

## NAME NAME

555 LAKE DR. APT 555, HASLETT, MI 48840  
(517) 555-5555 ♦ EMAIL@MSU.EDU

## PROFILE

Engineer with four years of experience in research, numerical modeling and simulation software development. Creative, prolific, and results-oriented, with positive attitude and all the willingness to discover, to grow, and to serve. Interested in the product management position in Moscow and intending to make a positive contribution to Google by utilizing my experience and research skills.

## EDUCATION

- Ph.D., Mechanical Engineering, Michigan State University** **May 2009 (expected)**  
**Dissertation Title:** Numerical Models for the Assessment of the Cylinder-kit Performance of Four-Stroke Internal Combustion Engines
- Certificate in Automotive Product Development Management, SAE/Oakland University** **January 2009**
- M.Sc., Mechanical Engineering, Michigan State University** **May 2006**  
**Thesis Title:** Piston Design and Analysis: Parameterized and Complete Finite Element Analysis Approach for the Assessment of Piston Performance
- B.Sc., Mechanical Engineering, University of Vermont** **May 2004**  
**Senior Project Title:** Hot Wire Anemometry: A Hands-on Experience for the Mechanical Engineering Student
- Higher National Diploma, Mechanical Engineering, Higher Technical Institute, Cyprus** **June 2000**  
**Diploma Project Title:** A Multimedia Interactive Courseware Package on Internal Combustion Engines

## COMPUTER SKILLS

**Operating Systems:** Windows, Unix, Linux  
**Programming Skills:** FORTRAN, MatLab, HTML, PHP  
**Other Skills:** WordPress, HyperMesh, HyperView, TSV-PRE/POST, SolidWorks, Nastran, COSMOS DesignStar, Ricardo WAVE, Fluent, Labview, CASE, PIPEAD, Mathematica

## INDUSTRIAL EXPERIENCE

- Intern CAE Engineer, Ford Motor Company, Dearborn, Michigan** June 2008 – August 2008
- Worked in the Large Gas and Diesel Engine Engineering – Analytical Powertrain department and was involved in OEM procedures in engine bottom end (crankshaft, connecting rod, piston, rings) design and durability analysis.
  - Participated in meetings where key decisions were made in cylinder-kit development based on performance, reliability, cost, and customer satisfaction.
  - Collaborated with the on-site engineers to assess the ring-pack performance of a newly developed 2.0L GDI engine by using a 2.0L PFI production engine as a baseline.
- Intern R&D Engineer, Mid Michigan Research (MMR), LLC, Okemos, Michigan** Jan. – May 2008, Sep. 2008 – Dec. 2008
- Worked with and counseled engine manufacturers on the performance of their engine power cylinders. These include Ford Motor Company, Cummins, and NASCAR Bill Davis Racing.
  - Active member of an international team involved with heavy duty diesel cylinder-kit modeling.
  - Developed a progressive wear numerical model in FORTRAN, an add-on for MMR's RING (piston rings analysis tool). It has been used to investigate progressive wear on the rings and ring-grooves of Cummins heavy duty diesel engines.
  - Studied the ring-pack blow-by and 3D ring-bore conformability of a Ford 6.2L gasoline engine. Used RING to model the engine and tuned it to match the numerical results with experimental data.
  - Performed an elastohydrodynamic analysis of a high speed NASCAR engine piston. Identified the high stress areas and failure locations due to the cyclic combustive, thermal and inertial loads.

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**RESEARCH EXPERIENCE**

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- Research Assistant**, Automotive Research Experiment Station, Michigan State University May 2005 - Present
- Developed simulation software and their graphical user interfaces (GUI) for piston and piston ring dynamics simulations. These were developed in FORTRAN and MatLab.
  - Built a finite element analysis model tailored for the thermal and structural analyses of pistons. It takes the meshed piston geometry (HyperMesh) and returns its temperature and deformation distributions and the skirt compliance required to perform an elastohydrodynamic lubrication analysis.
  - Proposed and developed a piston elastohydrodynamic lubrication analysis model that considers translation along the wrist-pin and second land interactions with the cylinder bore. Showed that translation along the wrist-pin becomes important when predicting piston wear in gasoline engines running new generation pistons.
  - Initiated the development and implementation of a pseudo-adaptive response surface method for the optimization of piston skirt profiles. It is intended to be used in conjunction with computationally-intensive piston elastohydrodynamic lubrication analysis tools. Studied the impacts the skirt profile has on engine noise and friction losses at the skirt-cylinder interface.
  - Counseled and aided Mid Michigan Research, LLC, in the development of PISTON (piston elastohydrodynamic lubrication analysis tool), a module of the Cylinder-kit Analysis System for Engines (CASE).
  - Currently working on the development of a coupled ring dynamics and gas dynamics numerical model intended to investigate the ring-pack dynamics and blow-by.

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**TEACHING EXPERIENCE**

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- Guest Lecturer** for Automotive Engines course, Michigan State University, Fall 2007, Fall 2008
- Conducted a lecture on the challenges faced and the avenues followed by a research engineer in modeling the piston dynamics problem.
- Graduate Assistant** for Automotive Engines and Deformable Solids courses, Michigan State University Fall 2004, Spring 2005
- Led students to think and solve engineering problems during regular help sessions; assessed and evaluated student learning outcomes.

