MARCIAS MARTINEZ, PH.D.

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RESEARCH OBJECTIVE

Development of a Holistic Structural Integrity Process for Mechanical and Aerospace Structures

CURRENT RESEARCH OBJECTIVE

Development of structural integrity models

LANGUAGES

English: (Native/Bilingual)

Spanish: (Native/Bilingual)

French: (Limited working)

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EDUCATION

PH.D. IN MECHANICAL ENGINEERING • CARLETON UNIVERSITY, OTTAWA, ONTARIO, CANADA • JANUARY 2000 – NOVEMBER 2006

- **Research:** Developed an in-house finite element analysis code to study the behavior of piezoelectric structures in composites materials.
- **Thesis title:** Finite Element Model of Structures with Piezoelectric Elements

MASTER'S IN MECHANICAL ENGINEERING • CARLETON UNIVERSITY, OTTAWA, ONTARIO, CANADA • SEPTEMBER 1997 – NOVEMBER 1999

- **Research:** Numerical modeling of the formation of dendrites during the solidification of tertiary alloys composed of Aluminum, Copper, and Silicon. The computer model is based on the finite difference method and concentration differences of the three elements to calculate the morphology of the dendrite.

- **Thesis title:** Three-Dimensional Computer Modeling of Dendrite Growth in Tertiary Al-Cu-Si Alloys.

BACHELOR'S IN MECHANICAL ENGINEERING • CARLETON UNIVERSITY, OTTAWA, ONTARIO, CANADA • SEPTEMBER 1991 – NOVEMBER 1995

- **Thesis Project:** Developed a custom software package to predict austenization time for complete formation of austenite from pearlite, without unnecessary grain growth.

EMPLOYMENT HISTORY

PROFESSOR – (TENURED)
CLARKSON UNIVERSITY, POTSDAM, NY, USA • MAY 2022 - TO PRESENT

- Director of the Holistic Structural Integrity Process Laboratory. The lab is fully equipped with the latest generation of computational and experimental mechanics techniques with the sole purpose to understand the physics of failure.
- Development of physics based nucleation models for assessing remaining useful component life.
- Assist and guided the upcoming faculty members to expand their research capabilities.
- Serve both the scientific community and university in promoting STEM education, in addition to the development of highly qualified personnel.
- Problem solver, specializing on industry scientific and engineering challenges.

SABBATICAL PROGRAM WITH ONR: PRINCIPAL INVESTIGATOR
OFFICE OF NAVAL RESEARCH / PROSOURCE360 • JANUARY 2022 – MAY 2022 / SEPT 2022 – DECEMBER 2022

- Principal investigator on the development of computational models for single lap shear joints.
- Determination of Non-Destructive Inspection techniques for assessing the structural integrity of both metallic to metallic and composite to composite single lap shear joints.

ASSOCIATE PROFESSOR - (TENURED)
CLARKSON UNIVERSITY, POTSDAM, NY, USA • AUGUST 2015 – MAY 2020

- Principal Investigator on the development of a physics-based model known as HolSIP (Holistic Structural Integrity Process), with a primary goal of estimating remaining component life of critical aerospace components.
- Development of a physics-based understanding of guided Lamb wave propagation in complex metallic and composite structures using ABAQUS CAE and OnScale CAE (previously called PzFlex).
- Development of a physical understanding of the impact that environmental operational conditions have on the performance of Lamb wave based structural health monitoring (SHM) systems.
- Development of data sets for SHM probability of detection curves.
- Development of experimental and numerical data sets for cold hole expansion processes for the aeronautical industry.
- Developed the JetBlue Composite Laboratory for the course ME/AE457 Composite Structural Design. The laboratory was primarily intended for undergraduate students attending the course; however, it is currently being used by Design Build & Fly and the Rocketry Club.

ASSOCIATE PROFESSOR (DUAL APPOINTMENT)
DELFT UNIVERSITY OF TECHNOLOGY, DELFT, THE NETHERLANDS • JULY 2015 – OCTOBER 2019

- In order to continue supervising my Ph.D. students at Delft University of Technology, the Faculty of Aerospace Engineering at TU Delft allowed me to remain connected to the department as an Associate Professor with the Structural Integrity and Composite Group.

ASSISTANT PROFESSOR - TENURED
DELFT UNIVERSITY OF TECHNOLOGY, DELFT, THE NETHERLANDS • AUGUST 2012 – JULY 2015

- Application on the use of MEMS and fibre optic distributed sensing systems for shape and load monitoring of aerospace structures. The primary impact of this research has been the utilization of smart sensors for the evaluation and estimation of strain distribution, even in regions where the application of sensors is difficult, thus providing the structural integrity research groups an ability to estimate damage growth and its impact on the life of the structure.
- Experimental and numerical study on the effect of variable residual stress fields on the crack growth phenomenon.
- Design and development of an amphibious solar power UAV with incorporated smart sensing technology.
- Secured funding for over €100,000, through a European Union Marie Curie Integration Grant (MASS – Monitoring Aerospace Structural Shapes).
- Secured funding from FLOW, to cover the salary of a post-doc researcher for 2 years for development of load monitoring of wind turbine blades.
- Received a fully paid Ph.D. candidate to work under my supervision from the Brazilian Air Force to study the effects of temperature in variable amplitude loading in composite materials.
- Secured funding from the Rijksmuseum in Amsterdam, for a Ph.D. researcher in order to study the effect of transport on 18th century pastel paintings.
- Secured a permanent contract in the faculty (Equivalent to Tenure in the USA/Canada).

MY RESEARCH AND ACADEMIC EXPERIENCE AT CLARKSON UNIVERSITY, DELFT UNIVERSITY OF TECHNOLOGY AND CARLETON UNIVERSITY HAS ALWAYS BEEN COMBINED WITH MY FULL TIME WORKING EXPERIENCE IN INDUSTRY AND GOVERNMENT RESEARCH INSTITUTES.

ASSOCIATE RESEARCH OFFICER – TENURED
NATIONAL RESEARCH COUNCIL OF CANADA • SEPTEMBER 2005 – JULY 2012

- As primary researcher in the field of Structural Health Monitoring (SHM), I have evaluated and developed sensor technologies and systems for aerospace applications to help maintain the structural integrity of civilian and military aircrafts. With the help of my students, I have evaluated the capabilities of the Acellent System, Microstrain Wireless Technology, Surface Mountable Crack Sensor, strain gauges and MEMS for SHM and load monitoring applications.
- *Secured customer research funding in the excess of $1.5 million (CAD) over 5* years, for developing SHM platforms to help evaluate SHM system under realistic load and service conditions.
- Program Manager and primary researcher on the use of the Smart Patch® software. The program consisted in the development of technology to determine the load carrying capabilities of a bonded patch and evaluation of sensors to detect disbonding in adhesive joints and repairs.
- Worked as Program Manager and primary researcher on health monitoring systems for rotary wing (CH-149) and fixed wing aircrafts (CF-18).
- Developed finite element analysis software in C and C++ for smart material (piezoelectric composites) applications. The in-house FEA code was validated with ABAQUS. It is also important to note that the in-house FEA software attracted attention of the Ottawa Hospital for the design of smart material sensors for biomedical applications.

CMP DESIGN INC., OTTAWA, CANADA
THERMAL ANALYST • 2000 – JULY 2005

- Manager of the Zimac Laboratories division at Chateaugay Metal Products Inc.
- Primary research engineer in charge of sustaining and improving the design of equipment used in patch bonding technology for aircraft structures such as CF18 and F16. The developed equipment was also used to perform retrogression re-aging (RRA) of aluminum structures. RRA is used as a means for increasing the corrosion resistance of the material while sustaining the strength of the structure through a specialized in-situ heating process thus providing large savings to the different fleet managers.
- Designed midplanes/backplanes and other PCB cards using PCB tools (Pro-E 2000i) for high-speed telecommunication systems while optimizing their design utilizing CFD/Thermal Analysis tools for efficient air ventilation and heat removal using Flotherm V3.1 while considering EMI containment issues.

WORLDHEART, INC. OTTAWA, CANADA
PROCESS ENGINEER • 1998–2000

- Assisted in the design, characterized, and qualified using ISO 9000 standards, an axial flow pump for a left ventricular assist device (artificial heart).
- Test Engineer responsible for performing theoretical analysis on electrical, mechanical, and hydraulic efficiencies followed by experimental verification.
- Designed fixtures and surgical tools using Pro-Engineer version 19 and 2000i, for medical doctors in charge of implanting a left ventricular assist device (LVAD).

UNIT INSTRUMENTS, INC., YORBA LINDA, CA, USA
MANUFACTURING ENGINEERING • JUNE 1995– JULY 1997

- Project Manager in charge of qualifying, validating for manufacturing and implementing new manufacturing processes for two mass flow controllers (UFC-8100 and UFC 8260). The estimated time to perform this task was six months; however, I was able to complete the task in three months.
- Evaluated and improved utilizing statistical process control (SPC) the cleaning procedures of stainless-steel components used in the manufacturing of mass flow controllers. This helped the company increase quality, throughput, and efficiency. Utilizing process improvement tools, cleanliness levels in stainless steels parts were increased from 900 ppb. to less than 100 ppb.

