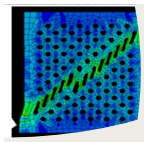
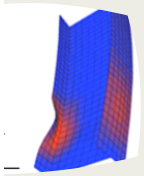
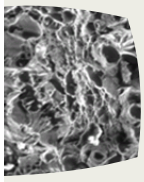




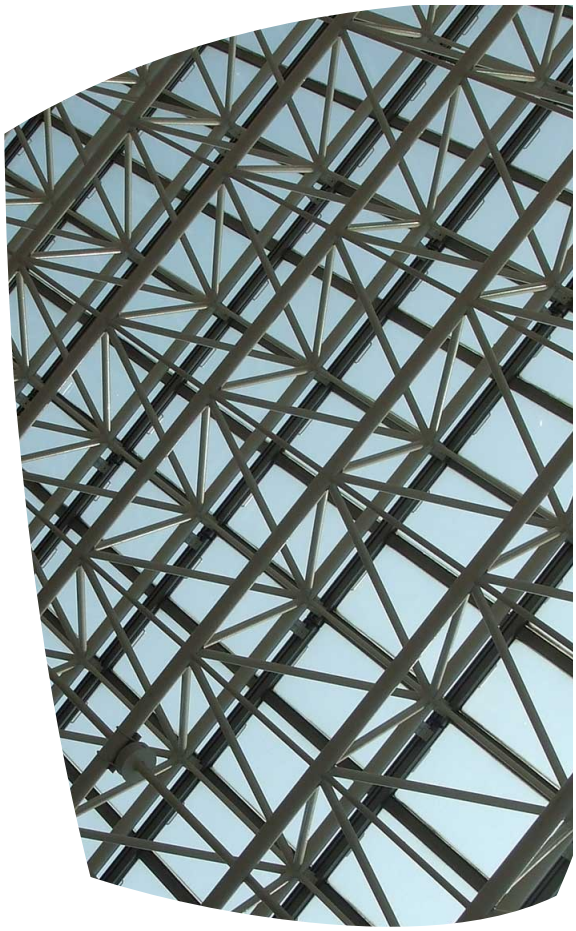


UCI Samueli School of Engineering | Department of Civil and Environmental Engineering

Presented By:
Amit Kanvinde, Ph.D.
Professor & Chair
Civil & Environmental Engineering
University of California, Davis

Civil Engineering *Seminar Series*

Thursday, February 25th, 2016
MDEA
2:00PM - 3:00PM



Role Of Nonlinear Analysis & Damage Mechanics In The Seismic Design Of Steel Structures

Finite Element (FE) simulation, in conjunction with nonlinear structural analysis is increasingly used by structural engineers to characterize the performance of structural components and systems. However, interpreting the results (i.e., limiting values of stress and strain demands) of these FE simulations is not straightforward, especially when they are used to assess fracture safety. This is even more challenging for seismic design of structures where traditional fracture mechanics is unreliable where components are designed to undergo large-scale yielding. The talk will summarize recent developments in applications of nonlinear analysis to seismic design and research on continuum-based fracture mechanics, which can reliably assess fracture under these conditions. Applications of these approaches to recent engineering applications and research projects will be presented, along with a discussion of their limitations.

Amit Kanvinde is interested in the seismic response and design of steel structures, with an emphasis understanding and simulating extreme limit states, such as fracture, fatigue, and collapse. His research combines large and small-scale experiments with model-based simulation to develop a more fundamental understanding of the response of structural systems. His ongoing projects include the seismic performance of steel column connections, fracture and fatigue in ageing cast iron pipes and the development of continuum models for low-triaxiality fracture and fatigue in steel. Some of Professor Kanvinde's recent projects have addressed ultra-low cycle fatigue in steel structures, inelastic buckling and fracture of cyclically loaded steel braces and strength and ductility/earthquake induced fracture in the connections of eccentrically braced frames. Professor Kanvinde received the 2008 Norman Medal presented by the American Society of Civil Engineers. He is currently Professor and Chair at the Department of Civil and Environmental Engineering, at the University of California, Davis.