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**SEMINARS ATTENDED**

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- Managing Integrated Product Development, SAE Seminar, Troy, Michigan, Jan. 12-13, 2009
- Fundamentals of Metal Fatigue Analysis, SAE Seminar, Troy, Michigan, Dec. 10-12, 2008
- Automotive Product Lifecycle Management, SAE Seminar, Troy, Michigan, Dec. 8-9, 2008
- Program and Risk Management, SAE Seminar, Troy, Michigan, Nov. 3-4, 2008
- Leading High Performance Teams, SAE Seminar, Troy, Michigan, Oct. 21-22, 2008
- TSV-PRE/POST, Upwind Technology, Inc., Southfield, Michigan, Aug. 4, 2008
- Piston Ring Design/Materials, SAE Seminar, Troy, Michigan, May 15-16, 2008
- HyperMesh and HyperView for FEA Pre and Post-Processing, Altair Engineering, Inc., Troy, Michigan, Dec. 17-19, 2007
- Finite Element Analysis for Design Engineers - Hands-on FEA Workshop, SAE Seminar, Troy, Michigan, Jan. 22-23, 2007
- Global Issues – Global Solutions, Fulbright Enrichment Seminar, Washington DC, Mar. 2003
- Statistical Process Control, Higher Technical Institute, Nicosia, Cyprus, May 10-12, 1999

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**PROFFESIONAL SERVICE**

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- Technical Session Co-chair**, ASME Internal Combustion Engine Division Spring Technical Conference, 2008, 2009
- Administered the review process of technical papers in the area of Engine Lubrication, Friction, and Component Design. This involved: (i) assigning reviewers and assisting them in keeping to the publication schedule, (ii) determining acceptance of papers, once all review comments have been submitted, (iii) approving the author's final draft of the paper.
- Member of the Advisory Committee**, Department of Mechanical Engineering, Michigan State University, 2008
- Sole graduate student member, along with four faculty members. Counseled the Department Chairperson on major policy decisions affecting department personnel and the programs of the Department.

### Technical Paper Reviewer

- Reviewed and assessed the quality for publication of technical papers based on my expertise in internal combustion engine modeling. These papers were presented at: (i) SAE World Congress, 2008, 2009, (ii) ASME International Mechanical Engineering Congress and Exposition, 2007, (iii) ASME Internal Combustion Engine Division Fall Technical Conference, 2007, (iv) ASME Internal Combustion Engine Division Spring Technical Conference, 2008, 2009.

### PUBLICATIONS AND CONFERENCE PRESENTATIONS

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- .2008, “On the Optimization of Piston Skirt Profiles using a Pseudo-Adaptive Response Surface Method”, Structural and Multidisciplinary Optimization, DOI: 10.1007/s00158-008-0295-7
- 2008, “On the Approximation of the Integral of the Asperity Height Distribution for the Greenwood-Tripp Asperity Contact Model,” Proc. IMechE, Part J: J. Engineering Tribology, Vol 222(J2), 165-169
- 2008, “Avenues for Predicting Piston Wear: Employing 2D and 3D Numerical Piston Dynamics Models”, SAE Paper 2008-01-1044 (presented at SAE 2008 World Congress, Detroit, Michigan, April 14-17, 2008)
- 2007, “Investigations on Piston Secondary Dynamics: A Model that Considers Translation Along the Wrist-Pin and Second Land Interactions with the Cylinder Bore,” ASME Proceedings of IMECE2007, Paper No. IMECE2007-41264 (presented at 2007 ASME International Mechanical Engineering Congress and Exposition, Seattle, Washington, November 11-15, 2007)
- 2006, “Piston Finite Element Modeling for the Estimation of Hydrodynamic and Contact Forces and Moments,” ASME Proceedings of ICEF2006, Paper No. ICEF2006-1587 (presented at ASME Internal Combustion Engine Division 2006 Fall Technical Conference, Sacramento, California, November 5-8, 2006)
- 2006, “Parameterization and FEA Approach for the Assessment of Piston Characteristics,” SAE Paper 2006-01-429 (presented at SAE 2006 World Congress, Detroit, Michigan, April 2-6, 2006)
- “The Costs of Downforce: the Effects of Angle of Attack of the Rear Wing of a Formula 1 Car on Downforce and Drag,” Old Guard Oral Competition, ASME Regional Student Competition 2004, Region I, University of Vermont, Burlington, Vermont, April 1-3, 2004 (*presentation only*)

### AFFILIATIONS

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- Member of the American Society of Mechanical Engineers (ASME)
- Member of the ASME Internal Combustion Engine Division (ICED) Board of Associates
- Member of the Society of Automotive Engineers (SAE)

### RESEARCH INTERESTS

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- Simulation software development
- Integration of computer systems to aid engineering processes in the leap for a greener future
- Finite element and optimization methods and computational fluid dynamics
- Internal combustion engine modeling and design: piston and piston ring dynamics and tribology

### HONORS/AWARDS

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- Research Assistantship, Michigan State University, 2004-2009
- Fulbright Scholar, 2002-2004
- Outstanding Senior Award in Energy Engineering, University of Vermont, 2004

### LANGUAGE SKILLS

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- Fluent in English and Greek.
- Rudimentary in Russian.

### MILITARY EXPERIENCE

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#### Communications Battalion, Ministry of Defense, Cyprus

July 2000 – July 2002

- Ranked to sergeant.
- Managed the company’s guard shifts and personnel leave.
- Handled the company’s supply office; responsible for ordering and maintaining supplies.