# Antonio Alessandro **Deleo**


Aerospace Engineer · Structural Engineer · Software Engineer

*Structural Analysis Engineer @ ES3, San Diego, CA, USA*

*Department of Aeronautics & Astronautics @ University of Washington, Seattle, WA, USA*

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*"Be the change that you want to see in the world."*

## Work Experience

**Engineering and Software System Solutions, Inc. (ES3)** — *San Diego, CA*

Structural Analysis Engineer — *Aug. 2023 – Present*

- Subject Matter Expert (SME) in Composite Modeling
- Developer of MARS Finite Element Research Code
- Supervisor: Dr. Daniele Pelessone, Chief Scientist

## Education

**University of Washington Seattle** — *Seattle, US*

Doctor of Philosophy (Ph.D.) in Aerospace Engineering — *Sep. 2016 – Sep. 2023*

- Thesis title: FastDM4C: A Fast and Efficient Discrete Model for Composites
- Supervisor: Prof. Marco Salviato, Professor in Aeronautics & Astronautics
- GPA: 3.95

Bachelor of Science (B.S.) in Aerospace Engineering — *Sep. 2014 – Jun. 2016*

- Aeronautical Capstone Project
- Technical Electives in Aerostructures and Modeling

**Cascadia College** — *Bothell, US*

Bachelor of Science (B.S. Transfer) in Civil Aeronautical — *Sep. 2012 – Jun. 2014*

- GPA: 3.97

**National Conservatory of Music "G.Rossini"** — *Pesaro, Italy*

Master (M.Mus) in Music - Flute Performance — *Oct. 2008 – Jun. 2010*

Bachelor (B.Mus) in Music - Flute Performance — *Oct. 2005 – Jun. 2008*

- GPA: 4.0 cum Laude

## Academic Experience

**University of Washington** — *Seattle, US*

Research Assistant at Multiscale Analysis of Materials & Structures (MAMS) Lab — *Sep. 2016 - Sep. 2023*

- Modeled fracture onset and crack propagation in composites using discrete modeling
- Investigated bio-inspired materials for enhanced durability and performance
- Conducted multi-axial fatigue studies on composite materials
- Explored applications of composite origami in structural design
- Developed and maintained computational codes for structural analysis

Teaching Assistant in the Aeronautics & Astronautics Department — *Sep. 2016 - Sep. 2020*

- Taught introductory and advanced Finite Element Method classes
- Instructed on mechanics of composites, covering both introductory and advanced topics
- Supported courses in solid mechanics
- Assisted with aircraft design projects for graduating undergraduates

**Conservatory of Music "G.Rossini"** — *Pesaro, Italy*

Teaching Assistant in Flute Performance Program — *Sep. 2010 - Jun. 2012*

- Provided individualized instruction to enhance students' technical and expressive abilities
- Assisted in preparing students for performances and recitals
- Supported faculty in flute pedagogy and curriculum development

## Specialized Courses

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|---|---|---|
| Sep. 2018 | **Nanofabrication**, Washington Nanofabrication Facility (WNF) | *Seattle, WA, USA* |
| Jun. 2017 | **Fatigue and Damage Tolerant Design**, FAA | *Seattle, WA, USA* |
| Jun. 2015 | **GEA Aviation Summer Program**, ENAC - ISAE-SUPAERO | *Toulouse, France* |

## Honors & Awards

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|---|---|---|
| May 2015 | **Robert Reynolds Scholarship**, University of Washington Seattle | *Seattle, WA, USA* |
| Aug. 2015 | **Valedictorian GEA Aviation Program**, ENAC - ISAE/Supaero | *Toulouse, France* |
| 2012 – 2014 | **President Honors**, Cascadia College | *Bothell, WA, USA* |

