Olivia Pinon Fischer, Ph.D.

Chief, Digital Engineering Division · Senior Research Engineer

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Education

Georgia Institute of Technology — *Atlanta, GA, U.S.A.*

Ph.D. in Aerospace Engineering — *Aug. 2006 - May 2012*

International Space University — *Strasbourg, France*

M.Sc. in Space Studies — *Aug. 2005 - Aug. 2006*

Oregon State University — *Corvallis, OR, U.S.A.*

M.Sc. in Mechanical Engineering and in Wood Science & Engineering (dual degree) — *Sept. 2002 - May 2005*

Institut des Sciences et Techniques de l'Ingénieur de Lyon — *Lyon, France*

M.Sc. in Mechanical Engineering — *Sept. 2000 - June 2003*

Université Claude Bernard Lyon 1 — *Lyon, France*

B.Sc. equivalent in Mathematics and Physics — *Sept. 1997 - June 2000*

Experience

Georgia Institute of Technology, Aerospace Systems Design Laboratory (ASDL) — *Atlanta, GA, U.S.A.*

Senior Research Engineer and Chief, Digital Engineering Division — *July 2018 - Present*

- Lead and manage multi-disciplinary research teams in the fields of living habitats, digital twins & ecosystems, digital factories, production analytics, machine learning, artificial intelligence, data fusion, big data, strategic planning, data/text mining, visual analytics, decision support environments.
- Support meetings and interact directly with sponsors/clients from both government and industry.
- Lead and develop proposals, manage research activities among other research faculty and graduate students, manage schedules, budgets and deliverables.
- Work with ASDL Strategic Manager to develop leads for sponsored research projects.
- Supervise Master and Doctoral students' academic research and serve on Ph.D. thesis committees.
- Participate and contribute to technical committees within AIAA.

Georgia Institute of Technology, Aerospace Systems Design Laboratory (ASDL) — *Atlanta, GA, U.S.A.*

Research Engineer II and Chief, Manufacturing Systems & Process Design Branch — *February 2012 - June 2018*

- Lead and manage multi-disciplinary research teams in the fields of production analytics, aircraft and UAV/UAS affordability-based design, manufacturing-influenced design, technology portfolio and strategic planning, and data/text mining and visual analytics.
- Coordinate research among other research faculty and graduate students.
- Work with ASDL Strategic Manager to develop leads for sponsored research projects.
- Supervise Master and Doctoral students' academic research and serve on Ph.D. thesis committees.

Georgia Institute of Technology, Aerospace Systems Design Laboratory (ASDL) — *Atlanta, GA, U.S.A.*

Senior Graduate Researcher — *May 2006 - May 2012*

University of Michigan, Department of Aerospace Engineering — *Ann Arbor, MI, U.S.A.*

Visiting Scholar — *May 2006 - Aug. 2006*

Oregon State University, Department of Foreign Languages — *Corvallis, OR, U.S.A.*

Instructor — *Sep. 2002 - Mar. 2005*

Research Projects

Automated Knowledge Extraction & Representation

June 2018 - December 2018

Sponsor: Siemens Corporate Technology

Role: Co-Investigator
Project overview: Development of a methodology, founded on strong mathematical principles, that enables the automatic extraction and representation of design knowledge such that the extracted knowledge can be utilized by a learning agent to aid, automate, or replace design engineers in new, but related, scenarios in Siemens NX.

Architecting of Digital Twin Vision through Use Case Formulation

January 2018 - December 2019

Sponsor: Airbus Americas

Role: Technical Lead
Project overview: Formulation of an MBSE enabled digital twin framework and architecting of an overall digital twin vision for the following activities:

- In-flight C.G. determination through direct experimentation
- Thrust measurement

Designing for Manufacturing Process Capability

January 2018 - December 2018

Sponsor: Boeing Research & Technology

Role: Co-Investigator
Project overview: Development and validation of process based manufacturing modeling to predict the manufacturability and potential defects in a part, and link this capability to the early design process.