BOOK CHAPTERS

1. **M. Martinez**, M. Yanishevsky, B. Rocha, N.C. Bellinger, "21 - Maintenance and Monitoring of Composite Helicopter Structures and Materials", Published by Woodhead Publishing, UK, May 2015. DOI: http://dx.doi.org/10.1016/B978-0-08-100137-0.00021-3. http://store.elsevier.com/product.jsp?isbn=9780081001370

2. N.C. Bellinger and **M. Martinez,** "Environmental Monitoring of Aircraft", in Encyclopaedia of Structural Health Monitoring, Boller, C., Chang, F. and Fujino, Y. (eds), John Wiley & Sons Ltd, Chichester, UK, DOI: 10.1002/9780470061626.shm191, pp. 1523-1530. September 2009.

REFEREED PUBLICATIONS

Current or past graduate student's names under Dr. Martinez supervision underlined.
Colleagues and co-authors names in italic.
Undergraduate students

Scopus h-index: 14, Google Scholar h-index: 16

Manuscripts in preparation:

1. J. Jayasuruiya, *M.C.F. Bazzocchi, K. Fite,* **M. Martinez**, "Biomechanical Data-Driven Analysis for Firefighter Exoskeleton Development".
2. *C. Merrett,* A. Baldasarre, *H. Balsara*, **M. Martinez**, "Finite Element Analysis of Linear Viscoelastic Materials: A Benchmark Case Study", manuscript in review at the US Naval Surface Warfare Center, Carderock Division for submission to the Journal of Mechanics of Time-Dependent Materials. April 2024.

Manuscripts in review:

3. C. de Mooij, **M. Martinez,** A Critical Comparison of Shape Sensing Algorithms: The Calibration Matrix Method Versus iFEM, Journal of Sensors, sensors-2968182, March 31st 2024.
4. **Marcias Martinez**, Mst. Jannatul Ferdausi, *Craig Merrett, Sumona Mondal,* "A Phenomenological Approach to Strength and Time to Failure Prediction using a Ductile Damage Evolution Material (DDEM) Model of Adhesive Joints", manuscript submitted for the consideration of the Journal of Adhesion, Submission ID: 242590919, March 13th, 2024.
5. Jeevan Jayasuriya, *Michael Bazzocchi, Kevin Fite*, **Marcias Martinez**; "Motion Capture Data Set with Comprehensive Biomechanical and Musculoskeletal Analysis of Firefighting Activities", Journal of Applied Ergonomics, JERG-S-23-01508, Dec 1st- 2023.

Manuscripts accepted and published:

6. *Scott Carlson, Marcus Stanfield*, **Marcias Martinez,** *Alec Hitchman, David Backman;* "Validation of Finite Element Plasticity Models Using Full-Field Strain Measurements", Journal of Materials Engineering and Performance, doi:10.1007/s11665-024-09404-8., Accepted March 13th, 2024.
7. Juliana Garcia, *Michael Bazzocchi, Kevin Fite, Juan Ocampo*, **Marcias Martinez,** Review and Statistical Analysis of U.S. Firefighting Injuries, their Causes and Effects. Journal of Fire Technology, MDPI Journal of Fire, fire-2812930, https://doi.org/10.3390/fire7020046, January 29th, 2024.
8. Joshua Alamo, Jameson Pitcheralle, *Craig G. Merrett, Michael C.F. Bazzocchi*, **Marcias Martinez,** "Smoothed-Particle Hydrodynamics, Fracture with Multiple Interactions, Soda Lime Glass, Milling Process, Johnson-Holmquist Constitutive Model", J. of Applied Mechanics, 5(1); pp. 58-72; https://doi.org/10.3390/applmech5010004, January 19th 2024.
9. David Mackey, **Marcias Martinez**, *John Goldak, Stanislav Tchernov, Daryush Aidun*, "Transient Strain Monitoring of Weldments using Distributed Fiber Optic System", Metals 13, no. 5: 865. https://doi.org/10.3390/met13050865, April 27th, 2023.
10. F. Falcetelli, N. Venturini, M. B. Romero, **M. Martinez,** S. Pant, and *E. Troiani*, "Reconstruction of a Broadband Acoustic Signal using Time Reversal", Journal of Intelligent Material System and Structures, https://doi.org/10.1177/1045389X20972474, February 23rd, 2021.

11. Hieu T. Truong, **Marcias Martinez**, *Ozden Ochoa, Dimitris Lagoudas*, "Mode I Fracture Toughness of Hybrid Co-Cured and NiTi-CFRP Interfaces: An Experimental and Computational Study", Journal of Composites Part A, Vol. 135, 105925, https://doi.org/10.1016/j.compositesa.2020.105925. August 2020.
12. *D.L. Ball*, **M.Martinez**, A. Baldassarre, *D.M. Dubowski, S.S. Carlson*, Analytical and Experimental Investigation of Elastic-Plastic Strain Distributions at Two-Dimensional Notches, Journal of Testing and Evaluation (ASTM), https://doi.org/10.1520/JTE20190924, July 15th 2020.
13. Baldassare, Alessandro; *Ocampo, Juan;* **Martinez, Marcias**; *Rans, Calvin*, "Accuracy of Strain Measurements Systems of a Non-Isotropic Material and Its Uncertainty on Finite Element Analysis", Journal of Strain Analysis for Engineering Design. https://doi.org/10.1177/0309324720924580, June 7th 2020.
14. M. Pliazhuk, C. Reyes, **M. Martinez,** *J. Goldak, H. Nimrouzi, D.K. Aidun*, "In-situ Monitoring of Transient Strain Formation in Vertical Welds", Published in the American Welding Journal, September 2019. https://doi.org/10.29391/2019.98.022, ***Charles H. Jennings Award from the American Welding Society 2020.***
15. *Jurij Sodja*, **Marcias J. Martinez,** *John C. Simpson, Roeland De Breuker*, "Experimental Evaluation of the Morphing Leading Edge Concept", Journal of Intelligent Material Systems and Structures, August 2019. https://doi.org/10.1177/1045389X19862369
16. M. Barroso-Romero, *D. Gagar,* S. Pant, **M. Martinez**, "Wave Mode Identification of Acoustic Emission Signals using Phase Analysis", Journal of Acoustics, https://doi.org/10.3390/acoustics1020026 , June 2019.
17. Cornelis de Mooij, **Marcias Martinez**, and Rinze Benedictus, "iFEM Benchmark Problems for Solid Elements", Journal of Smart Materials and Structures, https://doi.org/10.1088/1361-665X/ab136f, March 2019.
18. Alessandro Baldassare, **Marcias Martinez**, *Calvin Rans*, "Residual Stress Evaluation of Bonded Composite Joints using the Central Cut Plies Specimens", Journal of Adhesion, DOI: 10.1080/00218464.2019.1598862, March 2019.
19. L. Sauvage, *B. Wei,* **M. Martinez,** "When Conservation Meets Engineering: Predicting the Damaging Effects of Vibrations on Pastel Paintings", Journal of Studies in Conservation, DOI: 10.1080/00393630.2018.1504444, Vol. 63, pp. 418-420, February 2018.
20. Fabricio N. Ribeiro, **Marcias Martinez**, *Calvin Rans,* "Evaluation of mode II Fatigue Disbonding using Central Cut Plies Specimen and Distributed Strain Sensing Technology", Journal of Adhesion, DOI: 10.1080/00218464.2018.1433039, January 23rd 2018.
21. **M. Martinez,** S. Pant, *M. Yanishevsky, D. Backman*; "Residual Stress Effects of a Fatigue Crack on Guided Lamb Waves", Smart Materials and Structures, 26(11),115004, September 2017.
22. T. Zhao, *G. Palardy, I. Fernandez Villegas, C. Rans*, **M. Martinez**, R. Benedictus; "Mechanical Behavior of Thermoplastic Composites Spot-Welded and Mechanically Fastened Joints: A Critical Comparison"; Journal of Composites Part B, December. 2016
23. S. Pant, *J. Laliberte,* **M. Martinez,** and *B. Rocha*, "In-situ Characterization of Isotropic and Transversely Isotropic Elastic Properties using Ultrasonic Wave Velocities", Journal of ASTM International, Material Performance and Characterization. MPC-2015-0021. March 2016.
24. C. Garcia, T. Lotz, **M. Martinez**, *A. Artemev, R. Alderliesten, R. Benedictus*, "Fatigue Crack Growth in Residual Stress Fields", International Journal of Fatigue, 87, pp. 326-338. DOI: 10.1016/j.ijfatigue.2016.02.020, February 2016.
25. P. Martinez-Bueno, **M. Martinez**, *C. Rans, R. Benedictus*, "Strain Monitoring using a Rayleigh Backscattering System for a Composite UAV Wing Instrumented with an Embedded Optical Fiber", Journal of Advanced Materials Research Vol. 1135 (2016) pp. 1-19. doi:10.4028/www.scientific.net/AMR.1135.1, ISSN: 1662-8985, Nov. 19-2015.
26. S. Pant, *J. Laliberte*, **M. Martinez,** *B. Rocha, and D. Ancrum,* "Effects of Composite Lamina Properties on Fundamental Lamb Wave Mode Dispersion Characteristics", Journal of Composite Structures. doi:10.1016/j.compstruct.2015.01.017, January 2015.