## Seminars & Conference Talks

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| 2024 | **American Society for Composites 39th Technical Conference (ASC)** | *San Diego, CA, USA* |
| | **San Diego State University (SDSU)** | *San Diego, CA, USA* |
| | **ASME Aerospace Structures, Structural Dynamics, and Materials Conference (SSDM)** | *Seattle, WA, USA* |
| 2023 | **Society of Advanced Materials and Processing Engineering (SAMPE)** | *Seattle, WA, USA* |
| 2022 | **American Society for Composites 37th Technical Conference (ASC)** | *U. of Arizona, Tucson, AZ, USA* |
| | **University of Washington, Finite Element Class (AA540)** | *Virtual Conference* |
| 2021 | **Engineering Mechanics Institute Conference (EMI)** | *Virtual Conference* |
| | **University of Washington, Finite Element Class (AA540)** | *Seattle, WA, USA* |
| | **University of Washington, Advanced Composite Class (AA535)** | *Seattle, WA, USA* |
| 2020 | **University of Washington, Finite Element Class (AA540)** | *Seattle, WA, USA* |
| | **University of Washington, Solid Mechanics Class (AE540)** | *Seattle, WA, USA* |
| 2019 | **Engineering Mechanics Institute Conference (EMI)** | *Caltech, Pasadena, CA, USA* |
| | **University of Washington, Finite Element Class (AA540)** | *Seattle, WA, USA* |
| | **The Joint Center for Aerospace Technology Innovation (JCATI)** | *Seattle, WA, USA* |
| 2018 | **American Society for Composites 33rd Technical Conference (ASC)** | *Seattle, WA, USA* |
| | **Fatigue and Damage Tolerance Design (FDT)** | *Kirkland, WA, USA* |
| | **Society of Advanced Materials and Processing Engineering (SAMPE)** | *Long Beach, CA, USA* |
| | **University of Washington, Finite Element Class (AA540)** | *Seattle, WA, USA* |

## Publications

**Journals:**

*equally contributing authors

J5 FastDM4C: A Fast and Efficient Discrete Model for Composites — *2025 - in prep.*
***Deleo A.A.**, Pelessone D., Salviato M.* — *JMPS*

J4 A Novel Discrete, Mesoscale Modeling Framework for the Simulation of the Damaging and Fracturing Behavior of Composites — *2025 - in prep.*
***Deleo A.A.***, Phenisee E.S*., Pelessone D., Flores M., Salviato M.* — *JMPS*

J3 Origami-based deployable structures made of carbon fiber reinforced polymer composites — *2020*
***Deleo A.A.**, O'Neil J., Yasuda H., Salviato M.,Yang J.* — *Composites Science and Technology*

J2 Aerogami: Composite origami structures as active aerodynamic Control — *2020*
*Cozmei M., Hasseler T., Kinyon E., Wallace R., **Deleo A. A.**, Salviato M.* — *Composites Part B*

J1 A study on the multi-axial fatigue failure behavior of notched composite laminates — *2019*
*Qiao Y., **Deleo A. A.**, Salviato M.* — *Composites Part A*

## Peer-Reviewed Articles in Conference Proceedings:

C18 Advancing Additively Manufactured Composite Structural Joints Testing with Discrete Computational Modeling and Digital Twins — *2024*
***Deleo A.A.**, Phenisee E.S., Derek S., Flores M., Pelessone D., Flores M., Salviato M.* — *ASC/Nature - in print*

C17 To the Mesoscale and Beyond! Capturing Complex Damage Mechanisms in Composites via Simple, Physics-Based, Discrete Mathematical Models of Fibers and Matrix — *2023*
*Salviato M., Phenisee E.S.*, **Deleo A.A.***, Pelessone D., Flores M.,* — *ASC*

C16 FastDM4C: A Fast and Efficient Discrete Model for Composites — *2023*
***Deleo A.A.**, Phenisee E.S., Pelessone D., Flores M., Salviato M.* — *ASC*

