

Shaikh Akhlaque-E-Rasul, PhD, PEng.

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ACHIEVEMENT:

- ✓ Winner of Canadian most prestigious scholarship, NSERC PDF, for the contributions in Computational Solid Mechanics
- ✓ German DAAD scholarship holder for the internship in Airbus, Germany
- ✓ Attended more than 10 international conferences in China, India, UK, Germany, Canada and USA
- ✓ Published more than 10 peer reviewed journal papers in the international journals
- ✓ Recently 6 patents have been filed and approved all over the world, USA, Canada, China, India, Japan, Russia, UK and Mexico.
- ✓ Received more than 0.3 million Canadian Dollars for the research works in the last few years
- ✓ Regular reviewer of “*Composites Science and Technology of Elsevier* and *Science and Engineering of Composite Materials*”

RESEARCH INTEREST AND TEACHABLE AREAS:

Under Graduate Courses: 2410-Statics, 2420-Elementary Mechanics of Materials, 3400-Dynamics I, 4410-Vibrations I: Theory and Laboratory, 5040-Finite Element Methods I, 5400-Dynamics II, 5410-Vibrations II, 5600-Advanced Mechanics of Materials, 5610-Experimental Mechanics of Materials, 5720- Mechanics of Composite Materials, Machine Drawing and Design and Mechanical Engineering Drawing.

Graduate Courses: 7610- Theory of Elasticity, 7720- Advanced Mechanics of Composite Materials, 8020- Crashworthiness and Occupant Protection in Transportation Systems, Structural Design of Composite, Buckling and Stability, Stress and Failure Analysis of Machinery, Bonded and Bolted Connections for Composite Structures, Computational Solid Mechanics Based on Classical and Higher Order Plate and Shell Theories, Materials in Design, Full-Scale Behavior and Failure of Composite Car Body-in-White, Nonlinear Finite Element Analysis, and System Reliability.

EDUCATION:

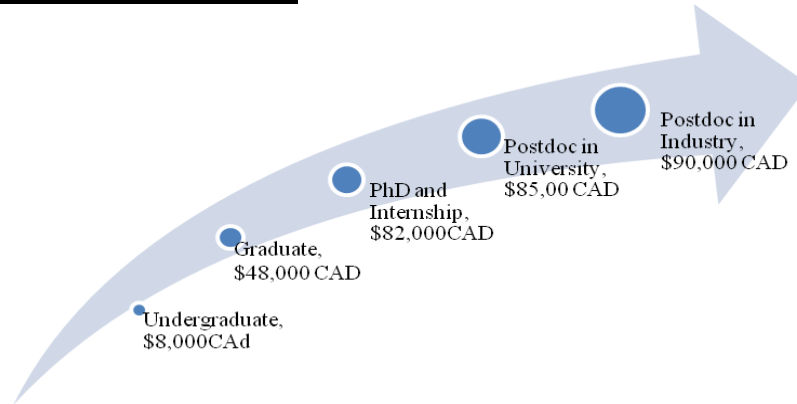
PhD, Mechanical Engineering, Concordia University, Canada, June 2011

- ✓ Worked on the composite shell structures to find out a novel type of shape that can save material without compromise with the strength.
- ✓ Developed a novel, robust method of Finite Element (FE) for non-linear analysis
- ✓ Developed new Finite Element (FE) for the analysis of shell structures
- ✓ Modeled damage analysis under compressive loads
- ✓ Published more than 14 scientific articles
- ✓ GPA 4.2

M. A. Sc., Mechanical Engineering, Concordia University, April 2005

- ✓ Worked on several projects to evaluate the mechanical properties of fiber reinforced composite structures.
- ✓ Published 6 scientific articles