Low Cost Attritable Aircraft (LCAA) - Extension of Structural/Manufacturing Modeling & Analysis Capabilities

October 2017 - November 2018

Sponsor: Air Force Research Laboratory

Role: Co-Investigator
Project overview: The objective of the research is to expand the detailed structural modeling capabilities developed in 2016-2017 to include fuselage and tail components to explore low-cost manufacturing techniques and materials

Data Visualization of Performance Rating

October 2017 - October 2018

Sponsor: Crown Consulting, Inc.

Role: Co-Investigator
Project overview: Provide support to the Aeronautics Research Mission Directorate (ARMD), Portfolio Analysis and Management Office (PAMO). In particular, support informed decision making regarding the continued operations of NASA ARMD programs and projects by:

- Identifying, collecting, and integrating data relevant to the evaluation of programs and projects' progress towards accomplishing their goals.
- Developing an interactive visualization environment that establishes and provides an integrated view of the performance of programs/projects towards achieving the strategic Thrusts Outcomes and/or Critical Commitments.

Benefit Assessment for Mission Adaptive Digital Composite Aerostructure Technology (MADCAT)

June 2018 - September 2018

Sponsor: Crown Consulting, Inc.

Role: Co-Investigator
Project overview: Conduct a benefit assessment of one of NASA CAS exploratory studies, Mission Adaptive Digital Composite Aerostructure Technologies (MADCAT), and provide NASA with system benefit projections (real-world potential). This was achieved by

- Conducting a qualitative design study to identify potential needs to bring the MADCAT technology to the next level
- Assessing life cycle cost benefits brought by MADCAT: accomplished by comparing a Cirrus SR-22 equivalent wing model using a conventional aluminum design and manufacturing technologies with one using a voxel lattice

Low Cost Attritable Aircraft (LCAA) – Attritable Sensor Trade Space Exploration

October 2017 - May 2018

Sponsor: None - IRAD

Project overview: The objective of the research was to evaluate the necessary sensor performance and cost for Attritable UAVs to operate effectively. The research focuses on three key areas:

- The development of an adaptive agent behavior model
- The development of a SoS-level battle manager
- The parametric modeling of sensor costs Major accomplishments

FAA Data Fusion

August 2017 - May 2018

Sponsor: Federal Aviation Administration

Role: Technical Lead
Project overview: The objective of this research was two-fold:

- Support the FAA through the development of a data fusion framework aimed at facilitating the analysis of aviation Big Data
- Transfer the developed data fusion framework to the FAA for integration into their data sharing environment

NASA ARMD's Plan for Technology Innovation and Convergence/Divergence

March 2017 - August 2018

Sponsor: Crown Consulting, Inc.

Role: Co-Investigator
Project overview: Development of a repeatable methodology to identify opportunities for NASA ARMD and the Convergent Aeronautics Solutions (CAS) project to meet ARMD's objective of transforming aviation through convergence between aeronautical technologies and advances in the non-aviation world.

NASA Comprehensive Digital Transformation - Atmospheric Data Study

September 2016 - May 2018

Sponsor: NASA Langley Research Center - Climate Science Branch

Role: Technical Lead
Project overview: Leverage data fusion and machine learning techniques to support the construction of 3D domains of cloud properties using both passive imagery and active satellite sensors data.

The Digital Factory of the Future: 88-19 Quadbot Study

January 2017 - December 2017

Sponsor: Boeing Research & Technology

Role: Co-Investigator
Project overview: The objective of this research was to support the planning, execution and analyses of scenarios of interest by developing components that serve as a digital factory founded on the integration of data-driven and simulation models. Major accomplishments includes:

- Data Exploration and Visualization: Developed a process browser to support data exploration
- Root Cause Analysis:
  - Developed logic and algorithm to automatically 1) generate sequence of events, and 2) identify the event/states or sequences of events/states that contribute the most to process time
  - Leveraged machine learning algorithms to 1) predict the occurrence of triggering events, and 2) predict process time using planned parameters and the predicted occurrence of triggering events as input to the predictive model
- Delay modeling: Developed delay models for tool change, fastener ejection, movement, and collar installation
- Simulation: Developed a discrete-event simulation model that integrates the data-driven predictive models developed as part of the root cause analysis to run scenarios and optimize cell execution
- Optimization:
  - Developed a technique for optimizing the NC programming sequence
  - Leveraged the Simio simulation model to evaluate the performance of an identified viable sequence

NASA's Aeronautics Research Progress towards Planned Strategic Community Outcomes

June 2016 - October 2017

Sponsor: Crown Consulting, Inc.

