Raymond K. Yee, Ph.D., P.E.

Professor
Mechanical Engineering Department
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SUMMARY

A strong background in mechanical design, reliability and safety evaluations with broad skills & knowledge in machine design, fracture and fatigue evaluation, and finite element analysis & simulation. Over ten (10) years of industrial and research experience in Silicon Valley and fifteen (15) years of academic teaching with six (6) years of academic leadership experience as Associate Chair and ME Program Director. By virtue of education and experience, equally adept in management, teaching, engineering design, applied research, and expert witness testimony services.

EDUCATION

1990 Ph.D., Mechanical Engineering, University of California, Berkeley, California.
Dissertation: *Shear Localization and Ductile Fracture in Metal Cutting*

1981 M.S., Mechanical Engineering, University of California, Berkeley, California.
Master's Research Project: *Fracture Behavior in Mode II Fatigue Cyclic Loading*

1980 B.S., Mechanical Engineering, California Polytechnic State University, San Luis Obispo, California (Graduated with Highest Honors).

PROFESSIONAL CREDENTIAL

- Registered Professional Engineer (P.E. in Mechanical Engineering), State of California (Since 1993)

ADMINISTRATIVE and TEACHING EXPERIENCES

2012 – Present **Professor and Director of ME Program** San Jose State University, San Jose
Director of Product Design Laboratory

- In the Mechanical Engineering Department, teach undergraduate and graduate courses, conduct research, and supervise graduate students. Serve as the Chair of the ME Forward Task Force. Served as ME Program Director (2012-2013) responsible for curriculum development and delivery, class scheduling, part-time faculty appointment, and approve student's major forms for graduation in the program.

2010 – 2011 **Professor** San Jose State University, San Jose, California
Director of Product Design Laboratory

- In the Mechanical & Aerospace Engineering Department, teach undergraduate and graduate courses, conduct research, serve as ABET Coordinator and various committees in the department and college, supervise graduate students on research projects, and provide academic advising to students.

2006 – 2010 **Department Associate Chair & Professor** San Jose State University, San Jose, California

Director of Product Design Laboratory

- In the Mechanical & Aerospace Engineering Department, worked closely with the Department Chair on various leadership roles and administrative assignments such as on Department budget and operation, Chair of the U/G Academic Advising Team, representative to the College of Engineering Council of Chair meetings/retreats, faculty recruitment justification, P/T faculty appointment, staff hiring, semester class scheduling, freshmen/transfer students advising, new graduate student information forum, and also acted as Chair to run Department business when the Chair absent. As a faculty, teach undergraduate and graduate courses, supervise graduate students on theses/projects, conduct research, and provide academic advising to students.

2000 – 2006 **Associate Professor** San Jose State University, San Jose, California

Director of Product Design Laboratory

- In the Mechanical & Aerospace Engineering Department, teach undergraduate and graduate courses, conduct research and laboratory development, serve in various committees on campus, supervise graduate students on thesis and research, and provide academic advising to students.

1997 - 2000 **Adjunct Professor for Engineering Transfer Program** Laney College, Oakland, California

- In the Math and Science Division, developed and taught an undergraduate "Engineering Mechanics – Statics" course, supervised teaching aids, and advised students on engineering transfer issues. (Part-time position)

1985 - 1987 **Teaching Associate** University of California, Berkeley, California

- In the Mechanical Engineering Department, conducted discussions and some lectures for the graduate courses -- "Fracture of Engineering Materials" and "Mechanical Behavior of Engineering Materials." (TA half-time position)

PRIOR PROFESSIONAL & RESEARCH EXPERIENCE

1993 - 2000 **Senior Research/Consulting Engineer** Aptech Engineering Services, Inc. Sunnyvale, California.

- Coordinate and manage engineering projects. Prepare and develop engineering proposals.
- Perform finite element structural analysis, stress, thermal, fracture and fatigue analyses & fitness-for-service evaluations. Use ABAQUS and COSMOS/M finite element codes for engineering design analysis and research. Conduct applied research in Structural Mechanics area. Provide litigation support and expert witness testimony services.
- Participate in the development of firm's fitness-for-service assessment methodology.

1990 - 1993 **Senior Engineer** Anamet Laboratories, Inc., Hayward, California.

