THE UNIVERSITY OF ARIZONA
College of Engineering

Aerospace and Mechanical Engineering Seminar

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Engineering Practice Evolution: a 60 year Span [-40y, +20y]

Abstract: Engineering practice, numerical methods and computer technology are always intertwined. Long gone are the days of manual and simple calculations using closed-form formulas to predict the behavior of a physical system. Computers have changed the landscape of engineering in a unique way. This presentation is about how engineering practice has evolved due to the improvements in numerical methods to solve physics problems, in conjunction with the improvements in computer technology, i.e., speed and memory, in the past 40 years. We will start from the early part of the 20th century but quickly transition to the 80's and beyond with the purpose of exposing the symbiotic relationship between numerical methods and computer power. We then present a prediction of what awaits ahead in the next 20 years, certainly a dynamic, ever changing, fast, and complex panorama in the engineering profession. New developments in technology will continue the support of new methods and algorithms to solve the problems of our future. The presentation aims to be a pleasant remembrance for junior and senior professors, while a lesson of history combined with advices for young students.

Bio: Dr. Ciro Soto is currently a technical supervisor in Ford Research and Advanced Engineering, in the Propulsion System and Analysis Department. He leads the Propulsion Concept Analysis and Optimization team. He finished his engineering bachelor studies in 1982 and his MS studies in 1989, both in Venezuela. He then finished his doctoral studies in 1993 in Mechanical Engineering at Michigan State University. He has been working in Ford Motor Company since 1994 in CAE analysis and design optimization, computer tools and method developments, with applications in NVH, crashworthiness, hybrid electric vehicle power-trains, battery electric vehicles, and lately in autonomous vehicles and machine learning modeling for automotive applications. From 2009 to 2020 he joined the Electrical and Computer Engineering department in the University of Michigan-Dearborn as a Lecturer to teach the graduate course titled Electrical Aspects of Hybrid Electric Vehicles. He has 50 technical publications, numerous industry internal reports, and multiple presentations in technical conferences.
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Thursday, April 8th at 4:00 P.M.
Zoom Link: Email eperumala@arizona.edu