Role: Technical Lead
Project overview: Development of a dashboard in Tableau to support the portfolio analysis of NASA's Aeronautics research progress toward planned community strategic outcomes. Major accomplishments includes:

- Supported NASA QSRs
- Developed an interactive environment to support the assessment of progress towards Outcomes
- Proposed a formulation to quantitatively assess progress towards Outcomes
- Developed training material and briefed manager from NASA Cross-Program Analysis Portfolio Analysis & Management Office on the development of interactive visualizations in Tableau
- Proposed a dashboard that integrates the links between Technical Challenges, Critical Commitments, their alignment with Partner/Stakeholder efforts, and Strategic Thrust Outcomes to provide NASA leadership with a more accurate view of the roots of issues and the mitigation/recovery strategies in place

Low Cost Attritable Aircraft (LCAA) Product Line Cost-Capability Analysis

September 2016 - September 2017

Sponsor: Air Force Research Laboratory

Role: Co-Investigator

Project overview: Development of a methodology and framework integrating Conceptual Design, Operations Analysis, Cost Estimation & Manufacturing Modeling to enable the identification and design of capable, cost-effective platforms. Major accomplishments includes:

- Developed and implemented a design methodology that parametrically integrates operations analysis, vehicle sizing, and manufacturing and cost estimation disciplines into one multidisciplinary framework to support the development of capable and cost-effective Systems of Systems or Architectures
- Demonstrated trades at discipline level (AC Conceptual Design and Sizing:, Operations Analysis, Manufacturing and Cost Modeling
- Demonstrated ability to compare cost/target between architectures
- Conducted commonality studies across four distinct design variants to assess impact of economies of scale