27. D. Barazanchy, **M. Martinez,** *B. Rocha, M. Yanishevsky;* "A Hybrid Structural Health Monitoring System for the Detection and Localization of Damage in Composite Structures", Journal of Sensors, September 2014.
28. A. Cooperman, **M. Martinez,** "Load Monitoring for Active Control of Wind Turbines – A Review Article", Journal of Renewable & Sustainable Energy Reviews, doi: 10.1016/j.rser.2014.08.029, August 2014.
29. S. Pant, *J. Laliberte,* **M. Martinez,** *B. Rocha,* "Derivation and Experimental Validation of Lamb Wave Equations for an n-layered Anisotropic Composite Laminates", Journal of Composite Structures, January 2014, http://dx.doi.org/10.1016/j.compstruct.2014.01.034
30. **M. Martinez,** *B. Rocha*, M Li, *A. Beltempo, R. Rutledge, and M. Yanishevsky*, "Load Monitoring of Aerospace Structures utilizing Micro-Electro Mechanical Systems (MEMS) for Static and Quasi-Static Loading Conditions", Journal of Smart Materials and Structures, 21 (2012) 115001 (11pp), doi:10.1088/0964-1726/21/11/115001, September 14 2012.
31. F. Habib, **M. Martinez,** *A. Artemev, M. Brothers*, "Structural Health Monitoring of Bonded Composite Repairs Based on Acoustic Lamb Waves", Journal of Composites Part B., November 2012.
32. *B. Ashrafi, L. Johnson, Y. Martinez-Rubi,* **M. Martinez**, *N. Mrad*, "SWCNT-Modified Epoxy Thin Films for Continuous Crack Monitoring of Metallic Structures", Journal of Structural Health Monitoring, Vol. 11, Issue 5 September 2012 pp. 589 – 601.
33. *V. Wickramasinghe, Y. Chen,* **M. Martinez***, F. Wong*, R. Kernaghan, "Design and Verification of a Smart Wing for an Extreme-Agility Micro-Air-Vehicle", Smart Mater. Struct., Vol. 20, 125007**,** 2011, doi:10.1088/0964-1726/20/12/125007. **(IOP Editor's Choice Recognition)**
34. **M. Martinez**, *A. Artemev*, "A Novel Approach to a Piezoelectric Sensing Element"; Journal of Sensors, vol. 2010, Article ID 816068, 5 pages, 2010, doi:10.1155/2010/816068.
35. *M. Yanishevsky*, **M. Martinez***, C. Mandache, M.* Khan, A. Fahr, D. Backman, "Artificial Seeding of Fatigue Cracks in NDI Reference Coupons", Published in Insight – Non-Destructive Testing and Condition Monitoring, Journal of The British Institute of Non-Destructive Testing, October 2010.
36. **M. Martinez**, R. Kernaghan*, A. Artemev,* "Finite Element Analysis of Broken Fiber Effects on Hollow Active Fibre Composites", *Journal of Intelligent Material Systems and Structures, Vol. 21, January 2010, pp.107-113*.
37. **M. Martinez**, *A. Artemev,* "Finite Element Analysis of Broken Fiber Effects on the Performance of Active Fibre Composites", *Journal of Composites Structures* 2008. Available online 20 June 2008, Vol. 88, Issue 3, May 2009, Pages 491-496.
38. M. Genest, **M. Martinez**, *N. Mrad, G. Renaud*, "Pulsed Thermography for Non-destructive Evaluation and Damage Growth Monitoring of Bonded Repairs", JA-SMPL-2007-0088, *Journal of Composites Structures 2008*, February 2008.
39. **M. Martinez**, *A. Artemev,* "Three-Dimensional Computer Model of Dendrite Growth in Al-Si-Cu tertiary alloys", The Scientific Committee, 12th ICMCM Chicago, USA, Mathematical modeling and Scientific Computing Vol. 13, No. 3, Page 247, 2001.

CONFERENCE PUBLICATIONS

* Presenter

1. **Marcias Martinez***, Mst. Jannatul Ferdausi, *Craig Merrett, Priscilla Fonseca*, Experimental Investigation of Strength, and Time to Failure of Adhesively Bonded Double Lap Shear Joints, AIAA Conference Paper, SciTech 2024, Orlando Florida, 8-12ve of January 2024.

2. *Craig Merrett**, **Marcias Martinez,** Analytical Solution for Tensile Loading of Linear Elastic Single Lap Shear Joint Subject to Clamped-Roller Boundary Conditions, AIAA Conference Paper, SciTech 2024, Orlando Florida, 8-12ve of January 2024.
3. Trevor Irwin*, **Marcias Martinez**, *Craig Merrett*, Stress Relaxation of Adhesively Bonded Single Lap Shear Joints, AIAA Conference Paper, SciTech 2024, Orlando Florida, 8-12ve of January 2024.
4. Todd Mull*, *Jared Taylor, David Forsyth*, **Marcias Martinez**, Ultrasonic Inspection of Thin Composite Laminates, Proceedings of SPIE- Smart Structures, Non-Destructive Evaluation 2023, Long Beach, California, USA. 12ve-16th of March 2023.
5. Nicolas Venturini*, **Marcias Martinez**, *Enrico Troiani*, Maria Barroso-Romero, Francesco Falcetelli, "Experimental Broadband Signal Reconstruction in Plate-like Structures", Proceedings of the International Conference on Adaptive Structure and Technologies, ICAST, Montreal, Quebec, Canada, Oct. 2019.
6. Brendan Ooi*, Salman Shafi, Chris Bassindale*, Jeremy Laliberté, Craig Merrett,* **Marcias Martinez**, "Development of a Cross-Border Bridge Inspection Utilizing a Remotely Piloted Aircraft System at the Ogdensburg-Prescott International Bridge", Proceedings of the Unmanned Systems Canada Conference, Ottawa, October 2019.
7. S. Pant*, *D. Backman, P. Keum,* **M. Martinez**, *P. Patnaik*, "Evaluation of Structural Health Monitoring Sensors during Fatigue Loading at Room Temperature", 12ve International Workshop on Structural Health Monitoring, Stanford University, Palo Alto, CA, USA, September 2019.
8. *J. Goldak**, **M. Martinez,** *D. Aidun, J. Zhou, S. Tchernov and H. Nimrouzi*, "Correlating Large sets of Experimental data with High Resolution Computational Weld Mechanics Models", 12ve International Seminar on Numerical Analysis of Weldability, Tu Graz, Austria, September 2018.
9. Francesco Falcetelli*, Maria Barroso Romero, Shashank Pant, *Enrico Troiani*, **Marcias Martinez**, Modelling of a Pencil-Lead Break Acoustic Emission Sources using Time Reversal, 9th European Workshop on Structural Health Monitoring (EWSHM), 2018, Manchester, UK, July 9th to 11th 2018.
10. S. Pant*, **M. Martinez**, *M. Yanishevsky, D. Backman*; "Combined Effects of Load and Fatigue Crack Growth on Multi-Frequency Guided Wave Propagation in a C-Channel Type Aerospace Structure for SHM Applications", 9th European Workshop on Structural Health Monitoring (EWSHM), 2018, Manchester, UK, July 9th to 11th 2018.
11. Leila Sauvage*, *W. (Bill) Wei*, and **Marcias Martinez**; "When Conservation Meets Engineering: Predicting the Damaging Effects of Vibrations on Pastel Paintings", Studies in Conservation, Princeton, NJ, Nov 2017, USA.
12. Nicolò Facciotto*, **Marcias Martinez**, *Enrico Troiani,* Source Identification and Classification of Acoustic Emission Signals by a SHAZAM Inspired Pattern Recognition Algorithm, IWSHM Conference 2017, September 2017, Palo Alto, California, USA.
13. C. de Mooij*; **M. Martinez***; R. Benedictus;* "Sensor Fusion for Shape Sensing: Theory and Numerical Results", Proceedings of the International Conference of Adaptive Structure and Technologies (ICAST), Lake George, NY, USA, Oct. 2016.
14. F. Ribeiro*, **M. Martinez**, *C. Rans*, Evaluation of Mode II Fatigue Durability of Bonded Composite Repairs using the Central Cut Plies Specimen, Proceedings of the Meeting on Aeronautical Composite Materials Structures, MACMS 2015, Sao Paulo, Brazil, December 3rd-4th, 2015.
40. Vargalui*, **M. Martinez**, *D.S. Zarouchas,* S. Pant, Temperature Effects on an Acoustic Emission Based SHM System - Applied to composite materials-, International Conference of Adaptive Structure and Technologies – ICAST, Kobe, Japan, October 2015.
15. H. Truong*, **M. Martinez**, *O. Ochoa and D. Lagoudas*, Experimental and Computational Investigation of Hybrid Interfaces in Hybrid Composite Laminates, 30th American Society for Composites, East Lansing, MI, September-2015.