RESEARCH FUNDS / AWARDS



- ✓ NSERC industrial research fund (Max 80,000 CAD)
- ✓ Industrial research fund, value of 5,500.
- ✓ Doctoral thesis completion award in Concordia University, value of 4,500.
- ✓ DAAD scholarship (Germany) and Internship in AIRBUS, value of 10,500.
- ✓ Concordia conference fund for several times, value of 10,000.
- ✓ NSERC research grant, value of \$30,000 for M.A.Sc program
- ✓ NSERC research grant, value of \$60,000 for Ph.D. program
- ✓ Quebec research grant, value of \$15,000
- ✓ Bangladesh State Scholarship for university study at abroad
- ✓ Received GOLD medal in national science faire in Bangladesh
- ✓ Received ‘Artist of the year’ award in college

TEACHING EXPERIENCE

I. Industrial R&D Projects

Feb 2012 – Sept 2012

Composite car Project, MAGNA, Detroit, USA

Teaching the Juniors Short Course on LSDYNA for the analysis of composite car

II. Post Doctoral Fellow

Jan 2011 – Jan 2012

Wayne State University, Detroit, USA (*total credit hours: 4*)

Fall 2011 (Wayne S U) Capstone Course (ME 4500/5500): co-supervisor

Fall 2011 (Wayne S U) Short Course on Composite Structure Analysis using LSDYNA

III. Teaching Assistant

Sep 2007 – Dec 2010

Concordia University, Montreal, Canada (*total credit hours: 21*)

Winter 2007 (Concordia) *MECH 313: Machine drawing and design (3 credits; under graduate level course).*

Winter 2008 (Concordia) *MECH 460 (ANSYS and CATIA): Finite element analysis (3 credits; under graduate level course).*

Fall 2008 (Concordia) *MECH 211 (AutoCAD): Mechanical engineering drawing (3 credits; under graduate level course).*

Winter 2009 (Concordia) *MECH 460 (ANSYS and CATIA): Finite element analysis (3 credits; under graduate level course).*

Fall 2009 (Concordia) *MECH 211 (AutoCAD): Mechanical engineering drawing (3 credits; under graduate level course).*

Winter 2010 (Concordia) *MECH 460 (ANSYS and CATIA): Finite element analysis (3 credits; under graduate level course).*

- Winter 2010 (Concordia) *MECH 313: Machine drawing and design (3 credits; under graduate level course).*
- Fall 2007 (Concordia) *MECH 6441: Stress and failure analysis of machinery (4 credits; Graduate level course).*
- Fall 2008 (Concordia) *MECH 6671: Finite element method in machine design (4 credits; Graduate level course).*

IV. Course Director (with full academic responsibility; total credit hours: 3) Spring 2003
 Iqra Foundation, Montreal, Canada.
REL-101: Faith and Science;

SUMMARY OF INDUSTRIAL R&D WORKS :

Key Skills		Space-craft	Aerospace	Automotive	Materials	Testing m/c and Computer Software
Testing of Structures (Coupon or Full scale)	Static	-	<i>Tailboom Like Structure and HMD</i>	<i>Ford Fusion Hood and full scale Yo-Auto car BIW</i>	<i>Epoxy/graphite & PP/Glass Composites; Metal</i>	<i>Universal Testing M/c, Minitab, MCQ and LS-Dyna</i>
	Fatigue and Damage	-	<i>Tailboom Like Structure</i>	<i>Ford Fusion Hood (Mode-I test)</i>	<i>Sandwich, Epoxy/graphite composites</i>	<i>Universal Testing M/c, ANSYS</i>
	Sine Vibration Test	<i>Hylas-3, EDRS-C</i>	-	-	-	<i>NX-NASTRAN & In-House Software</i>
Material Characterization & Qualifications (MCQ)		-	-	<i>Ford Fusion Hood</i>	<i>Sandwich Composite</i>	<i>MCQ</i>
Research Development Projects' Analyses	Static	<i>AMOS6, Hylas-3, EDRS-C</i>	<i>Tailboom Like Structure, HMD</i>	<i>Ford Fusion Hood, GM Volt</i>	<i>PP/Glass Composite, Metal</i>	<i>Hypermesh, LS-Dyna, NX-NASTRAN</i>
	Hand Calculation	<i>ExoMars</i>	<i>Airplane structure University Project</i>	<i>GM Volt</i>	<i>Metal, Sandwich Composite</i>	<i>MATLAB, Excel</i>
	Dynamic (Modal, Sine & Random)	<i>AMOS6, Hylas-3, EDRS-C</i>	<i>Tailboom, HMD</i>	<i>Ford Fusion Hood</i>	<i>Sandwich Composite</i>	<i>NASTRAN (SOL - 103 & SOL-111); ANSYS</i>
Research Project's Design		-	<i>HMD</i>	-	<i>Metal and Composite</i>	<i>CATIA-5</i>
Health Monitoring	Vibrothermography	-	<i>Fan Blades</i>	-	<i>Metal</i>	<i>LS_DYNA</i>
Composite Manufacturing	Filament W, Hand lay-up and Compression Molding	-	<i>Tailboom Like Structure, HMD</i>	<i>Ford Fusion Hood</i>	<i>Epoxy/graphite & PP/Glass Composites</i>	<i>Filament winding, Autoclave and Compression molding</i>