Additional Past Projects

2007 - 2016

Various Sponsors/Clients

- **The Digital Factory of the Future: A Cyber-Physical Transformation Perspective (Sponsor: Boeing Research & Technology):** Development and integration of data-driven and simulation models to support reactive scheduling and mitigate the impact of delays and disruptions at the cell and system levels. The objectives of this particular research were to 1) study the flex track and side of body drilling systems to define and model relationships at the cell and factory levels and 2) offer predictive analysis to measure the impact of certain features to the production system in order to enable more informed scheduling, and identify disruption mitigation strategies. The capabilities developed and transitioned to the Sponsor included an overarching simulation model that integrated both a scheduling and a drilling model as well as a data-driven predictive model for the cycle time of individual drilling jobs.
- **Production Flow Analysis for a Space Launch System (Sponsor: Boeing Research & Technology):** Development of a methodology and tools to support the integration of a large number of external and internal sensors on the Engine Section and Intertank of the Space Launch System (SLS). This included the development of production models, sensor installation logic, optimization algorithms and decision support environment. In particular, the decision support environment allowed for the identification and prioritization of sensor installation schedules that reduce the impact on manufacturing flow time, man-hours, etc. It supported the down-selection of Pareto optimal sensor installation plans by: 1)Providing the ability to compare scenarios from the system-level down to the individual process-by-process level, 2) Increasing transparency and trust in the planning process by allowing the decision makers to understand how the simulation is completing sensor installations, and 3) Incorporating the planner's knowledge by facilitating down-selection, intelligent plan modification, and automatic evaluation of the modified plan
- **Concurrent UAS Family and Flexible Factory Design (Sponsor: None):** Incorporated flexible factory design within an UAS conceptual design framework to identify design parameters and manufacturing technologies that reduce cost, increase flexibility, and improve market coverage.
- **A Visual Analysis through Linguistic Mapping (Sponsor: Georgia Tech):** Application of text mining techniques and visual analytics best practices to enable the development of a visualization environment that helps: 1) visualize gaps between sustainable courses and sustainable research as defined by the QEP keywords, and 2) understand relationships between the data to identify clusters of research areas, opportunities to grow in areas, and support the development of new degree programs.
- **Manufacturing Influenced Design (MInD) & Parametric Analysis for Aircraft Production Flow (Sponsor: Boeing Research & Technology):** Development of a framework, and interactive & parametric visual environment, to support decision making and enable rapid trade studies and concept selections at early design stages. In particular, investigated the impact of: 1) production planning on aircraft design, 2) demand variability on production planning and aircraft design and 3) manufacturing variability on production planning and aircraft design.
- **Unmanned Aircraft Systems in the National Airspace System (Sponsor: LMI):** Development of an evaluation framework to help assess the impact of regulatory & technological requirements on UAS/NAS performance and safety, and support the future integration of UAS in the NAS.
- **NASA ARMD Analysis Framework (AAF) Database Prototyping and User Support (Sponsor: Crown Consulting Inc.):** Development of a web-based visualization environment that leverages the NASA Aeronautics research Mission Directorate (ARMD) Analysis Framework (AAF) to support the exploration and analysis of research portfolios and better support strategic planning.
- **Value Assessment of Enhanced Capabilities (Sponsor: Airbus):** Investigate approaches to quantify the benefit of infusing new design methods or tools into the design process; Provide a quantitative assessment of conceptual design errors and their impact on detailed design; Provide a statistical approach to estimating rework cost.
- **Business Process Management (BPM) Tools and Processes (Sponsor: Canadian Navy):** Development of a business process management relational framework to improve the existing HR management framework; Facilitate the active and effective management of approved work, delivered efficiently, on time and on budget; Provide performance measurement of planned work against key performance indicators and highlight problem areas; Better align competency and capacity with customer requirements and forecast demand.
- **Dassault Systemes' Winning Program (Sponsor: Dassault Systemes):** Support Dassault Systemes' understanding of a UAS conceptual design process; Help demonstrated the capability of the DS Winnin Program (WP) tool suite to support such process from A to Z.
- **Airborne Wind Electric Generator (AWEG):** Evaluation of the design and technical feasibility of a 1MW airborne wind electric generator operating at altitudes up to 20,000 feet or even higher (for special use or restricted airspace)

- **Modeling of Vehicle Environmental Characteristics Including New Technologies/Concepts for the Next Generation Air Transportation System (Sponsor: NASA):** Definition and development of a public registry in support of the strategic development of NextGen architectures within NASA Research Announcement (NRA) "Modeling of Vehicle Environmental Characteristics Including New Technologies/Concepts for the Next Generation Air Transportation System".
- **Aviation environmental Portfolio Management Tool (APMT) (Sponsor: FAA):** Supported the development of the Aviation environmental Portfolio Management Tool (APMT) in contract work for the Federal Aviation Administration (FAA) in support of the International Civil Aviation Organization (ICAO).

Consulting

Freelance Consultant

2013 - 2015

Company: Kee Energy / Client: Nissan

Project overview: Technical analyst for Kee Energy in an effort to determine feasible and viable strategies for the introduction and sustainment of electric taxi systems worldwide using historical data sets of taxi patterns in several cities (New York, Barcelona). The effort culminated in a visual, strategic, decision support system to bring together key stakeholders to find mutually agreeable paths forward.