16. Hieu T.X. Truong*, **Marcias J. Martinez,** *Ozden O. Ochoa and Dimitris C. Lagoudas,* An Investigation on Hybrid Interface using On-line Monitoring Experiment and Finite Element Analyses, 20th International Conference on Composite Material (ICCM), Copenhagen, July 19th-24-2015.
17. A. Cooperman*, **M. Martinez**, MEMS Inertial Sensors for Load Monitoring of Wind Turbine Blades, Proceedings of SPIE Smart Structures/NDE 2015, San Diego, California, 03/2015.
18. A. Cooperman*, M. Martinez, MEMS for Structural Health Monitoring of Wind Turbine Blades, Proceedings of the International Conference on Adaptive Structure and Technologies, The Hague, Netherlands, October 2014.
19. *J. Sodja, R. de Breuker**, **M. Martinez**, "Experimental Evaluation of the Morphing Leading Edge Concept", Accepted for publication in the Proceedings of the American Institute of Aeronautics and Astronautics Science and Technology Forum 2015, June 2014.
20. *D. Gagar**, **M. Martinez**, *P. Foote,* "Development of Generic Methodology for Designing a Structural Health Monitoring installation based on Acoustic Emission Technique", Submitted for the consideration of the Proceeding of the 3rd International Conference on Through-life Engineering Services, 4-5th November 2014
21. M.J.G.N. Boon*, *D. Zarouchas,* **M. Martinez**, *D. Gagar, R. Benedictus, P. Foote,* Temperature and Load Effects on Acoustic Emission Signals for Structural Health Monitoring Applications, Submitted for the consideration in the Proceedings of the 7th European Workshop on Structural Health Monitoring, July 8th-11th 2014, Nantes, France.
22. Maria Barroso-Romero*, Darun Barazanchy, **Marcias Martinez**, *Roger M. Groves, Rinze Benedictus,* Time Reversal of Lamb Waves for Damage Detection in Thermoplastic Composites, Proceedings of the International Conference on Adaptive Structure and Technologies, Aruba, 2013.
23. Jeremy Bussieres, **Marcias Martinez***, Darun Barazanchy, *Dimitri Debruyne, Pascal Lava,* "Load Monitoring using a Rayleigh Backscattering Fibre Optic System", Proceedings of the International Conference on Adaptive Structure and Technologies, Aruba, 2013.
24. S. Pant*, *J. Laliberte,* **M. Martinez**, "Structural Health Monitoring (SHM) of Composite Aerospace Structures Using Lamb Waves" Proceedings of the 19th International Conference on Composite Materials', July 28,2013.
25. **M. Martinez**, *D. Bürger**, *C. Rans*, F. Habib, *A. Artemev,* "Structural Health Monitoring of Bonded Repairs", Published in the proceedings of the ICCE-21, Tenerife, Spain 2013
26. *D. Gagar**, **M. Martinez**, *M. Yanishevsky, B. Rocha, J. McFeat*, *P. Foote, P. Irving,* "Detecting and Locating Fatigue Cracks in a Complex Wing-box Structure using the Acoustic Emission Technique: A Verification Study", Submitted for publication in the proceedings of the International Workshop on Structural Health Monitoring, Palo Alto, California 2013. DOI: 10.13140/2.1.1548.3844
27. S. Pant*, *J. Laliberte*, **M. Martinez**, "Development of a Structural Health Monitoring (SHM) System for Aerospace Structures", Submitted to the CASI 60th Aeronautics Conference and AGM, 22nd CASI Aerospace Structure and Materials Symposium, April 30th till May 2nd 2013, Toronto, Ontario, Canada.
28. *Rocha, B. *, Yanishevsky, M., Beltempo, A., Rutledge, R., Bellinger, N.* and **Martinez, M.**, "Global Framework for the Assessment, Development and Demonstration of Structural Health and Load Monitoring Systems", CASI 60th Aeronautics Conference and AGM, 22nd CASI Aerospace Structure and Materials Symposium, Montreal, Canada. 2013
29. *D. Backman**, **M. Martinez**, "Validation of a Structural Health and Loads Monitoring Platform", Published in the 27th ICAF Symposium, 5-7June 2013, Jerusalem, Israel.
30. **M. Martinez*,** B. Rocha, M. Li, G. Shi, A. Beltempo, R. Rutledge, M. Yanishevsky, "Load Monitoring of Aerospace Structures using Micro Electro Mechanical Systems (MEMS)", SMASIS 2012, ASME 2012 Conference of Smart Materials, Adaptive Structures and Intelligent Systems, Stone Mountain, September 2012, Georgia, USA
31. F. Habib*, M**. Martinez**, *A. Artemev, M. Genest, M. Brothers*, "Structural Health Monitoring of Bonded Composite Repairs", Published in the proceedings of the International Conference of Adaptive Structure and Technologies (ICAST), October 10-12, 2010, Corfu, Greece.

32. Liu*, *C. Cheung,* **M. Martinez**, "Use of Artificial Neural Networks for Helicopter Load Monitoring". In Proc. 7th DSTO Intl Conference on Health and Usage Monitoring, March 2011. Melbourne, Australia.
33. **M. Martinez***, *A. Artemev,* "Piezoelectric Sensing Element for Hydrostatic Pressure Measurements", Published in the proceedings of the International Conference of Adaptive Structure and Technologies (ICAST), October 4-7, 2010, State College, PA, USA.
34. F. Habib*, **M. Martinez**, *A. Artemev, M. Genest, M. Brothers,* "Damage Detection and Quantification using the Acellent ScanGenie Acusto-Ultrasonic System", Published in the proceedings of the International Conference of Adaptive Structure and Technologies (ICAST), October 4-7, 2010, State College, PA, USA.
35. *Banerjee, S*., Beard, S.J.*, Habib, F., **Martinez, M.,** "Damage Quantification using SmartPatch System for Hot Spot Monitoring", to be published in the proceedings of SPIE Smart Structures and Materials + Non-destructive Evaluation and Health Monitoring, 7-11 March 2010, San Diego California, USA.
36. *Wickramasinghe, V*., Chen, Y*.*, Martinez, M., Kernaghan, R.*, Wong, F.* "Design and Verification of a Smart Wing for a Micro-Air-Vehicle", **50th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference**, 4-7 May 2009.
37. **Martinez, M.*,** *Chen, Y., Wickramasinghe, V., Wong F.* "Adaptive Airfoil Wing for Micro UAV Flight Control", 19th International Conference on Adaptive Structures and Technologies, 6-9 October 2008, Ascona Switzerland.
38. *Wickramasinghe,V., Chen,V., Nejad-Enasn, M.,* **Martinez M.*,** and *Wong,F.* "Verification of a Smart Wing Design for a Micro-Air-Vehicle through Simulation", CANSMART 2008: 11th International Workshop on Smart Material and Structures, 23-24 October 2008.
39. **Martinez M***, *Gang Li, Backman D., Oudovikine Al, and Bellinger N.* "Crack Detection on Composite and Metallic Aerospace Structures", 4th European Workshop on Structural Health Monitoring, 2-4 July 2008, Crakow, Poland.
40. **M. Martinez*,** *T. Marincak, T. Benak and N.C. Bellinger,* "Prototype Installation of a Surface Mountable Crack Sensor", Aging Aircraft Conference 2008, 20-24 April 2008, Phoenix, AZ, USA.
41. **Martinez, M.**; *Jodoin, A. *; Backman, D.; Marincak, T.; Li, G.*; "Development study of an In-flight Damage Monitoring System", CANCOM 2007 The Sixth Canadian-International Composites Conference From 14-Aug-2007 To 17-Aug-2007, Winnipeg, Manitoba, Canada.
42. *Renaud, G. *,* **Martinez, M.**, and *Backman, D.,* Finite Element Design and Analysis of a Damage Prone Bonded Patch for Disbond Sensing Applications, 22nd Annual Technical Conference of the American Society for Composites, 17-19 September 2007.
43. Schnackenburg, K. *, **Martinez, M.**, *Laliberté, J. and Dawson, J.* "Towards Better Artificial Insect Wings for Flow Visualization and Micro-Air Vehicles" *2007* International Conference on Adaptive Structures Technology (ICAST), Ottawa, ON, October 2007.
44. *Backman D. **, **Martinez, M.,** Reaud G., Genest M., Chisholm, K.*, "Thermoelastic Stress Analysis to Detect Disbonding in a Composite Patch", Submitted for publication in the Society of Experimental Mechanics, 3-6 June 2007.
45. **Martinez, M.** *, *Renaud. G., Backman D., Genest M., Delannoy M.,* "Demonstration of an Instrumented Patch", 14th International Symposium on: Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring (SPIE Symposium), 18-23 March 2007.
46. **M. Martinez*,** *A. Artemev, F. Nitzsche and B. Geddes*, "Finite Element Modeling of Actuated Fibre Composites" Proceedings of Third International Conference on High Performance Structures and Materials HPSM 2006. 3-5 May 2006, Ostend, Belgium. Published by WIT Press, Ed. C.A. Brebbia, 2006, p. 103-110.
47. *M. Melnykowycz*, **M. Martinez***, *F. Nitzsche, M. Barbezat, and A. Artemev*, "Active Airfoil Design and Finite Element Analysis of Smart Structures for Rotor Blade Applications" Proceedings of 16th International Conference on Adaptive Structures and Technologies, Paris, France, 9-12 October 2005, DEStech Publications, p. 182-189.

