Exponent
Failure Analysis Associates®

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Kaveh Hosseini, Ph.D., P.E.
Senior Engineer

Professional Profile

Dr. Kaveh Hosseini is a Senior Engineer in Exponent's Thermal Sciences practice. He specializes in aerospace and mechanical engineering. His responsibilities include the investigation of fire cause and origin, aviation accidents, consumer product failures, smoldering combustion, dermal injury hazards from consumer appliances, and the investigation of explosions in commercial refrigeration plants. Specializing in Computational Fluid Dynamics (CFD), he uses CD-adapco's STAR-CCM+ for complex multi-physics simulations, as well as the National Institute of Standards and Technology's FDS (Fire Dynamics Simulator) for the simulation of fires and fire-driven flows. His background also includes numerical analysis, aircraft propulsion, rocket propulsion, aircraft design, combustion, thermodynamics, heat transfer, parallel computing, business administration, 3D modeling, and photogrammetry.

Prior to joining Exponent, Dr. Hosseini was a Research Assistant in Stanford University's Aerospace Computing Laboratory, where his research focused on developing advanced algorithms for the Department of Energy's Advanced Simulation and Computing project enabling massively parallel fluid dynamics simulations. As part of his graduate work he was a Teaching Assistant for graduate-level classes in numerical analysis for CFD, aircraft propulsion, and rocket propulsion. He was also involved in a hybrid rocket project where he designed a controller for an experimental engine. Before joining Stanford, he worked on various internal combustion rotary engine projects in Toulouse, France. His responsibilities included writing engine simulation programs, designing laboratory model combustion chambers, conducting laser-Doppler velocimetry and interferometric photography of flame fronts.

Academic Credentials and Professional Honors

Ph.D., Aeronautics and Astronautics, Stanford University, 2005
M.S., Aeronautics and Astronautics, Stanford University, 1998
Business Administration Degree, Diplôme d'Etudes Supérieures Spécialisées – Certificat d'Aptitude à l'Administration des Entreprises, Institut d'Administration des Entreprises, France, 1997
Diplôme d'Ingénieur, Mechanical and Aeronautical Engineering, Ecole Nationale Supérieure de Mécanique et d'Aérotechnique, France, 1996

American Institute of Aeronautics and Astronautics Outstanding Teaching Assistant of the year (1998–1999); French Ministry of Education's Graduate Fellowship

Licenses and Certifications

Registered Professional Mechanical Engineer, California, #M35349

Fire Investigation: Cause and Origin (1A), State of California, Office of the State Fire Marshal; Hazardous Waste Operations and Emergency Response Training (Per Cal-OSHA GISO 5192 and 29 CFR 1910.120); Confined Space Entry Training; Private Pilot (French and U.S. licenses); Open Water SCUBA Diving Certificate by PADI

Languages

French, Persian

Publications and Presentations

Kim S, Hosseini K, Leoviriyakit K, Jameson A. Enhancement of a class of adjoint design methods via optimization of parameters. AIAA Journal 2010 Jun; 48(6):1072–1076.

Hosseini K. Practical implementation of robust preconditioners for optimized multistage flow solvers. Ph.D. Thesis, Stanford University, June 2005.

Kim S, Hosseini K, Jameson A. Enhancement of adjoint design methods via optimization of adjoint parameters. Proceedings, 43rd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2005.

Hosseini K, Alonso JJ. Practical implementation and improvement of preconditioning methods for explicit multistage flow solvers. Proceedings, 42nd Aerospace Sciences Meeting and Exhibit, Reno, NV, January 2004.

Hosseini K, Alonso JJ. Optimization of multistage coefficients for explicit multigrid flow solvers. Proceedings, 16th AIAA Computational Fluid Dynamics Conference, Orlando, FL, June 2003.

Professional Affiliations

- AIAA – American Institute of Aeronautics and Astronautics (member)
- NFPA – National Fire Protection Association (member)
- AOPA – Aircraft Owners and Pilots Association (member)