

Abstract:

Systems of the form  $x_{n+1} = (\delta_1 A_1 + \delta_2 A_2 + \delta_3 A_3 + \dots + \delta_k A_k) x_n$  where  $\delta_i \in \{0, 1\}$  and the sum of the  $\delta_i$ 's is one have been studied extensively in the control theory literature. Two cases have been studied where either the  $\delta_i$  are stochastic or controlled. At Texas Tech we have worked extensively with these systems. At the theoretical level there are three important papers with Dayawansa and others and at the application level we have used these to develop numerical methods for ODEs and for the modeling of dynamical clinical trials. In this talk I will discuss the work that has been done and work that is ongoing.