LIST OF PATENTS / PUBLICATIONS***A. Recent Patent Submission***

1. Akhlaque-E-Rasul, S., Gao Z., and Sherwood, B. (May, 2015) “Active roll-over protection”, has been Approved.
2. Akhlaque-E-Rasul, S., Gao Z., Luo, C., and Sherwood, B. (May, 2015) “Spider orb for impact load”, has been Approved.
3. Akhlaque-E-Rasul, S., Gao Z., Luo, C., and Sherwood, B. (March, 2015) “Round Pipe Insert for FHEV/PHEV/BEV”, has been Approved.
4. Akhlaque-E-Rasul, S., Gao Z., Luo, C., and Sherwood, B. (March, 2015) “Stepped Honeycomb Insert for FHEV/PHEV/BEV”, has been Approved.
5. Akhlaque-E-Rasul, S., Gao Z., Luo, C., and Sherwood, B. (May, 2015) “Pressurized Air Insert for FHEV/PHEV/BEV”, has been Approved.
6. Gao Z., Akhlaque-E-Rasul, S., Luo, C., and Sherwood, B. (April, 2015) “Light weight and efficient hybrid B-Pillar”, has been Approved.

B. Recent Papers

1. Akhlaque-E-Rasul, S., Gao Z., Luo, C., and Sherwood, B. (2015) “Optimum Design of Rocker-Panel Using the Inserts of Extruded Aluminum, Aluminum Honeycomb and Pressurized Airbag”, Ford Truck Safety, Product Development Center, Dearborn, USA.
2. Akhlaque-E-Rasul, S. and Ganesan, R. (2012) “Compressive response of tapered curved composite plates Using Nine-Node Shell Theory”. Composite Structures; Ref. No.: COST-D-11-00394, in press.
3. Akhlaque-E-Rasul, S. and Ganesan, R. (2012) “Non-linear buckling analysis of tapered curved composite plates based on a simplified methodology”. Composites Part B, v.43, no.2, p. 797(8) (ISSN: 1359-8368).
4. Ganesan, R. and Akhlaque-E-Rasul, S., (2012) “Progressive failure analysis of tapered plate for high performance composite structures applications”, ICCE-20, Beijing, China, July 22-28, 2012.
5. Ganesan, R. and Akhlaque-E-Rasul, S., (2012) “Post-buckling non-linear failure analysis of tapered plate for high performance composite structures applications”, American Society for Composites, 27th Technical Conference, October 1-3, 2012, Texas, USA.
6. Akhlaque-E-Rasul, S., M. Hailat, A. Phadatare and G. Newaz. (2012) “Characterization of Balsawood Mechanical Properties Required for Continuum Damage Mechanics (CDM) Analysis”, International Journal of Solids and Structures, Re No. IJSS-D-11-00655. (Submitted)
7. Akhlaque-E-Rasul, S., M. Hailat, A. Phadatare and G. Newaz. (2011) “Progressive Failure Assessment of Balsawood Sandwich Composites for Automotive Applications”, ASC 26th Annual Technical Conference, Montreal, Sep. 26 -28.
8. Ganesan, R. and Akhlaque-E-Rasul, S., (2015) “Progressive Failure and Post-Buckling Response of Tapered Composite Plates” was accepted in ICCE-21, Tenerife, Canary Islands, Spain July 21-27, 2013; however, we could not attend and it has been referred to next year.