Software Development

Jan. 2001 - Dec. 2002

Client: Institut de Médecine Humaine (IMH)

Geneva, Switzerland

Project overview: Developed an application in C++ to support the processing and visualization of biological test results

Academic Research Supervision

Ph.D. Committees Serving/Served On

- **Fatma Karagoz**, PhD student, Ph.D. thesis supervision, Title: *MBSE-enabled Product Family and Platform Design*, Expected Graduation: Fall 2020
- **Ethan T. Minier**, PhD student, Ph.D. thesis supervision, Title: *An Improved Methodology for Designing Environments Subject to Unpredictable and Evolving Conditions: A Manufacturing Application*, Expected Graduation: Fall 2018
- **Burak Bagdatli**, Ph.D. thesis supervision, Title: *Architecture-based Selection of Modeling Type for System of Systems Analysis*, Graduating Fall 2018
- **Seth L. Libby**, Ph.D. thesis supervision, Title: *Framework for Product Architectural Analysis of Unmanned Systems and Technologies*, Defended Fall 2017
- **Dennis J.L. Siedlak**, Ph.D. thesis supervision, Title: *Robust Scheduling Methodology to Reduce Risk in Aerospace Production Systems*, Graduated Fall 2016
- **Christopher P. Frank**, Ph.D. thesis supervision, Title: *A Design Space Exploration Methodology to Support Decisions Under Evolving Uncertainty in Requirements and Its Application to Advanced Vehicles*, Graduated Fall 2016
- **Tyler R. Milner**, Ph.D. thesis supervision, Title: *A Risk-Informed Manufacturing-Influenced Design Framework for Affordable Launch Vehicles*, Graduated Spring 2016
- **Alicia Sudol**, Ph.D. thesis supervision, Title: *A Methodology for Modeling the Verification, Validation, and Testing Process for Launch Vehicles*, Graduated Fall 2015
- **Ludovic F. Hivin**, Ph.D. thesis supervision, Title: *Sustainability of Multimodal Intercity Transportation using a Hybrid System Dynamics and Agent-Based Modeling Approach*, Graduated Fall 2014

M.Sc Committees Serving/Served On

- **Manon Huguenin**, MS student, M.Sc. thesis supervision, Title: *Development and Validation of 3D Cloud Fields Using Data Fusion and Machine Learning Techniques*, Expected Fall 2018
- **Florence Duveiller**, MS student, M.Sc. thesis supervision, Title: *A Methodology to Support Relevant Earth-Mars Communication Architecture Comparisons*, Expected Fall 2018
- **Eugene Mangortey**, MS student, M.Sc. thesis supervision, Title: *Decision Support Tool for Predicting the Duration and Coincidence of Ground Delay Programs and Ground Stops using Machine Learning*, Expected Spring 2019
- **Ghislain Dard**, MS student, M.Sc. thesis supervision, Title: *Application of Data Fusion in the Analysis of the Effectiveness of Recommended Flight Reroutes*, Expected Spring 2019
- **Domitille Commun**, MS student, M.Sc. thesis supervision, Title: *Investigation of Pedestrian Safety on Campus Intersections*, Expected Spring 2019

AE8900 Supervision

- **Joshua Price**, MSc student, Research title: Methods to Define Optimal Agent Behavior Using Reinforcement Learning, Spring 2018
- **Vu Ngo**, MSc student, Research title: Improving Data Quality and Data Mining Process for Vertical Cloud Prediction Models with Higher Resolution Data, Fall 2017
- **Chelsea Johnson**, MSc student, Research title: Generating 3D Cloud Fields through Prediction Using A-Train and Machine Learning Techniques, Summer 2017
- **J. Christian Buhr**, MSc student, Research title: Expanding OA Capabilities of RAAGE through the Development of a SEAD Scenario, Summer 2017
- **Dat Huynh**, MSc student, Research title: Extending the Manufacturing/Cost Estimation Capabilities of the RAAGE Methodology, Summer 2017
- **David Solano**, MS student, Special Problem supervision, Title: *Development of an Agent Based Simulation Model of a Complex Automated Aircraft Assembly Line*, Spring 2017
- **Preet Dulla**, MS student, Special Problem supervision, Title: *Model Based Engineering Architecture Development for a Manufacturing Environment*, Fall 2015
- **Paul Schlais**, MS student, Special Problem supervision, Title: *Sensitivity of Performance and Production Constraints on Optimal Wing and Factory Design Choices*, Fall 2014
- **Celine Bonicel**, MS student, Special Problem supervision, Title: *Bringing Manufacturing Variability Considerations into Design Concept Selection and Production*, Fall 2014
- **Ethan T. Minier**, MS student, Special Problem supervision, Title: *Optimization and Assessment of Variable Production Manufacturing Environments*, Summer 2014
- **Young Jin Kim**, MS student, Special Problem supervision, Title: *Parallel Agent-Based Modeling and Simulation of Air Traffic Network*, Summer 2014
- **Ben Murdock**, MS student, Special Problem supervision, Title: *Manufacturing Influenced Design Production Ramp-up Analysis*, Summer 2014
- **Amanda Heckwolf**, MS student, Special Problem supervision, Title: *Integration of Demand Variability into Composite Aircraft Factory Cost Predictions Using Manufacturing Influenced Design (MInD)*, Spring 2014
- **Dennis J.L. Siedlak**, MS student, Special Problem supervision, Title: *Exploration of Production Flow Time and Efficiency's Impact on Aircraft Design* , Fall 2013
- **Todd Schmidt**, MS student, Special Problem supervision, Title: *Manufacturing Influenced Design Production Optimization Cost Estimation*, Fall 2013