- For applied mechanics group, conducted research in:
  - fatigue crack growth retardation in aluminum alloys

- composite materials containing conductive polymers and fillers
- predicting the nonlinear flutter in supersonic/hypersonic vehicles

- Performed finite element structural analyses, fatigue, and fracture analyses using fracture mechanics principles for variety of engineering structures.
- Prepared and assisted with the development of firm's research and engineering proposals. Acted as technical lead in many projects.

1985 Summer **Summer Graduate Research Student** Lawrence Livermore National Laboratory, Livermore, California

- Conducted research and performed design in the Precision Metal Cutting Group, developed a precision micro-force dynamometer for measuring forces during precision metal cutting.

1980-1984 **Member of the Technical Staff** AT&T Bell Laboratories, Naperville, Illinois

- For the Thin Film Technology Group, performed research & development and engineering analysis to determine the mechanical integrity of electronic chip packages, accomplished thermal, stress and failure analysis using finite element codes.
- Supervised technical assistants. Provided management with a Business Case Study on Multilayer Polymer Technology. Acted as Group Supervisor when Supervisor absent. Selected for AT&T's One-Year-On-Campus Graduate Study Program (1981).

HONORS & AWARDS

- "*Professor of the Year*" Awards from the Pi Tau Sigma Mechanical Engineering Honor Society at San Jose State University (in 2001, 2002, 2009)
- College of Engineering Teaching Excellence Summer Fellowship (2001)
- California State University Research Fund Mini-Grant (2001)
- ` Applied Materials Award for Excellence in Teaching (2004)
- *Who's Who in Science & Engineering* (1994 & 2006)
- *Who's Who in America (2006)*
- University Provost's Assessment Award (2007)
- University Provost's Assessment Award (2008)
- University Provost's Assessment Award (2009)
- AT&T Bell Laboratories Graduate Study Fellow
- Tau Beta Pi National Engineering Honor Society

RESEARCH INTERESTS

- Finite Element Simulation & Analysis
- Mechanical Design
- Fracture Mechanics & Life Prediction
- Product Design Methodology
- Mechanical Behavior of Materials

COURSES DEVELOPED/TAUGHT

Graduate Courses:

- Product Design & Development (ME 297)
- Applied Stress Analysis (ME 260)
- Precision Machine Design (ME 250)
- Computer-Aided Mechanical Engineering Design (ME 265)
- AE and ME Master's Project/Thesis (AE/ME 295A/B & 299)

Undergraduate Courses:

- Mechanical Engineering Design: Synthesis and Analysis (ME 154)
- Mechanical Systems Design (ME 157)
- Senior Design Project I and II (ME 195A/B)
- Engineering Mechanics (Engr 35 at Laney College campus)

PROFESSIONAL MEMBERSHIP & ACTIVITIES

- Committee Member of the American Society of Mechanical Engineers and American Petroleum Institute (ASME/API) Joint Fitness-for-Service Standard Committee
- Member of the American Society of Mechanical Engineers (ASME)
- Member of the American Society for Engineering Education (ASEE) - not in current AY
- Grand Award Judge for the 2001 Intel International Science and Engineering Fair in San Jose

REPRESENTATIVE SERVICES TO THE MAE DEPARTMENT and THE COLLEGE of ENGINEERING AT SAN JOSE STATE UNIVERSITY

- Director of the ME Program
- Chair of the Academic Advising Team for undergraduate students in the MAE Department
- Chair of the MAE Department Assessment Committee
- Chair of the ME Program Subcommittee
- ABET Coordinator in the MAE Department
- Coordinator for the FE/EIT Exam Review
- Member of the Undergraduate Study Committee in the MAE Department
- Member of the Curriculum & Graduate Studies Committee in the MAE Department
- Member of the Scholarship Award Committee in the MAE Department
- Member of the MAE Department RTP Committee
- Member of the MAE Department Faculty Recruitment Committee
- Member of the MAE Department Faculty Hearing Panel
- Faculty Advisor for the Tau Beta Pi Engineering Honor Society
- Faculty Advisor for the AFE Student Chapter S18
- Chair of the COE Sabbatical Leave Committee
- Member of the COE RTP Committee

- Member of the Undergraduate Curriculum Committee in the COE
- Member of the Assessment Committee in the COE
- Member of the University General Education Advisory Panel (GEAP) Committee on Critical Thinking

RECENT PUBLICATIONS

Research and Innovative Design of a Zero-Emissions Vehicle by Multidisciplinary Student Teams in Multi-Years, Proceedings of the IEEE Green Energy and Systems Conference, Long Beach, CA, November 25, 2013 (Paper submitted for the Conference).

