

MAE Graduate Seminar

Application of CAE Methods for Solving Next-GEN Technology Challenges

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QuEST Global has been providing advanced engineering services utilizing CAE tools for advanced aerodynamic design, heat transfer, structural analysis and custom software development for many major OEMs. Major focus has been for advanced aero design, analysis and performance improvements in systems and components related to next generation aircraft engines, power generation equipment, oil & gas exploration technology and automotive industry. Some unique and selective examples of complex engineering case studies that utilize application of advanced 3D CFD and Heat Transfer methods to meet specific performance goals across the industry domains listed above will be presented and discussed during this seminar. Effect of flow unsteadiness between components on performance and importance of coupling appropriate flow physics to improve modeling accuracy will be quantified for some real world, challenging engineering applications, like next generation aircraft engines, automotive and energy industry. The intent of the presentation is also to provide an insight into some unique technological challenges and opportunities that exist for young engineers to be involved and become future leaders.

Biography:

Dr. Mani Subramanian serves in the key role of global technology development to expand Aero & Fluid Systems (AFS) capabilities across all of QuEST Global vertical and service domains.

Mani has over 30 years of aerospace and mechanical engineering experience related to his job functions. Some of his key accomplishments were in developing and applying advanced 3D analytical methods for the design and performance improvements in aircraft gas turbine engines and high-speed propulsion systems including planetary entry/reentry applications.

Prior to joining QuEST, Mani served as President and CEO of ASE Technologies, Inc., in Cincinnati, Ohio and had been in this position since the company was started in 1993. Before starting ASE Technologies, Mani worked at GE Aviation in Cincinnati, Ohio on hypersonic programs and turbine aerodynamic technology. Mani also worked for several years at Textron Lycoming in Stratford, Connecticut (now Honeywell Engine Systems, Phoenix, AZ).

In 1985, Mani spent one year at NASA Glenn Research Center in Cleveland, Ohio as an Industry Visiting Scientist. During this time Mani developed 3D CFD codes for the design and analysis of gas turbine components. As a graduate research assistant with Old Dominion University, Mani worked at NASA Langley Research Center in Hampton, Virginia on hypersonic flows as applicable to Jovian entry under radiative non-equilibrium conditions. Mani also worked as an aerospace engineer in the Aerodynamics Division at the Indian Space Research Organization (ISRO) in Trivandrum, India.

Mani holds a Bachelor of Engineering (with honors) in Mechanical Engineering from the University of Madras, India. Dr. Subramanian obtained both his MS and Ph. D. degrees in Mechanical Engineering from Old Dominion University, Norfolk, Virginia under the guidance of Eminent Prof. Surendra Tiwari. Mani has authored and co-authored several technical papers on subjects related to gas turbine engines, propulsion, CFD, turbomachinery flows, hypersonic reacting flows and radiative heat transfer.