Awards & Fellowships

May 2016	**Award**, Advisor to First Place Team	*Simio Student Competition*
May 2015	**Award**, Advisor to First Place Team	*Simio Student Competition*
2007 - 2010	**Fellowship**, Thales, Air Systems Division	
2005	**Scholarship**, European Space Agency (ESA)	

Publications

Book Chapters

- D. N. Mavris and O. J. Pinon, *A Systems Engineering Approach to Aircraft Design*, in Encyclopedia of Aerospace Engineering, eds R. Blockley and W. Shyy, John Wiley: Chichester, doi:10.1002/9780470686652.eae597, Published June 15th, 2012

Journal Papers

- C. P. Frank, R. A. Marlier, O. J. Pinon Fischer, and D. N. Mavris, *Evolutionary Multi-Objective Multi-Architecture Design Space Exploration Methodology*, Optimization and Engineering, January 2018, Volume 19, Issue 2, pp 359-381, https://doi.org/10.1007/s11081-018-9373-x
- D. J.L. Siedlak, O. J. Pinon, B. Robertson and D. N. Mavris, *Simulation-based Optimization Approach to Reduce the Impact of Manual Installation Tasks on Low Volume, Aerospace Production Flows*, Journal of Manufacturing Systems, January 2018, Volume 46, Pages 193-207, https://doi.org/10.1016/j.jmsy.2017.12.006
- C. P. Frank, O. J. Pinon Fischer, and D. N. Mavris, *A Flexible Multi-Disciplinary Environment for Performance, Life-Cycle Cost, and Safety Evaluation of Suborbital Vehicles*, Aerospace Science and Technology, June 2018, Volume 77, Pages 555-562, https://doi.org/10.1016/j.ast.2018.03.017
- D. J.L. Siedlak, O. J. Pinon, P. R. Schlais, T. M. Schmidt and D. N. Mavris, *A Digital Thread Approach to Support Manufacturing-Influenced Conceptual Aircraft Design*, Research in Engineering Design, April 2018, Volume 29, Issue 2, pp 285–308, https://doi.org/10.1007/s00163-017-0269-0

- C. P. Frank, O. J. Pinon Fischer, D. N. Mavris, and C. M. Tyl, *Design Methodology for the Performance, Weight, and Economic Assessment of Chemical Rocket Engines*, Journal of Aerospace Engineering, July 2016, doi:10.1061/(ASCE)AS.1943-5525.0000668
- P. Burgain, O. J. Pinon, E. Feron, J-P Clarke and D. N. Mavris, *Optimizing Pushback Decisions to Valuate Airport Surface Surveillance Information*, IEEE Transactions on Intelligent Transportation Systems, Vol. 13, Issue 1, pp 180-192, March 2012
- O. J. Pinon, D. N. Mavris and E. Garcia, *Harmonizing European and American Aviation Modernization Efforts through Visual Analytics*, Journal of Aircraft, Vol. 48, No.5., pp 1482-1494, September-October 2011, doi:10.2514/1.56055