C. Industrial R&D Works

9. Akhlaque-E-Rasul, S., and Alpha DS ROSS, (2013) “Cup-cone study for deployable satellite dish antenna of Exo-Mars”, MDA, Montreal Branch. (Internal Report)
10. Akhlaque-E-Rasul, S., and David Bernard-giguere, (2013) “Metal-Composite joint (of AMOS06) analysis under dynamic loads”, MDA, Montreal Branch. (Internal Report)

11. Akhlaque-E-Rasul, S., Palmieri, M. and Morse, S., (2012) “Modular design of low cost new materials for automotive applications”, Yo-Auto, USA branch, Fraser, March 2012. (Internal Report)
12. Akhlaque-E-Rasul, S., (2012) “Composite joining technique for Glass-Fiber/Polypropylene thermoplastic body-in-white”, Presented in the Yo-Auto consortium meeting, Karlsruhe, Germany, February 15-18, 2012.

D. Invited Paper:

13. Akhlaque-E-Rasul, S. and Ganesan, R., (2010) “Innovative High Performance Composite Structures for Aerospace Applications”. Invited Paper, World Tamil Conference – Scientific Session, Coimbatore, Tamil Nadu, India, June 23-27.

E. Articles Published or Accepted in Refereed Journals:

14. Akhlaque-E-Rasul, S. and Ganesan, R. (2011) “Non-Linear Buckling Analysis of Tapered Curved Composite Plates”. Science and Engineering of Composite Materials, Volume 18, Issue 3, Pages 157–165, ISSN (Online) 2191-0359.
15. Akhlaque-E-Rasul, S. and Ganesan, R. (2011) “The Compressive Response of Thickness-Tapered Shallow Curved Composite Plates based on classical shell theory”. Accepted on 28th May 2010 in the Journal of Advanced Materials, Issue 1 (Jan 2011).
16. Ganesan, R., and Akhlaque-E-Rasul, S. (2011) “Compressive response of tapered composite shells”. Composite Structures vol. 93 issue 9, p. 2153-2162.
17. Akhlaque-E-Rasul, S., Ganesan, R. (2010) “Finite Element Global Buckling Analysis of Tapered Curved Laminates”. World Journal of Engineering, 2010 Supplement, pp.566-567.
18. Akhlaque-E-Rasul, S. and Ganesan, R. (2010) “Buckling Analysis of Tapered Curved Laminates Using ANSYS”. The World Journal of Engineering, 2010 Supplement.1, pp. 378-379.
19. Akhlaque-E-Rasul, S., and Mudur, S. P. (May 2010) “Ranking the Candidates Based On Decision-Making Theory”, International Journal of Applied Management and Technology, Vol. 9, No. 1.
20. Akhlaque-E-Rasul, S. and Ganesan, R. (2010) "Buckling Analysis of Tapered Composite Plates Using Ritz Method Based on First-Order Shear Deformation Theory". Accepted on 18th June 2010 in the International Journal of Structural Stability and Dynamics.
21. Akhlaque-E-Rasul, S. and Ganesan, R. (2010) “Buckling Analysis of Tapered Laminated Composite Plates Using Ritz Method". Journal of Materials Science and Engineering, Volume 5, Number 3 (Serial Number 40), pp. 253-265
22. Akhlaque-E-Rasul, S. and Ganesan, R. (2010) “Buckling response of tapered composite plates based on third-order plate theory”. Journal of Advanced Materials, Vol 42; NO. 3, pages 40-55.
23. Chowdhury, M.A.I., Uddin, M.T., Ahmed, M.F., Ali, M.A., Rasul, S. A., Hoque, M.A., Alam, R., Sharmin, R., Uddin, S.M., and Islam, M.S. (2006) “Collapse of socio-economic base of Bangladesh by arsenic contamination in groundwater”. Pakistan Journal of Biological Sciences, 9(9):1617-1627.