C15 Discrete, Meso-Scale Modeling of Fiber-Reinforced Composites (DM4C): Application to the Additive Manufacturing of Continuous Fibers — *2023*
*Salviato M., Phenisee E.S.*, **Deleo A.A.***, Pelessone D., Flores M* — *IMECE*

C14 Investigation of the Effect of In-Plane Waviness on the Mechanical Behavior of Additive Manufactured Composite Laminates — *2023*
*Phenisee S., **Deleo A. A.**, Pelessone D., Huff S., Shelley D., Flores M., Salviato M.* — *SAMPE*

C13 Analysis of Additive Manufactured Structural Joints using Discrete Model for Composites (DM4C) — *2023*
***Deleo A. A.**, Phenisee S., Pelessone D., Furmanski J., Flores M., Salviato M.* — *SAMPE*

C12 A Novel Discrete, Mesoscale Modeling Framework for the Simulation of the Damaging and Fracturing Behavior of Composites — *2022*
*Salviato M., Phenisee S.*, **Deleo A. A.***, Pelessone D., Flores M.* — *IMECE*

C11 Discrete Modeling and Machine Learning Assisted Calibration of 3D Printed Carbon Fiber Reinforced Plastics (CFRP) Structural Joints — *2022*
***Deleo A. A.**, Phenisee S., Pelessone D., Furmanski J., Flores M., Salviato M.* — *ASC*

C10 Discrete, Meso-Scale Modeling of Fiber-Reinforced Composites (DM4C): Application to Additive Manufacturing of Continuous Fiber Composites — *2022*
*Phenisee S., **Deleo A. A.**, Pelessone D., Flores M., Salviato M.* — *ASC*

C9 A Novel Discrete, Mesoscale Modeling Framework for the Simulation of the Damaging and Fracturing Behavior of Composites — *2022*
*Salviato M., Phenisee S.*, **Deleo A. A.***, Pelessone D., Flores M.* — *ASC*

C8 A Novel Discrete, Mesoscale Modeling Framework for the Simulation of the Damaging and Fracturing Behavior of Composites — *2022*
*Salviato M., Phenisee S.*, **Deleo A. A.***, Pelessone D., Flores M.* — *SES*

C7 Active Aerodynamic Control Surfaces Based on Origami Composites — *2019*
*Cozmei M., Hasseler T., Kinion E., Wallace R., **Deleo A.A.**, Salviato M.* — *AIAA Region VI Student Conference*

C6 Multi-axial Fatigue Behavior of Notched Composite Structures — *2018*
*Qiao Y., **Deleo A.A.**, Liao K., Salviato M.* — *ASC*

C5 Computational Study for Size Effect in Composites and Nanocomposites — *2018*
***Deleo A.A.**, Salviato M.* — *ASC*

C4 Deployable Structures Constructed from Composite Origami — *2018*
*O'Neil J., **Deleo A.A.**, Yasuda H., Salviato M., J. Yang* — *ASC*

C3 Cohesive Modeling of Fracture in Composites: Numerical Investigation of the Effects of the Cohesive Law on Size Effect — *2018*
*Das A., **Deleo A. A.**, Salviato M.* — *ASC*

C2 Multi-axial Fatigue Failure Behavior of Notched GFRP Laminates — *2018*
*Qiao Y., **Deleo A.A.**, Liao K., Salviato M.* — *SAMPE*

C1 Composite Origami: Foldable Structures based on Tachi-Miura-Polyhedron (TMP) Origami Architecture — *2018*
***Deleo A.A.**, O'Neil J., Yasuda H., Salviato M., J. Yang* — *SAMPE*

### Peer-Reviewed Abstracts

A9 Simulating Additively Manufactured Composite Structural Joints Using FastDM4C — *2025*
***Deleo A.A.**, Phenisee E.S., Shelley D., Flores M., Pelessone D., Salviato M.,* — *ICCM - in print*

