essential to our way of life.

Due to the cost and criticality of these space based digital systems they cannot afford to fail. The vacuum of space is an extremely hostile environment that increases the risk of failure in these systems when compared to their terrestrial brethren. This paper will introduce obstacles that a spaced based digital designer must overcome, the methods to overcome them, and the trade-offs involved with those methods.