F. Articles in Refereed Conference Proceedings:

24. Akhlaque-E-Rasul, S. and Ganesan, R. (2010) “Non-Linear Buckling Analysis of Tapered Curved Composite Plates”. Eighth Joint Canada-Japan Workshop on Composites, Montreal, Canada, July 26-29.
25. Akhlaque-E-Rasul, S., and Ganesan, R. (2009) “The compressive response of tapered curved composite plates”. Proceedings of the American Society for Composites: Twenty-Fourth Technical Conference, Newark, DE, American Society for Composites CD-ROM- paper No: 10, September 15–17.

26. Akhlaque-E-Rasul, S., and Ganesan, R. (2009) "The buckling response of tapered curved composite plates-II". Proceedings of the American Society for Composites: Twenty-Fourth Technical Conference, Newark, DE, American Society for Composites CD-ROM—paper No: 09, September 15–17.
27. Akhlaque-E-Rasul, S., and Ganesan, R. (2009) "Buckling response of tapered curved composite plates based on classical shell theories". Proceedings of ICCM-17 Edinburgh, UK: IF3:3, July 27- 31.
28. Akhlaque-E-Rasul, S., and Ganesan, R. (2009) "Buckling response of tapered composite plates based on first-order plate theory". Proceedings of 22nd Canadian Congress of Applied Mechanics, Dalhousie University, Halifax, Canada: 75-76, May 31st - June 4th.
29. Akhlaque-E-Rasul, S., and Ganesan, R. (2009) "Buckling response of tapered composite plates based on third-order plate theory". Proceedings of 2009 SAMPE Fall Technical Conference, Wichita, USA, October 19-22.
30. Ganesan, R., and Akhlaque-E-Rasul, S. (2008) "Buckling analysis of tapered laminated composite plates using Ritz method". Proceedings of the CSME forum 2008, Ottawa, Canada. Paper No: 1569107337, June 5-8.

G. Conference Presentations

31. Akhlaque-E-Rasul, S. and Ganesan, R. (2011) "A Simplified Methodology for the Non-Linear Buckling Analysis of Tapered Curved Composite Plates", ASME Applied Mechanics and Materials Conference, McMAT-2011, Paper Number: McMat2011-4131, May 30 to June 1. 5
32. Akhlaque-E-Rasul, S., and Mudur, S. P. (2010) "Selection of talents based on decision making theory". INFORMS Annual Meeting in Austin, USA, November 7-10.
33. Akhlaque-E-Rasul, S. and Ganesan, R. (2010) "Buckling Analysis of Tapered Curved Laminates Using ANSYS®". International Conference on Composites/Nano Engineering (ICCE - 18), Alaska, USA, July 4-10.
34. Islam, A., Akhlaque-E-Rasul, S. and Islam, S., (2009) "Upstream DAMS - the Man Made Disaster to Bangladesh", Bangladesh Watch Canada, Toronto, Canada, August 15.

