

Nastaran Navidmoghaddam



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EDUCATION

	Amirkabir University of Technology (AUT), Tehran, Iran
2019–Present	M.Sc in Biomedical Engineering–Bioinformatic Thesis. “Investigating the effect of various types of approaching to the bifurcation points in biological networks and prediction of these points using recovery rate.”
	Amirkabir University of Technology (AUT), Tehran, Iran
2014–2018	B.Sc. in Biomedical Engineering–Bioelectric Thesis. “Studying critical slowing down indicators to predict bifurcations occur in different parameters.”

RESEARCH INTEREST

Chaos, Network

HONORS AND AWARDS

2013	Bronze medal in 9 th National Olympiad on Astronomy and Astrophysics
2013–Present	Member of Iran’s National Elites Foundation (INEF)

SKILLS

Programming Languages Expert in Matlab | Familiar with C

Engineering Software Orcad, LTspice, Altium Designer, Proteus, Keil, Code Vision, LabView, CodeVisionAVR, AVR, and ARM Assembly, Microsoft Access

PROJECTS AND RESEARCHES

Feb. 2021	Statistical Analysis of COVID-19 data and climatic factors The final project of Statistical Analysis of Medical Data Instructor: Dr. Ghasemi
JUNE. 2020	Designing healthy documents for students The final project of Design & Management of Medical Databases, using Microsoft Access Instructor: Dr. Mirzababae
Dec. 2018	Studying critical slowing down indicators to predict bifurcations occur in different parameters

	BSc final project Biomedical Eng. Department of Amirkabir University Supervisor: Dr. S. Jafari, Biomedical Eng. Department
JULY. 2018	Designing PCB for reporting Electrocardiography The final project of Electronic II lab, using Altium Designer for PCB Instructor: Dr. Ahmadi
JAN. 2018	Musical Instrument simulator on a touchscreen The final project of Microprocessor Lab, using a STM32F103ZET microprocessor Instructor: Dr. Almasganj
JUNE. 2017	Electromyography's analysis with LabVIEW The final project of Electrical measurement Using LabVIEW for having digital filters and show the output of the electrical circuit on computer screen Instructor: Dr. AhmadiPajouh
JULY. 2017	Pulse signal generator The final project of Logic Circuit Lab on FPGA Instructor: Dr. Almasganj
JULY. 2017	Game on AVR The final project of Microprocessor Using Code Vision for programming an AVR microcontroller and simulate in Proteus Instructor: Dr. Almasganj
NOV. 2016	Wireless Sending data of Electromyography The final project of Introduction to Biomedical Engineering Using NRF24L01, a wireless communication module, and Arduino UNO Instructor: Dr. Nasiraei

PUBLICATION

paper:

N. NavidMoghaddam, F.Nazarimehr, S.Jafari 'Studying the performance of critical slowing down indicators in a biological system with a period-doubling route to chaos.'

Abstract: This paper aims to investigate critical slowing down indicators in different situations where the system's parameters change. Variation of the bifurcation parameter is important since it allows finding bifurcation points. A system's parameters can vary through different functions. In this paper, five cases of bifurcation parameters variation are considered in biological model with a period-doubling route to chaos. The first case is a slow and small stepwise variation of the bifurcation parameter. The second case is a cyclic, state-dependent variation of the bifurcation parameter. In the third case, a small cyclic variation is combined with a sizeable stochastic resonance. The fourth case involves variation by a large noise, and finally, in the fifth case, significant stepwise changes in the parameter are studied. To identify the condition under which critical slowing down occurs, an improved version of four well-known critical slowing down indicators is used. The result shows that when bifurcations are caused by a sudden change in parameter or state, critical slowing down cannot be observed before the bifurcation points. However, in cases with slowly varying parameters, critical slowing down can be detected before the bifurcation points. Thus critical slowing down indicators can predict these bifurcation points. In other words, in three cases, the system approaches bifurcation points slowly. In other cases, the bifurcation occurs suddenly because of a significant shift in the parameter or state. Thus critical slowing down indicators cannot predict the bifurcation points in other cases.

REFERENCES

My B.Sc and M.Sc thesis supervisor: Dr. Sajad Jafari
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Amirkabir University of Technology, Tehran, Iran

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