Design of Zero-Emissions Vehicles by Multidisciplinary Student Teams in Multi-Years – A Model for Engineering Design Education, Proceedings of the ASME 2010 International Design Engineering Technical Conferences (IDETC), Montreal, Quebec, CANADA, August 15-18, 2010.

Three Dimensional Finite Element Analysis of Weld Overlay Application on a Plastically Formed Feeder Tube, Proceedings of the 34th Annual Conference of the Canadian Nuclear Society and the Canadian Nuclear Association, Montreal, QC, CANADA, May 24-27, 2010.

Weld Overlay Size Sensitivity on Residual Stresses in a Welded Pipe, Proceedings of the ASME Pressure Vessels and Piping Division Conference, Chicago Illinois, July 27-31, 2008.

A Finite Element Study of Geometric Modifications to Reduce Thermal Mismatch Curvature in Wafer Bonding, the ASME International Mechanical Engineering Congress & Exposition Conference, Seattle Washington, November 11-15, 2007.

Parametric Study of Circular Micro Flexure Hinge Design, the ASME International Mechanical Engineering Congress & Exposition Conference, Chicago, Illinois, November 5-10, 2006.

A Structural Integrity Assessment Methodology for Pressurized Vessels, Transactions of the ASME Journal of Pressure Vessel Technology, Volume 127, No. 4, November 2005.

Computational Simulation on Thermal Aspect of Micro-Fabrication Process for MEMS Device, the ASME International Mechanical Engineering Congress & Exposition Conference, Orlando Florida, November 5-11, 2005.

Spreadsheet-based Design Tool for the Analysis of Thermal Shock, the ASME Summer Heat Transfer Conference, San Francisco, California, July 18, 2005.

Structural and Thermal Analyses of Pressure Vessel Bottom Head with Penetration Holes, the ASME Pressure Vessel and Piping Conference, Denver Colorado, July 21, 2005.

An Innovative Laser Heating Methodology Study for Crack Growth Retardation in Aircraft Structures, International Journal of Fatigue, Volume 27, January 2005.

A Monolithic Micro Four-Bar Mechanism with Flexure Hinges, the ASME International Mechanical Engineering Congress and Exposition Conference, Anaheim, California, November 13-19, 2004.

Application of Finite Volume Method for Solid Mechanics, the ASME International Mechanical Engineering Congress and R&D Expo Conference, Washington D.C., November 15-21, 2003.

Fitness-for-Service and Remaining Useful Life Assessment of a Pressurized Vessel, the ASME Pressure Vessel and Piping Conference in Cleveland, Ohio, July 2003.

Structural Behavior of Storage Rack Design Under Earthquake Ground Motion, the Disaster Resistant California Conference 2003 in San Jose, California, April, 2003.

Significance of Mechanical Design Laboratory on Student Projects, A Preliminary Study, the American Society for Engineering Education (ASEE) Annual Conference in Montreal, CANADA, June 2002.

The Benefits of Engineering Design Projects for Engineering Curriculum, presented at the ASEE/Pacific Southwest (PSW) Section Conference in Fresno, California, April, 2002 (published in Conference Proceedings in "Creative Concepts in Engineering Instruction" session).

Prediction of High Energy Piping Creep Relaxation, Transaction of the ASME Journal of Pressure Vessel Technology, Vol. 122, No. 4, November 2000, pp 488-493.

Engineering Evaluation of Column Continuity Plate Detail Design and Welding Issues in Seismic Moment Resisting Frame Connections, presented at the International Conference on Welded Construction in Seismic Areas in Maui, Hawaii, October 1998.

TEXTBOOK/MANUSCRIPT REVIEW

Wiley Publishing Company book reviewer for the 4th edition of the mechanical design textbook titled Fundamentals of Machine Component Design by Robert Juvinall and Kurt Marshek.

Prentice Hall Publishing Company book reviewer for the 4th edition of the mechanical design textbook titled Machine Design, An Integrated Approach by Robert L. Norton.

ASME/API FITNESS-OF-SERVICE JOINT STANDARD

Served in the ASME Fitness-for-Service Committee at the national level and contributed to the development of the *ASME/API Fitness-of-Service Joint Standard* document for pressure equipment (such as energy processing pressure vessels) used in all industries worldwide. The Standard was released in 2007. The Standard consists of several hundred pages in volume and has 12 Parts, and it provides national impact to the engineering community. This document has become an invaluable resource for practitioners to assess equipment safety in engineering.