48. **M. Martinez***, *M. Melnykowycz, A. Artemev, and F. Nitzsche,* Finite Element Analysis of Actuated Fibre Composites. Proceedings of CANSMART 2005, International Workshop on Smart Materials & Structures. 13-14 October 2005, Toronto, Ontario, Canada. p. 231- 240.

POSTER PRESENTATIONS

1. Joshua Alamo, *Craig Merrett, Michael Bazzocchi*, **Marcias Martinez**, Modeling Brittle Fracture with Multiple Interactions, Annual CAMP Meeting, Clayton NY, May 2022.
2. Minhaz Morshed, *Craig Merrett, Ioannis Mastorakos*, **Marcias Martinez**, Identification of Ductile Damage Parameters for Polypropylene, Annual CAMP Meeting, Clayton NY. May 2022.
3. Juliana Garcia, Max Stephan, *Michael Bazzocchi*, **Marcias Martinez**, Design of a Lower Limb Exoskeleton for Firefighters, Annual CAMP Meeting, Clayton NY. May 2022.
4. Todd Mull, *Renato Nogueira*, **Marcias Martinez**, Non-Destructive Evaluation of Defects in Think Adhesively Bonded Structures using Ultrasonic Phased Arrays, Annual CAMP Meeting, Clayton NY. May 2022.
5. Mst Jannatul Ferdausi, **Marcias Martinez,** *Crag Merrett, Sumona Mondal*, Static Strength Prediciton of Adhesively Bonded Joints (Metal to Metal and Composite to Composites), Annual CAMP Meeting, Clayton NY. May 2022.
6. Rodrigo Salazar-Colunga, **Marcias Martinez**, Acousto-Ultrasonic (AU) baed Structural Health Monitoring System on Single Lap Shear Bonded Joints, Annual CAMP Meeting, Clayton NY. May 2022.
7. Miller, J., *Janoyan, K., Backus, E., Valyou, D.* and **Martinez, M.**, "Infrastructure Inspection with Full-Field UAS, International Conference of Adaptive Structure and Technologies," ICAST 2016, Lake George, NY, USA (Oct. 2016).
8. Facciotto, Nicolò, **Martinez, M.** and *Enrico, T.*, "Emission Signals by Time-Frequency Analysis," International Conference of Adaptive Structure and Technologies, ICAST 2016, Lake George, NY, USA (Oct. 2016).
9. Piccioni, F., **Martinez, M**. and *Enrico, T.*, "Cure Monitoring of Uni-directional Composite Laminas utilizing a Distributed Sensing Rayleigh Backscattering System," International Conference of Adaptive Structure and Technologies, ICAST 2016, Lake George, NY, USA (Oct. 2016).
10. Leila Sauvage, **Marcias Martinez**, *Bill Wei*, "Fragile Handle with Care! The effects of Vibrations on Pastels in Transport", International Association of Book and Paper Conservators, Berlin, Germany, 12-16th of October 2015.
11. Cornelis de Mooij, **Marcias Martinez**, *Rinze Benedictus,* Sensor Fusion Applied to Shape Sensing – Theory and Numerical Proof of Concept, International Conference of Adaptive Structure and Technologies, Kobe, Japan, October 2015.

ORAL PRESENTATIONS (NO PAPER)

1. Todd C. Mull, Rodrigo Salazar-Colunga, Jared Taylor, David Forsyth, **Marcias Martinez**, 13th International Conference on Adaptive Structure and Technologies, Knoxville Tennessee, Oct. 2022.

2. Mst. Jannatul Ferdausi, Cole Cappon, Craig Merret, Sumona Mondal, Marcias Martinez, Development of a viscoelastic life prediction model for adhesively bonded single lap shear joints, 13th International Conference on Adaptive Structure and Technologies, Knoxville Tennessee, Oct. 2022.
3. Todd C. Mull, Rodrigo Salazar-Colunga, Jared Taylor, David Forsyth, **Marcias Martinez**, Non-Destructive Evaluation and Structural Health Monitoring of Single Lap Shar Joints, NATO AVT-361, Amsterdam Netherlands, Oct. 2022.
4. Kimberly Konar, **Marcias Martinez,** Virtual Presentation: Development of a Distributed Sensing App for Principal Strain Calculations, CAMP Symposium 2020, Virtual Presentation. Oct. 2020.
5. **M. Martinez,** L. Sauvage, SOAR Presentation, March 9th 2020: When Conservation meets Engineering, Predicting the Damaging Effects of Vibrations on Pastel Paintings, SUNY Potsdam University, March 9th 2020.
6. C. de Mooij, **M. Martinez,** Monitoring Aerospace Structural Shapes (MASS): An iFEM Approach, HolSIP Workshop, Utah, February 2020.
7. *C. Merrett*, D. Long, J. Nagle and **M. Martinez**, Presentation of the Aerospace Flutter and Dynamics Council, Whichita, KS, Oct. 17-18, 2019
8. Scott Carlson, Marcias Martinez, Craig Merrett, Keith Hitchman, Caleb Morrison, Joshua Hodges, "Assessing the State-of-the-Art Residual Stress Input Methods for Crack Growth Prediction vs. test", Engineered Residual Stress Implementation Workshop, Salt Lake City, UT, September 12ve 2019.
9. *Marcus Stanfield,* **Marcias Martinez**, Use and Verification of Non-contacting Measuring Systems, ASTM E08-E28 Workshop, San Diego USA, May 23, 2018.
10. *Daryush Aidun, Hamid Eisazadeh, Jeff Bunn,* **Marcias Martinez**, *Fatemeh Hejripour,* "Use of Neutron Diffraction Technique for Measurement of Residual Strains/Stresses in Dissimilar Metal Welds (DMW)." JAPAN-US NDT Symposium, HAWAII, July 8-12, 2018.

SELECTED GOVERNMENT PUBLICATIONS

1. Shashank Pant, Paul Swindell, **Marcias Martinez,** Damage Detection using Acoustic Ultrasonic SHM system on FAA's Full-Scale Aluminum-Lithium Aircraft Structures, Internal Publication at the National Research Council Canada, LTR-SMM-2020-0057, May 2020.
2. **Martinez, M.,** Rocha, B., Li, M., Beltempo, A., Yanishevsky, M., and Rutledge, R.S., "Micro-Electro-Mechanical Systems (MEMS) for Static and Quasi-Static Load Monitoring Applications", LTR-SMPL-2011-0222, 9/26/2011.
3. Beltempo, A., Yanishevsky, M., Shi, G., **Martinez, M.**, Rutledge, R., Rocha, B., Wickramasinghe, V., and Chen, E., "SHM Platform 1A Collaborator Information Package", LTR-SMPL-2011-0255, 11/17/2011.
4. Liu, A., Cheung, C., and **Martinez, M.**, "Initial study using artificial neural networks for helicopter loads estimation", LTR-SMPL-2011-0198, 8/30/2011.
5. **Martinez, M.**, Benak. T., and Delannoy, M., Surface Mountable Crack Sensor Installation Procedure, 6 March 2009, LM-SMPL-2009-0046.
6. **Martinez, M.,** Genest, M., Renaud, G., Backman, D., Delannoy, M., and Brothers, M., Demonstration of an Instrumented Patch - Phase I, 14 December 2006, LTR-SMPL-2006-0226.
7. **Martinez, M.**, and Delannoy, M., Bonded Health Monitoring of an Instrumented Patch on FT193, 23 August 2006, LM-SMPL-2006-0150.

Since 2005, I have published over 25 internal lab technical reports at the National Research Council of Canada.