H. Non-Refereed Contributions:

35. Akhlaque-E-Rasul, S., and Ganesan, R. (2009) "A simplified nonlinear buckling analysis to find out the limit load". CREPEC colloquium, Concordia University, Montreal. (Poster presentation).
36. Akhlaque-E-Rasul, S., and Ganesan, R. (2008) "The buckling response of tapered curved composite plates using Ritz method". CREPEC colloquium, Concordia University, Montreal. (Poster presentation).
37. Akhlaque-E-Rasul, S., and Mudur, S. P. and Ganesan, R. (2006) "Modeling and analysis of HMD structure". NSERC project for Head Mounted Display (HMD), Montreal, Canada. (Oral presentation).
38. Akhlaque-E-Rasul, S., and Mudur, S. P. and Ganesan R. (2006) "Selection of thermal insulator materials". NSERC project for Head Mounted Display (HMD), Montreal, Canada. (Oral presentation).
39. Akhlaque-E-Rasul, S., Arefin, M., and Minh, T.T. (2006) "A composite pipeline to transport oil from Alberta to Toronto". CONCOM (Concordia Center for Composites), Concordia University, Canada. (Oral presentation)
40. Akhlaque-E-Rasul, S., and Ganesan, R. (2006) "Survey on carbon nano tube and its probable use in the industries". CONCOM (Concordia Center for Composites), Concordia University, Canada. (Technical report)

41. Akhlaque-E-Rasul, S., and Ganesan, R. (2006) "The buckling analysis of tapered laminated plates using Ritz method based on classical and higher order plate theories". CREPEC colloquium, Ecole Polytechnique de Montreal, Montreal. (Poster presentation).
42. Akhlaque-E-Rasul, S., and Hoa S. V. (2006) "Manufacturing of Fiberglass Composite Tube by Bladder Molding", Concordia Center for Composites (CONCOM), Concordia University, Canada. (Oral presentation)
43. Akhlaque-E-Rasul, S., and Mudur, S. P. and Ganesan R. (2005) "Optimization of material, shape and fabrication process of HMD structure". NSERC project for Head Mounted Display (HMD), Montreal, Canada. (Oral presentation)
44. Akhlaque-E-Rasul, S., and Ganesan, R. (2003) "An easy way to apply the Airy's stress function to calculate the stresses of the machine components". Concordia Center for Composites (CONCOM), Concordia University, Canada. (Technical report)

RESEARCH EXPERIENCE

CAE Researcher (During work in WSU)

July 2011 – August 2011

AlphaSTAR, California, USA

AlphaSTAR is a leading global provider of physics based simulation technologies and services for structural modeling and analysis of advanced materials. AlphaSTAR has focused on composite structures, and related innovative research that helped industry and government agencies to overcome critical challenges with complex composite structural systems. The tasks were to analyze the sandwich structure applying the different modules of GENOA that include MCQ, Carpet Plotting, PFA and PFDA using different finite element solvers (ANSYS, ABAQUS and LSDYNA).

Postdoctoral Fellow

Jan 2011 – Jan 2012

Lightweight Automotive Materials Project (LAMP),

Wayne State University, Detroit, USA, MI.

The mission of LAMP was to develop lightweight vehicles. The task was to model and to analyze the lightweight Sandwich Composite Structures. The analyses include the following tasks.

Study of Sandwich Structures:

- ✓ Material characterization of core and skin of sandwich structures using GENOA's Material Qualification and Characterization (MCQ) module.
- ✓ Impact load and progressive failure analyses using LSDYNA
- ✓ Delamination and crack propagation analyses using LSDYNA and ABAQUS.

Modular design of Sandwich Structure:

- ✓ Developing the modular interface relationship using reverse reasoning strategy
- ✓ Developing the multi-scale bridging functions for the sandwich structures

Use of Ohio State Super Computer (OSC):

- ✓ Using OSC for the numerical modeling of composite structures

Research Assistant/Fellow

2003 – 2010

Concordia Center for Composites (CONCOM), Montreal, Canada.

The mission of CONCOM is to attain the world class excellence in research, training and industrial development activities. This center has partnership with National Research Council of Canada, Canada Space Agency, Bombardier Ltd., MDA Corporation, Bell Helicopter Textron Canada Ltd., Ford, Italian Centre for Aerospace Research and other world class research centers.