A8 A Fast and Efficient Discrete Model for Composites — *2024*
***Deleo A.A.**, Phenisee E.S., Pelessone D., Flores M., Salviato M.,* — *SSDM*

A7 A Novel Discrete, Mesoscale Modeling Framework for the Simulation of the Damaging and Fracturing Behavior of Composites — *2023*
*Salviato M., **Deleo A.A.***, Phenisee E.S.*, Pelessone D., Flores M.* — *EMI*

A6 Discrete, Meso-Scale Modeling of Fiber-Reinforced Composites (DM4C): Application to the Additive Manufacturing of Continuous Fibers — *2023*
*Salviato M., **Deleo A.A.***, Phenisee E.S.*, Pelessone D., Flores M.* — *SES*

A5 A Novel Discrete, Mesoscale Modeling Framework for the Simulation of the Damaging and Fracturing Behavior of Composites — *2022*
*Salviato M., **Deleo A.A.***, Phenisee E.S.*, Pelessone D., Flores M.* — *SES*

A4 A Novel Discrete, Mesoscale Modeling Framework for the Simulation of the Damaging and Fracturing Behavior of Composites — *2022*
*Salviato M., **Deleo A.A.***, Phenisee E.S.*, Pelessone D., Flores M.* — *ICONSOM*

A3 A Novel Discrete, Mesoscale Modeling Framework for the Simulation of the Damaging and Fracturing Behavior of Composites — *2022*
*Salviato M., **Deleo A.A.***, Phenisee E.S.*, Pelessone D., Flores M.* — *EMI*

A2 A Three-Dimensional Discrete Model for Damage and Fracture in Parts Made via Fused Deposition Modeling (FDM) — *2021*
***Deleo A.A.**, Salviato M.* — *EMI*

A1 Discrete Computational Model for Thin Foldable Composite Origami Structures — *2019*
***Deleo A.A.**, Salviato M.* — *EMI*

## Certifications

5 Google TensorFlow Developer Certificate — *2024*
*Google Tensorflow*

4 Natural Language Processing in TensorFlow — *2023*
*DeepLearning.AI*

3 Convolutional Neural Networks in TensorFlow — *2023*
*DeepLearning.AI*

2 Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning — *2023*
*DeepLearning.AI*

1 Fundamentals of Accelerated Computing with CUDA C/C++ — *2022*
*Nvidia*

## Professional Memberships

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| **AIAA** | American Institute of Aeronautics and Astronautics |
| **ASC** | American Society of Composites |
| **ASME** | American Society of Mechanical Engineers |
| **ASCE** | American Society of Civil Engineers |
| **SAMPE** | Society for the Advancement of Material and Process Engineering |

## Skills

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| **Major Programming** | Matlab, C++, Python, CUDA, TEX |
| **Minor Programming** | Bash, Fortran |
| **FEM** | Abaqus, Femap, LS-Dyna, Nasgro, Afgrow, Hyperworks, Ansys |
| **Composite Manufacturing** | Hand Layup, Autoclave, VARTM, Molding, Hot-press, 3D Printing |
| **Database** | SQLite, MySQL, PostGreSQL |
| **Management** | Git, GitKraken, Docker, Singularity, Apptainer |
| **Photography** | Photoshop, Illustrator, Inkscape |
| **Virtual Reality** | Unity, Unreal Engine |

## Activities

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| **Climbing** | Sport, Bouldering, and Trad Multipitches. Ex-Climbing Officer @ UW Climbing Club |
| **Music** | Flute and Piccolo Player in UW CPO, Bainbridge Island Symphonic Orchestra (BSO) and Puget Sound Symphonic Orchestra (PSSO) |
| **Sports** | Mountaineering, Hiking, Trekking, Skiing, Climbing |
| **Culinary** | Italian food enthusiast |

## Other

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| **Citizenship** | Italian |
| **Birth year** | 1993 (32 years old) |
| **Languages** | Italian (native), English, Romanian |
| **Driving** | California State/European license |