INVITED LECTURES AND KEYNOTE SPEAKER

1. **Marcias Martinez,** A Holistic Approach to Structural Integrity, University of Tennessee Space Institute, Tullahoma, TN, Oct. 2023.
2. **Marcias Martinez,** The Sticky Business of Gluing Airplanes, Annual CAMP Meeting, Clayton NY, May 2022.
3. **Marcias Martinez**, A Holistic Approach to Structural Health Monitoring, International Conference on Adaptive Structures and Technologies, October 2021 (Virtual)
4. **Marcias Martinez**, ALEX- The Medical Doctor of the Aerospace Industry, Weekly Seminar at the University of California Irvine (UCI), Department of Mechanical and Aerospace Engineering, Oct. 23rd 2020. (Virtual)
5. **M. Martinez**, L. Sauvage, "When Conservation meets Engineering: Predicting the Damaging Effects of Vibrations on Pastel Paintings", SUNY Potsdam, March 9th 2020.
6. **Martinez, M**., "ALEX- The Medical Doctor of the Aerospace Industry", Invited Seminar, Penn State University, Nov 11th 2016.
7. **Martinez, M**., "ALEX- The Medical Doctor of the Aerospace Industry", Invited Seminar, Clarkson University, October 2016.
8. **Martinez, M**., "ALEX- The Medical Doctor of the Aerospace Industry", Invited Seminar, University of Vermont, Burlington VT, October 2016.
9. **Martinez, M.,** "The Aid Plane, A Cargo Delivery System", Invited Speaker on Sustainability, Clarkson University, September 2016.
10. **Martinez, M.,** "ALEX – The Medical Doctor of the Aerospace Industry", Invited Seminar, U.S. Army Research Laboratory, USA. November 2015.
11. **Martinez, M.,** "ALEX – The Medical Doctor of the Aerospace Industry", Invited Seminar Speaker, Sapienza University of Rome, Italy, May 5th 2015.
12. **Martinez, M.,** "ALEX – The Medical Doctor of the Aerospace Industry", Invited Seminar Speaker, University of Twente, The Netherlands, April 2nd 2014.
13. **Martinez, M.,** "ALEX – The Medical Doctor of the Aerospace Industry", Invited Seminar Speaker, Texas A&M, College Station, 20th of February 2014.
14. **Martinez, M.,** *et al.,* "Piezoelectric Sensing Element for Biomedical Applications", Invited talk at: The 20th IEEE International Symposium on Applications of Ferroelectrics, International Symposium on Piezoresponse Force Microscopy & Nanoscale Phenomena in Polar Materials, Vancouver, BC, Canada, July 24-27-2011.
15. **Martinez, M.** "Structural Health Monitoring Systems and Non-Destructive Evaluation", Invited speaker by Universidad del Zulia, Maracaibo, Zulia, Venezuela, November 2009.

KEYNOTE SPEAKER:

1. **Marcias Martinez**, ALEX- The Medical Doctor of the Aerospace Industry, 4to Congreso de Ing. Aeronautica, Oct. 2020 (Virtual).
2. **Martinez, M.,** "Structural Health Monitoring of Aerospace Structures", Invited speaker by Tecnológico de Monterrey – Congreso IGNIS 2010, Puebla, Mexico, October 21-23-2010.
3. **Martinez, M.,** "Structural Health Monitoring Systems and Non-Destructive Evaluations", Invited speaker by El Centro de Ingenieria y Desarrollo Industrial (CIDESI), Queretaro, Mexico, 22-23 of October 2009.

PROFESSIONAL SERVICE
CONFERENCE ORGANIZATION AND SESSION CHAIR

1. Session Chair at 30th International Conference on Adaptive Structure and Technologies, ICAST, Montreal, Quebec, October 2019.
2. Session Chair at the Centre for Material Processing (CAMP) annual meeting, Syracuse, New York City, NY, May 2019.
3. Session Co-Chair at the 13th World Congress on Computational Mechanics, New York City, NY, July 2018.
4. Session Co-Chair, at European Workshop on SHM, Manchester, UK, 2018.
5. Session Co-Chair, at International Workshop on SHM, Palo – Alto California, USA, 2017.
6. Session Chair on SHM, International Conference on Adaptive Structures and Technologies, Lake George, USA, October 2016.
7. Session Chair of PHM in Wind Energy Applications, 2nd European Conference of the Prognostic and Health Management Society 2014, Nantes France.
8. Local Organizing Committee for the 25th Jubilee of the International Conference of Adaptive Structure and Technologies, ICAST, The Hague, The Netherlands, October 2014.
9. Local Organizing Committee for DeMEASS VI Conference, Ede, The Netherlands, May 2014.
10. Panel Sessions Chair for the 2nd European Conference of the Prognostic and Health Management Society, July 2014, Nantes France.
11. Session Chair of a Structural Health Monitoring and NDI Session at SAMPE 2010 in Seattle WA. USA. 2010
12. Deputy Chair of the International Conference of Adaptive Structure and Technologies, ICAST, Ottawa, ON. Canada, October 2007.

FUNDING AT CLARKSON UNIVERSITY

Over $4.5 million dollars in research funding since 2015.

TEACHING EXPERIENCE AT CLARKSON UNIVERSITY POTSDAM, NY, USA

Recipient of the 2016-2017 Clarkson University Student Association Outstanding Teacher Award. This award is given annually by the Clarkson University Student Association to a professor who makes a significant contribution to education and teaching at Clarkson University.

Since 2015, as an Associate Professor I have taught the following undergraduate/graduate courses:

AIRCRAFT PERFORMANCE (AE429)
JANUARY 2023 – PRESENT.

- The course covers the basic principles of aircraft performance, mission profiles, frame of references, equations of motion of the aircraft from an aircraft performance perspective, cruise, climb and descent. This course required the student to perform the analysis of a vintage aircraft and work with several museums in the US and Canada. In addition, they were mandated to develop a Matlab App. that could perform many of the performance calculations. The students individual evaluation was achieved through a midterm and a final exam, in addition to their home-work and group project.

STABILITY OF AEROSPACE VEHICLES (AE430)
AUGUST 2015 – PRESENT.

- The course covers an introduction to atmosphere flight vehicle dynamics. Static stability and control. Equations of motion. Dynamic stability and control. Classical control theory. Transfer functions and block diagrams. Routh's criterion, Root locus techniques and PID Controllers of aerospace vehicles. The students are evaluated through the development of Matlab App., in addition to midterm, final exam and project-based evaluation. The project based evaluation requires the student to develop models in X-Plane.

STRENGTH OF MATERIALS (ES222)
JANUARY 2021 – MAY 2021.

- Taught the students the basic principles of strength of materials, Generalized Hooke's Law, torsion, bending and Mohr's Circle. The course was taught both in person and on-line. The students were evaluated via online quizzes (McGraw Hill Connect), an in-person midterm and one final exam.

COMPOSITE DESIGN COURSE (AE/ME457)
AUGUST 2020 – PRESENT.

- This course was fundamentally designed as a hands-on course. The students were required to manufacture and test composite specimens following ASTM D3039. They were then required to test their manufactured specimens and compare their findings with respect to analytical models (Classical Laminate Theory) and a computational model in ABAQUS CAE. Finally, groups of students

had to manufacture using a variety of techniques a structure of their choosing. The analytical aspects of the course were evaluated through the development of a graphical user interface MATLAB app. The app. had to perform calculations on lamina strength, Tsai-Hill, Tsai-Wu failure criteria, and ABD stiffness matrices.

MULTIDISCIPLINARY DESIGN COURSE – HOUSE U BUILD (HUB)
JANUARY 2017 – DECEMBER 2019.

- This course consisted in providing a challenge of designing a House that can fit into a box for people that have been affected by a natural disaster. The HUB project/course provided an opportunity for the development of a multidisciplinary team consisting of the following majors: Aeronautical Engineering, Mechanical Engineering, Electrical Engineering, Engineering Management, Communication and Media, Sustainability and Supply Chain. This multidisciplinary course forced the students to operate a CAPSTONE style project in a realistic industrial environment.

INTRODUCTION TO AERONAUTICAL ENGINEERING (AE212)
JANUARY 2017 – DECEMBER 2019.

- This course consists in providing 2nd Year students the basics of flight mechanics, aerodynamics, structural analysis, and controls. The students were evaluated via assignments, midterms and one final exam.

AIRCRAFT DESIGN II (AE451)
JANUARY 2016 – MAY 2016.

- This course challenged the students to design an amphibious solar powered UAV for surveillance of the coast of Puerto Rico. The course culminated in a presentation of their design with industry partners.

HOLISTIC STRUCTURAL INTEGRITY PROCESS (HOLSIP) – ME530
JANUARY 2016 – TO PRESENT.

- The course discussed a Holistic Structural Integrity Process (HolSIP) founded upon the primary idea that all failure mechanisms involved in the degradation of a structure are interconnected and should not be analyzed as merely the sum of individual mechanisms. Many failure mechanisms interact and are complex and challenging to understand, and thus the requirement for a holistic physics-based analysis and design approach to structural integrity problems. The final goal of this holistic approach is to assess the reliability and structural integrity of aerospace and wind energy structures while maintaining and achieving higher safety conditions more accurately. Although the topic is primarily focused on Aerospace and Mechanical Engineering applications, the reality is that the holistic philosophy can be applied to a variety of structural integrity problems.

TEACHING EXPERIENCE AT DELFT UNIVERSITY OF TECHNOLOGY – TUD, DELFT, THE NETHERLANDS

Since 2012, as an Assistant Professor, I supervise M.Sc. and Ph.D. candidates performing state of the art research in structural health monitoring and smart structures. In addition, I teach several undergraduate and graduate courses within the department of structural integrity and composites.

STATICS
SEPTEMBER 2012 AND 2013

- Lectured over 440 first year engineering students on the basic principles of statics/mechanics.

TUTOR FOR THE DESIGN AND SYNTHESIS EXERCISE
UNMANNED AERIAL VEHICLE CARGO DELIVERY SYSTEM (UAV-CDS)
2013 -2014

- Led a design team on the development of UAV cargo delivery system. The primary objective of this design was to provide humanitarian support for the International Red Cross.