Helicopter Tail-boom:

The buckling problem of helicopter tail-boom was reported to CONCOM by Bell Helicopter Textron Canada Ltd. Because of my experience on composite shell structures I was appointed for the

progressive failure, Fatigue and Damage Tolerance (F&DT) and modal analyses of tapered curved composite structures. I also led the design and analysis focus group and my duty was to manage, conduct and coordinate day-to-day routine activities for different FEA-based composite projects.

Supervision:

- ✓ Supervised couple of junior graduate students in writing their research papers.
- ✓ Directed the research students in writing MATLAB code and to find out the Finite Element solutions of mechanical structures at different scale levels (nano, micro and macro)

Study of Carbon Nanotube-Reinforced Composites:

- ✓ Worked for a project of CNT-reinforced composites
- ✓ The study encompassed the properties of CNT composites, polymer–nanotube interactions, modeling and simulation of CNT, Molecular Dynamics (MD) simulation method, multi-scale simulation of nanotube/polymer composites, randomness of CNT in composites, potential applications for carbon nanotubes

Shell Analysis:

- ✓ Solved the buckling and post-buckling analysis of tapered curved plates (shell panels) using Ritz method based on linear and non-linear shell theories
- ✓ Verified the results obtained using Ritz method with that obtained using 9-node Lagrange finite element
- ✓ Investigated the critical sizes of the shell panels based on first-ply failure and delamination analyses of the panels

Plate Analysis:

- ✓ Analyzed the tapered composite plates using Ritz method based on classical and higher order plate theories
- ✓ Design of Head Mounted Display (HMD):
- ✓ Designed and analyzed the HMD for pilots using CATIA
- ✓ Optimized the material selection for HMD using ASHBY chart and decision making theory

Manufacturing:

- ✓ Manufactured the composite tube from E-glass braids by vacuum bladder moulding using Autoclave
- ✓ Familiar with the manufacturing of fuselage skin structure by filament winding and fibre replacement technique

Use of Cluster:

- ✓ The HPC cluster at Concordia University is built using the HP XC framework, running the Linux operating system (Redhat). Standard GNU tools are available as well as some specific utilities that are relevant to High Performance Computing. The 32- and 64-bit PathScale, MPI, and GNU compilers are installed.
- ✓ Used above mentioned cluster for computing the non-linear buckling analysis using single/multiple nodes.

INDUSTRIAL RESEARCH / DEVELOPMENT EXPERIENCE

CAE Crash Analyst

Dec 2014 to Present

Ford Motor Company, Dearborn, USA

Research: SUV and Sedan BIW structural analyses and optimization

Analyses: Side impact analysis to fulfill the government's safety regulations

CAE Crash Engineer

Jan 2014 to Nov 2014

MAGNA (HONDA Ridgeline Project) -Marysville, OH

✓ **Modeling**

Developed the CAE methodology/models for full vehicle analysis that include different types of joints (bolt, weld, adhesive, GEB and LSDYNA constrained), CONTACTS, BCs, Loads, DATABASE, etc.

✓ **Crash and Safety Analyses:**

- **Side Impact:** EU Barrier 18kph & 30kph; SICE structural and dummy; SINCAP structural and dummy; 2nd row pole 7kph, 18kph & 29kph; POLE 214 (SID IIs using seat at pole position & ES2-re using seat at SINCAP position) low speed (13kph) & high speed (32kph); 3rd row pole for fuel filler evaluation.
- **Rear Impact:** 70% overlap up, down and nominal positions. Cargo Retention
- **Seat Pull:** 210 (Seat Belt Assembly Anchorages) and 225 (Child Restraint Anchorage Systems) with tether and without tether
- **Roof crash:** FMVSS 216a and IIHS test protocols
- **Roll Over:** for the door lock deformation analysis
- **Sensor Evaluation:** Based on side impact results SIS_RH, SIS_LH, 2nd Row SIS_LH & SIS_RH, SSS and SRS raw data and filtered data are plotted
- **Mass balancing** for different impact loads
- **Debugged the FEA** full vehicle (Chassis, BIW and includes) model
- **Optimized the BIW** structures applying trial and error technique