PARTIAL LIST OF GRADUATE STUDENT SUPERVISION AS COMMITTEE CHAIR

No,	Students	MS Thesis/Project Title
1	Hok Chan	Structural Optimization of the Hybrid Human Powered Vehicle
2	Igor Markovsky	Design & Analysis of Wafer Gripper Aligner
3	Brandon Munis	Springback Characteristics in Composite Structures
4	Srikanth Racherla	Finite Element Simulation of Micro-Machined PVD Metal Beam
5	Anh Do	A Dual Axis Rotation Test Support Stand for the Pointing Control Mechanism
6	Chun Chol Sin	Mechanical/Physical Design of Personal Computer for Disassembly & Recycling
7	David Martin	Flame Combustion Display Design
8	Jimmy Ma	Design and Analysis of Compliant Mechanisms

9	Gilbert Chung	The Effects of Explosive's Location and Mass on Dynamic Structural Behavior of Building Beam Connection
10	Sarin Shrestha	Design Methodology for Flexure Hinge in a Monolithic Micro Mechanism
11	Aparna Chintapalli	Weld Overlay Size Sensitivity on Residual Stresses in a Welded Pipe
12	Sandeep Kadam	Feasibility Study of Application of Virtual Reality Technology to Mechanical Design
13	Jeff Bull	Development of Spreadsheet Based Design Tools for the Analysis of Thermal Shock
14	Wenyu Wu	Thermal and Structural Stress Analysis of Spherical Shell with Penetration Holes
15	Gabriel Chan	Thermal Residual Stresses in MEMS by Micro-fabrication
16	Brian Cheung	Dynamic Structural Behavior of Building Beam Connections Under Explosive Conditions
17	Kuldeep Singh	Evaluation of Laser Heating Process for Aircraft Life Extension by FEM Simulation and Experiments
18	Barbara Fischer	Design of the Telescope Structure for the HMI Instrument
19	Danny Chan	Storage Rack Design Analysis under Earthquake Condition
20	Bryce Fowler	Modeling Incompressible Solid Materials Using Finite Volume Methods
21	Tilak Mysore	Physical/Mechanical Design of Cell Phones for Disassembly and Recycling
22	Sangita Roy	Evaluation the Effects of Local Flexibility at the Built-in End of Cantilever Beam in Compliant Mechanism on Fatigue Characteristics
23	Dave Bosko	Methodology for Simulating Residual Stress Distribution in Steel due to Multi-pass Welding Process
24	Serey Kim	Equipment/System/Product Design Methodologies and Applications
25	Balwinder Singh	Mechanical Design of Fixture to Perform Accelerated Life Tests
26	Francis Ku	3D Finite Element Analysis Methododology Development of Welding Process on a Plastically Formed Elbow
27	David Aziz	Reduction in Energy Consumption Through Development of High Performance Lighting
28	Enrique Bibat	Mechanical Reliability of a Dental Implant
29	Sanandeep Bedi	Case Study for an Optimized CAD/CAM System for a Closed Die Forging Process
30	Ravi Parmar	An Evaluation of Mechanical Integrity and Sustainability of an Osseointegrated Dental Implant under Dynamic Impact Loading
31	Landon Allen	Variable Camshaft Design
32	Krishna Nelluri	An Impact Attenuator Design for Formula SAE Car
33	Srinivas Karnati	Electric Power Requirement for a Gasoline Scooter Retrofit
34	Hwan Lee	Development of Flexure Mechanism for Centering Silicon Wafers
35	Khoa Ton	Enclosure Design for a Three Wheel Electric Scooter Trike III
36	Lisa Serventi	A Novel Medical Device Design foa Tendon Release During Contracture

37	Daniel Aldama	Computational Model to Predict Wear in Total Knee Replacement
38	Richard Ling	Suspension System Design for a 3-Wheel Electric Scooter
39	Wai Kun Lai	Analysis of Dynamic Stability of TC-III 3-Wheel Electric Scooter
40	Lam Duong	Drive-train Design and Integration for an electric 3-Wheel scooter
41	Hans Tuft	Design of a Piezoelectric Energy Harvesting Device for Automotive Suspension-based on-board Power Generation
42	Robert Jones	Prediction of Residual Stress and Distortion in Heat Treated and Machined Aluminum 6061 and 7075