TUTOR FOR THE DESIGN AND SYNTHESIS EXERCISE
SOLAR POWERED AMPHIBIOUS UNMANNED AERIAL VEHICLE (UAV)
2012 -2013

- Led a design team on the development of an amphibious solar powered UAV for maritime surveillance operations. The results of this design are the basis for a research and development project within the faculty of aerospace.

TEACHING EXPERIENCE AT CARLETON UNIVERSITY, OTTAWA, ONTARIO CANADA

ADJUNCT PROFESSOR
2008 – 2012

- Since 2008, as an Adjunct Professor, I supervise M.Sc. and Ph.D. candidates performing state of the art research in structural health monitoring and smart structures.

4TH YEAR UNMANNED AIR VEHICLE (UAV) PROJECT MECH 4907 / AERO 4907,
2009-2011

- As an Adjunct Professor I have served as an external advisor to undergraduate students in the development and design of a structural health monitoring system for a UAV. As the lead engineer, I supported the structures team in the development of the composite structure of the aircraft.

FEEDBACK AND CONTROL SYSTEMS, MAAE 4500,
2004-2008

- Lectured 4th year undergraduate students on the principles and applications of feedback and control systems including the design of PID controllers using Matlab.

CAD/CAM, MECH 4705,
2000-2001

- Lectured students on the use CAD/CAM technology using Pro/Engineer CAD package as a mechanical design-engineering tool.

SUMMARY OF TEACHING EVALUATIONS

CLARKSON UNIVERSITY

- SUMMARY OF TEACHING EVALUATION (P-PAPER BASED, O-ONLINE BASED) OUT OF 5

COURSE	CLASS NAME	SEMESTER	QUESTIONS 14/19/20	UNIV. MEAN 14/19/20	NUMBER OF STUDENTS
AE430- O Resp. 23%	Stability and Control of Aerospace Vehicles	Fall 2023	4.6/4.1/3.7	4.2/4.3/4.1	31
AE429 – O Resp. 19%	Flight Mechanics and Performance	Spring 2023	4.0/3.8/3.6	4.3/4.3/4.1	42
ES222 – O Resp. 51%	Strength of Materials	Fall 2021	4.4/2.7/2.9	4.3/4.3/4.1	55
AE430- O Resp. 28%	Stability and Control of Aerospace Vehicles	Fall 2020	4.6/4.3/3.9	4.2/4.2/4.1	25
AE 457 – O Resp. 44%	Aerospace Composite Design	Fall 2020	4.3/4.0/4.0	4.2/4.2/4.1	9
AE 212 – O Resp. 67%	Intro. To Eng. Design	Fall 2019	4.5/3.8/4.1	4.2/4.2/4.0	47
AE 430 – O Resp. 40%	Stability and Control of Aerospace Vehicles	Fall 2019	4.1/3.2/3.5	4.2/4.2/4.0	42
AE 212 - O	Intro. To Eng. Design	Spring 2019	4.6/4.0/4.2	4.2/4.2/4.0	32
AE 430 - O	Stability and Control of Aerospace Vehicles	Fall 2018	4.5/2.5/2.7	4.3/4.2/4.1	41
AE 212- O	Intro. To Eng. Design	Spring 2018	4.5/4.4/4.2	4.3/4.3/4.1	51
AE/ME 430 -P	Stability and Control of Aerospace Vehicles	Fall 2017	4.6/4.5/4.0	4.2/4.3/4.0	34
AE 212 -P	Introduction to Engineering Design	Spring 2017	4.2/3.9/3.7	4.3/4.3/4.0	64
ME 530 -P	Holistic Structural Integrity Process (HolSIP)	Spring 2017	4.8/4.5/4.0	4.3/4.3/4.0	4
AE/ME 430 -P	Stability and Control of Aerospace Vehicles	Fall 2016	4.6/4.3/4.0	4.3/4.3/4.0	42

AE 451 (01) - P	Aircraft Design II	Spring 2016	4.8/4.3/3.6	4.2/4.3/4.0	23
ME 657 - P	Selected Topics in Solid Mechanics	Spring 2016	4.5/5.0/4.8	4.2/4.3/4.0	4
AE 430-P	Stability and Control of Aerospace Vehicles	Fall 2015	4.8/4.6/3.9	4.2/4.2/4.0	56
Question 14: The level of this course was intellectually challenging. Question 19: Overall, how would you rate this instructor? Question 20: Overall, how would you rate this course?					

- P- Paper based evaluation have a 70-80% response rate, while O-Online based evaluations only 40-60% response rate.

TU DELFT

SUMMARY OF TEACHING EVALUATION AT TU DELFT

COURSE NAME	2012	2013	2014
DSE	9.33/10		
STATICS	4.31/5	4.36/5	4.41/5

CARLETON UNIVERSITY

SUMMARY OF TEACHING EVALUATION (Paper based evaluation)

COURSE NUMBER	2000	2004	2005	2006	2007
MAAE4500		4.08/5	4.22/5	4.02/5	4.12/5
MECH 4705	4.22/5				

STUDENTS SUPERVISION

CLARKSON UNIVERSITY

THESES SUPERVISED BY DR. MARTINEZ AT CLARKSON UNIVERSITY

1. **Mr. Todd Trevor – Status: Work in Progress**
   Ph.D. Thesis: Development of a non-linear composite modeling techniques with viscoelastic effects for single and double lap shear joints.

Clarkson University, January 2023 – to present.

2. **Mr. Todd Mull- Status: Work in Progress**
   Ph.D. Thesis: Ultrasonic Phased Array on Composite Materials.
   Clarkson University, May 2021- to present.

3. **Mr. Minhaz Morshed - Status: Completed**
   M.Sc. Thesis: Fracture Mechanic of Polypropylene Fibers
   Clarkson University, May 2021- to August 2023.

4. **Mr. Joshua Alamo - Status: Completed**
   M.Sc. Thesis: Smoothed-Particle Hydrodynamic Modeling of Glass Fracture with Multiple Interactions.
   Clarkson University, May 2021- to April 2023.

5. **Miss Jannatul Ferdausi- Status: Completed**
   M.Sc. Thesis: Static Strength Prediction of Adhesive Joints
   Clarkson University, May 2021- to December 2023.

6. **Miss Juliana Garcia - Status: Completed**
   M.Sc. Thesis: Exoskeleton Design for Firefighters
   Clarkson University, September 2021- to present.

7. **Mr. Alessandro Baldassare - Status: Completed**
   Ph.D. Thesis: Fatigue of Composite Structures.
   Clarkson University, January 2016- to December 2021

8. **Mr. David Mackey - Status: Completed**
   M.Sc. Thesis: Experimental Evaluation of Dissimilar Welds
   Clarkson University, August 2020- to July 2021

9. **Mr. Brian Pfeil - Status: Completed**
   M.Sc. Thesis: Finite Element Analysis of Three Shaving Razor Blades
   Clarkson University, August 2018- to July 2020

10. **Mr. Jacob Miller - Status: Completed**
    Supervisors: Dr. Marcias Martinez, Dr. Kerop Janoyan
    M.Eng. Thesis: SLAM Algorithm for Flying UAVs through Complex Structures.
    Clarkson University, September 2015- to May 2017.

MCNAIR SCHOLAR AND CUSA STUDENTS UNDER DR. MARTINEZ AT CLARKSON UNIVERSITY

1. **Marageth Pliazhuk** – In-Situ Monitoring of Weldments, 1st Place in Engineering at the FIU McNair Scholar Conference in, Miami FL, 2018.
2. **Jeremy Macks** – Instrumentation of an Impact Drop Tower. (CUSA, 2018), (McNair Scholar, 2019)

HONOR THESIS SUPERVISED BY DR. MARTINEZ AT CLARKSON UNIVERSITY

1. **Delfina Rodrigues** – Fracture Toughness of Metamaterials – **Status: Completed**
2. **Kim Konar** – Fiber Optic Distributed Sensing algorithm – **Status: Completed**

3. **Patrick Perry** – Instrumentation of a Canoe Paddle – **Status: Completed**
4. **Nicholas Liotta** – Distributed Sensing Fiber Optic – **Status: Completed**
5. **Sean Gauntt** – Lamb Wave Study in Composite Materials – **Status: Completed**

TU DELFT

THESIS SUPERVISED AT DELFT UNIVERSITY OF TECHNOLOGY:

1. **Miss Leila Sauvage - Status: Work in Progress**
   Supervisors: Dr. Marcias Martinez, Dr. Bill Wei
   Ph.D. Thesis: Life Assessment of 18th Century Pastel Paintings under Transport Loading
   Delft University of Technology, September 2014- to present.

2. **Mr. Cornelis de Mooij - Status: Work in Progress**
   Supervisors: Dr. Marcias Martinez
   Ph.D. Thesis: Load Monitoring of Aerospace Structures through an Inverse Finite Element Method.
   Delft University of Technology, September 2014- to present.