✓ **Preparing Reports**

- Prepared session files of all load cases to plot the required curves and to compare with that of the test data
- Prepared the Reports/Presentation for every load case

✓ **Attended at various internal/customer meetings**

MDA (Montreal, Canada)

Jan 2013 – Dec 2013

MDA provides commercial customers, industrial partners and governments (civil, defense, security, space, and R&D agencies) with such information systems and solutions as space robotics, satellite information and payload systems, etc. The tasks were to analyze the composite and metallic satellite structures especially the antenna using NASTRAN that include:

- Development Tasks

- ✓ Collaborating with multi-disciplinary engineering team to develop state-of-the-art spacecraft communication antennas, payloads or subsystems
- ✓ FE Model checking of the satellite antenna (according to customer specifications)
- ✓ Quasi-static & thermal analyses
- ✓ Modal analysis (Sol-103)
- ✓ Sine vibration analysis including notching and air effect (Sol-111)
- ✓ Random vibration (NASTRAN Sol-111 and in-house software)
- ✓ Acoustic analyses (Va One)
- ✓ Fatigue and damage analyses (in-house software, SASSI)
- ✓ Preparing the sine test procedure including the positions of accelerometers and load cells
- ✓ Optimization of the composite and metallic structures (sizing, mass, etc) based on analyses

- Research Works

- ✓ Cup-Cone study of Exo-Mars
- ✓ Metal-composite joint analysis of AMOS06

Electric Car Project (Detroit, USA via Altair)

Jan 2012 - Sept 2012

It was a temporary appointment for the project of GM at Magna in Auburn Hill, MI as a Structural Engineer. The tasks were to test, characterize and prepare the material cards for the analyses of plastic and composite structures that include:

- ✓ Selection of right percentage of composite constituents (mainly propylene, glass fiber and talc)
- ✓ Selection of the right material cards based on material characteristics
- ✓ Carrying out the stress analyses of electric battery packs
- ✓ Modal analysis to check the models

YO-AUTO Composite Car Project (Via Karl Associates)

Worked as a composite specialist to design and develop a low cost Russian Composite car. Magana started to design that car and I worked only for concept face. The responsibilities were to:

- Development Projects

- ✓ Communicate with the consortium members [EDAG, ICT, Siebenwurst, FiberForge] to get their input to the design
- ✓ Conduct the tests and trials of composite car body-in-white
- ✓ Calibrate the test results using Material Characterization software (MCQ)
- ✓ Supervise the Design and CAE teams
- ✓ Select the new materials for the composite structures
- ✓ Train up the junior engineers

- Research Works

- ✓ Develop an optimized layup in collaboration with the design team
- ✓ Develop the Bond/Bolt joints for the composite Body-in-white and seat

COMPUTER SKILLS:

- ✓ Code writing in MATLAB, C++, and FORTRAN
- ✓ Experienced in CATIA, Pro/E, UG and AutoCAD
- ✓ Advanced knowledge of ANSA, NASTRAN, NX, HyperMesh, ANSYS, LSDYNA,
- ✓ ABAQUS and GENOA
- ✓ Working knowledge in MS Works, MS Office, Primavera Project Planner, etc.

LABORATORY SKILLS:

- ✓ Autoclave
- ✓ Universal testing machine

PROFESSIONAL MEMBERSHIP

- ✓ Professional Engineer (P.Eng.) of Ontario, CANADA
- ✓ Member of ASME

LANGUAGES

- ✓ Fluent: English; Bengali (native)
- ✓ Basic working knowledge: Arabic

PERSONAL INTEREST

- ✓ Playing volley ball and table tennis
- ✓ Pencil sketch and water paints