BİYOLOJİK MODELLERİN SAYISAL İNCELEMELERİ

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ÖZET

Bu çalışmada, dinamik bir sistemi ve doğrusal olmayan Riccati diferansiyel denklemini çözmek için polinom yaklaşımları ele alınmıştır. Matris tabanlı tekniklere göre sayısal çözümler elde edilmiş ve literatürdeki diğer sayısal yöntemlerle karşılaştırılmıştır. Daha sonra, çözümün yaklaşık sonuçlarını içeren sistemin kararlılığı tanıtılır. Ayrıca mevcut tekniklerin etkinliğini göstermek için hata analizi, bazı şekiller ve tablolar verilmiştir.

Anahtar Kelimeler: Sinir ağı modeli, Riccati diferansiyel denklemi, matris yöntemi, ortogonal polinomlar.

ABSTRACT

In this study, polynomial approximations for solving a dynamical system and nonlinear Riccati differential equation are considered. Numerical solutions are obtained with regard to the matrix based techniques and compared with other numerical methods in literature. Then stability of the system including approximated results of the solution are introduced. Besides, error analysis, some figures and tables are given in order to show the efficiency of the present techniques.

Key Words: Neural network model, Riccati differential equation, matrix method, orthogonal polynomials.

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