Conference Papers

- M. Huguenin, G. Archour, D. Commun, O. J. Pinon and D. N. Mavris, *3D Cloud Modeling using Data Fusion and Machine Learning Techniques*, to be presented at the 2019 AIAA Aerospace Sciences Meeting, AIAA SciTech Forum, San Diego, California, January 7-11, 2019
- J. E. G. Pagan, E.T. Minier, J. Corman, O. J. Pinon and D. N. Mavris, *Design, Manufacturing and Cost Analysis of Limited-life, Unconventional Configuration, Aircraft in Conceptual Design*, to be presented at the 2019 AIAA Aerospace Sciences Meeting, AIAA SciTech Forum, San Diego, California, January 7-11, 2019
- J. Price, Olivia Pinon Fischer and D. N. Mavris, *Definition of Optimal Agent Behaviors Using Reinforcement Learning*, to be presented at the 2019 AIAA Aerospace Sciences Meeting, AIAA SciTech Forum, San Diego, California, January 7-11, 2019
- E. Mangortey, J. Gilleron, G. Dard, Olivia Pinon Fischer and D. N. Mavris, *Development of a Data Fusion Framework to support the Analysis of Aviation Big Data*, to be presented at the 2019 AIAA Aerospace Sciences Meeting, AIAA SciTech Forum, San Diego, California, January 7-11, 2019
- O. J. Pinon, D.J.L. Siedlak and D. N. Mavris, *Enabling the Digital Factory through the Integration of Data-Driven and Simulation Model*, 31st Congress of the International Council of the Aeronautical Sciences (ICAS), Belo Horizonte, Brazil, 9-14 September 2018
- J. E. G. Pagan, M. Kurande, P. Kumar, J. Mehnert, O. J. Pinon Fischer and D. N. Mavris,*Designing Systems of Systems: The Coupling between Sensing Capabilities & Agent Behaviors*, 86th MORS Symposium, Monterey, CA, June 19-21 2018
- J. E. G. Pagan, D. Huynh, S. R. Schafer, O. J. Pinon Fischer and D. N. Mavris,*Enabling Multi-Disciplinary Cost Effectiveness Tradeoffs in the Design of Attritable Systems of Systems*, 86th MORS Symposium, Monterey, CA, June 19-21 2018
- D. N. Mavris, M. G. Balchanos, O. J. Pinon Fischer and WJ. Sung, WJ., *Towards a Digital Thread-enabled Framework for the Analysis and Design of Intelligent Systems*, **Invited Paper** in session on "Intelligent Systems in Engineering Design", 2018 AIAA Aerospace Sciences Meeting, AIAA SciTech Forum Gaylord Palms, Kissimmee, Florida, January 8-12, 2018, AIAA 2018-1367, https://doi.org/10.2514/6.2018-1367
- J. E. G. Pagan, D. Huynh, S. R. Schafer, O. J. Pinon and D. N. Mavris, *Revolutionary Affordable Architecture Generation and Evaluation*, 2018 AIAA Aerospace Sciences Meeting, AIAA SciTech Forum, Gaylord Palms, Kissimmee, Florida, 8-12 January, 2018, AIAA 2018-174, https://doi.org/10.2514/6.2018-1743
- D. N. Mavris, M. G., Balchanos, WJ. Sung and O. J. Pinon, *Towards a big Data-Enabled Virtual Experimentation Framework for Sustainability-Oriented Large-Scale Infrastructure Planning*, International Conference on Adaptive Modeling and Simulation (ADMOS 2017), Verbania, Italy, 26-28 June, 2017
- S.L. Libby, D.J.L. Siedlak, O. J. Pinon and D. N. Mavris, *Cost-Capability Analysis of UAS Family and Flexible Factory Design*, 17th AIAA Aviation Technology, Integration, and Operations Conference, 2017 AIAA Aviation and Aeronautics Forum and Exposition, Denver, Colorado, USA, June 5-9, 2017, AIAA-2017-4250
- K. Griendling, O. J. Pinon and D. N. Mavris, *Virtual Experimentation and Visual Analytics in Support of Systems Engineering and Systems-of-Systems Engineering Efforts*, **Invited Paper**, 30th Congress of International Council of the Aeronautical Sciences (ICAS), DCC, Daejeon, Korea, September 25-30, 2016
- D. N. Mavris, M. Balchanos, WJ Sung, and O. J. Pinon, *A Data Mining and Visual Analytics Perspective on Sustainability-Oriented Infrastructure Planning*, Lecture Notes in Computer Science, Vol. 9714, pp.330-341, Ying Tan and Yuhui Shi (Eds), Springer, doi: 10.1007/978-3-319-40973-3_33, 2016
- C. P. Frank, R. A. Marlier, O. J. Pinon Fischer, and D. N. Mavris, *An Evolutionary Multi-Architecture Multi-Objective Optimization Algorithm for Design Space Exploration*, 57th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, San Diego, California, USA, 4-8 January, 2016, AIAA-2016-0414
- C. P. Frank, M. F. Atanian, O. J. Pinon Fischer, and D. N. Mavris, *A Conceptual Design Framework for Performance, Life-Cycle Cost, and Safety Evaluation of Suborbital Vehicles*, 54th AIAA Aerospace Science Meeting, AIAA SciTech, San Diego, California, USA, 4-8 January 2016, AIAA 2016-1276
- C. P. Frank, O. J. Pinon Fischer and D. N. Mavris, *Variable-Oriented Morphological Matrix that Generates Architectures for an Improved Multidisciplinary Optimization Process*, 6th European Conference for Aeronautics and Space Sciences (EUCASS), Krakow, Poland, 29 June - 3 July, 2015
- C. P. Frank, C. Tyl, O. J. Pinon Fischer and D. N. Mavris, *New Design Framework for Performance, Weight and Life-Cycle Cost Estimation of Rocket Engines*, 6th European Conference for Aeronautics and Space Sciences (EUCASS), Krakow, Poland, 29 June - 3 July, 2015
- J. Kim, O. J. Pinon and D. N. Mavris, *Parallel Simulation of Agent-Based Model for Air Traffic Network*, AIAA Modeling and Simulation Technologies Conference, Aviation Forum 2015, Dallas, Texas, 22-26 June 2015
- D. J. L. Siedlak, P. R. Schlais, O. J. Pinon and D. N. Mavris, *Supporting Affordability-Based Design Decisions in the Presence of Demand Variability*, ASME 2015 International Manufacturing Science and Engineering Conference (MSEC 2015), Charlotte, North Carolina, June 8-12, 2015, MSEC2015-9422