3. **Mr. Ewoud Aaij - Status: Completed**
   Supervisor: Dr. Marcias Martinez
   M.Sc. Thesis: Lamb Wave Propagation in Sandwich Composite Structures
   Delft University of Technology, March 2013-to be completed April 2016

4. **Dr. Aubryn Cooperman - Status: Completed**
   Supervisor: Dr. Marcias Martinez
   Post-Doctoral Study: Load Monitoring of Wind Energy and Aerospace Structures through Shape Sensing.
   Delft University of Technology, September 2013-to be completed August 2015

5. **Mr. Alexandru Vargalui - Status: Completed**
   Supervisor: Dr. Marcias Martinez,
   M.Sc. Thesis: A.E. implementation on a UAV Wing.
   Delft University of Technology, March 2014-to be completed May 2015

6. **Mr. Rutger Stottelaar - Status: Completed**
   Supervisors: Dr. Marcias Martinez and Dr. Behnam Asharif (NRC)
   M.Sc. Thesis: Effects of Humidity on the development of CNT Sensor.
   Delft University of Technology, January 2014- January 2015

7. **Mr. Maurice Boon - Status: Completed**
   Supervisors: Dr. Marcias Martinez and Dr. Daniel Gagar (Cranfield University),
   M.Sc. Thesis: Temperature and Load Effects in Modeling and Experimental Verification on Acoustic Emission Signals for Structural Health Monitoring Applications
   Delft University of Technology, September 2013-July 2014

8. **Miss Patricia Martinez – Status: Completed**
   Supervisor: Dr. Marcias Martinez
   M.Sc. Thesis: Development of an Instrumented UAV Wing
   Delft University of Technology, September 2013-March 2014

9. **Mr. Tom Lotz - Status: Completed**
   Supervisor: Dr. Marcias Martinez, Dr. Rene Alderliesten,
   M.Sc. Thesis: Crack Growth Study on Thick Aluminum Components with Variable Residual Stress Fields
   Delft University of Technology, The Netherlands, October 2012 to January 2014

10. **Mr. Darun Barazanchy - Status: Completed**
    Supervisors: Dr. Marcias Martinez, Dr. Bruno Rocha (NRC)
    M.Sc. Thesis: Modeling of Lamb Waves in Composite Structures using the Time Reversal Approach for SHM applications
    Delft University of Technology, The Netherlands, January 2013 to August 2013

CARLETON UNIVERSITY

THESIS SUPERVISED AT CARLETON UNIVERSITY:

1. **Mr. Prem Anand – Status: Completed**
   Supervisors: Prof. Jeremy Laliberte and Prof. Marcias Martinez
   M.a.Sc. Thesis: Use of Optical Fibers for Structural Health Monitoring of Aircraft Components.
   Carleton University, Ottawa, Canada, May 2015 to May 2017.

2. **Dr. Christian Garcia – Status: Completed**
   Supervisors: Prof. Marcias Martinez and Prof. Andrei Artemev
   Ph.D. Thesis: Modeling of Residual Stress Fields and their Effects on Fatigue Crack Growth Carleton University, Ottawa, Canada, January 2011 to be completed in May. 2015.

3. **Dr. Shashank Pants – Status: Completed**
   Supervisors: Prof. Jeremy Laliberté, Prof. Marcias Martinez
   Ph.D. Thesis: Detection and Characterization of Low Velocity Impact Damage on Foam-Core Carbon Fiber Sandwich Composite Structures.
   Carleton University, Ottawa, Canada, September 2009 to June 2014.

4. **Mr. Ghazi H. Alsoruji – Status: Completed**
   Supervisors: Prof. Andrei Artemev & Prof. Marcias Martinez
   M.a.Sc. Thesis: Celular Model Simulations of Solidification Structures in Binary Alloys
   Carleton University, Ottawa, Canada, September 2011 - May 2013

5. **Mr. Fady Habib** – **Status: Completed**
   Supervisors: Prof. Marcias Martinez & Prof. Andrei Artemev
   M.a.Sc. Thesis: Structural Health Monitoring of Bonded Composite Joints
   Carleton University Ottawa, Canada, May 2009 to December 2011

6. **Mr. Robert Kernaghan – Status: Completed**

Supervisors: Prof. Marcias Martinez & Prof. Andrei Artemev
M.a.Sc. Thesis: Finite Element Analysis of Morphing Structures
Carleton University Ottawa, Canada, September 2008 to December 2011

7. **Mr. Terrence Cheung – Status: Completed**
   Supervisors: Prof. Marcias Martinez & Prof. Andrei Artemev
   M.Eng. Project: Delamination Growth Prediction in Composite Patched Repairs
   Carleton University Ottawa, Canada January 2008 to December 2011

Undergraduate Student Supervision: I have supervised a total of 7 undergraduate student, since September 2005, as part of an industrial experience program at the National Research Council of Canada.

VISITING SCHOLARS

All visiting scholars were self-supported for the entire duration of their stay at Clarkson University - Equivalent funding $37,500 for a 6-month period for each student.

1. **Gabriele Tedesco - Status: Completed**
   Supervisors: Dr. Marcias Martinez, Dr. Craig Merrett
   M.Sc. Thesis: SHM of Iso-Grids
   Clarkson University & Gugliemo Marconi University of Rome, January 2020- to June 2020.

2. **Nicolas Venturini - Status: Completed**
   Supervisors: Dr. Marcias Martinez, Dr. Enrico Troiani
   M.Sc. Thesis: Experimental Evaluation of Broadband Signal in Acoustic Emissions
   Clarkson University & University of Bologna, March 2019- to September 2019

3. **Carlos Eduardo Reyes - Status: Completed – Visiting Scholar (No thesis)**
   Supervisors: Dr. Marcias Martinez
   Research Project: In-Situ Monitoring of Transient Formation in Vertical Welds

4. **Francesco Felcaltelli - Status: Completed**
   Supervisors: Dr. Marcias Martinez, Dr. Enrico Troiani
   M.Sc. Thesis: Modelling of a Pencil-Lead Break Acoustic Emission Sources using Time Reversal
   Clarkson University & University of Bologna, December 2017- to October 2018

5. **Mr. Matteo Maracantoni - Status: Completed**
   Supervisors: Dr. Alessandro Ceruti and Dr. Marcias Martinez
   M.Sc. Thesis: Morphing of a Trailing Edge Wing
   Clarkson University, June 2017- to July 2018.

6. **Nicolo Facciotto - Status: Completed**
   Supervisors: Dr. Enrico Troiani, Dr. Marcias Martinez
   M.Sc. Thesis: Source Identification and Classification of Acoustic Emission Signals by a SHAZAM Inspired Pattern Recognition Algorithm.
   Clarkson University & University of Bologna, September 2014- to March 2015

7. **Rodrigo Salazar - Status: Completed**
   Supervisors: Dr. Marcias Martinez, Dr. Pedro Lopez
   M.Sc. Thesis: SHM of Adhesively Bonded Joints
   Clarkson University & University of Bologna, October 2021 to July 2023

8. **Sara Giorgioni – Status: Completed**
   Supervisor: Dr. Enrico Troiani, Dr. Marcias Martinez
   M.Sc. Thesis**:** Upper-Limb Exoskeleton Design for Firefighters
   Clarkson University & University of Bologna, Nov. 2021 to July 2022.

9. **Giullia Babi - Status: Completed**
   Supervisors: Dr. Marcias Martinez, Dr. Enrico Troaini
   M.Sc. Thesis: SHM of Adhesively Bonded Joints
   Clarkson University & University of Bologna, September 2022 to July 2023.

ASSOCIATE EDITOR & SERVICE

- Open House Committee (2015-2021)
- CAMP Director Search Committee (2020)
- Aerospace Engineering Committee (2015-Present)
- Graduate Student Selection Committee (2015-Present)
- Faculty Advisory Board for CAMP (2018-Present)
- Faculty Hiring Search Committee (2015, 2017, 2021, 2023)
- Judge in the FLL – Lego US Robotic Competition (2018)
- Advising to Design Build and Fly (DBF) and Martial Arts Club. (2015-Present)
- Advisor to TU Delft exchange Students through the Clarkson International Office (2015-Present)
- American Welding Society – A9 Committee on Computerization of Welding Information (2020-Present)

AWARDS

1. 2023 Clarkson University Excellence in Research and Scholarship Award
2. Clarkson University Million Dollar Club (March 2023)
3. Charles H. Jennings Award, from the American Welding Society, Las Vegas NV, Nov. 2020.
4. Mentor to Miss Marharyta Pliazhuk, McNair Scholar and 1st Place winner in Engineering at the McNair Conference in 2018.
5. 2016-2017 Clarkson University Student Association (CUSA) Teaching Excellence Award
6. European Commission Madame Marie Curie Fellow (2013-2017)

NATIONAL AND INTERNATIONAL MEMBERSHIPS

- Permanent member of the International Organizing Committee for ICAST – International Conference of Adaptive Structure and Technologies.
- AIAA – Associate Fellow, Class of 2023
- AIAA – Senior Member, 2018-2022
- AWS – American Welding Society.