- C. Frank, O. J. Pinon Fischer and D. N. Mavris, *A Design Space Exploration Methodology to Support Decisions under Evolving Requirements? Uncertainty and its Application to Suborbital Vehicles*, 53rd AIAA Aerospace Sciences Meeting, Kissimee, Florida, 5-9 January 2015, AIAA-2015-1010
- J. Domercant, O. J. Pinon Fischer, N. Knisely and D. N. Mavris, *An Evaluation Framework for Unmanned Aircraft Systems Integration in the National Airspace System*, 14th AIAA Aviation Technology, Integration, and Operations (ATIO) Conference, Atlanta, Georgia, 16-20 June 2014, AIAA-2014-2283
- Z. Tang, O. J. Pinon and D. N. Mavris, *Identification of Key Factors in Integrating Aircraft and the Associated Supply Chains during Early Design Phases*, 14th AIAA Aviation Technology, Integration, and Operations (ATIO) Conference, Atlanta, Georgia, 16-20 June 2014, AIAA-2014-3271
- D. J. L. Siedlak, T. M. Schmidt, O. J. Pinon and D. N. Mavris, *A Methodology for the Parametric Exploration of the Impact of Production Planning on the early Stages of Design*, ASME 2014 International Manufacturing Science and Engineering Conference (MSEC 2014), Detroit, Michigan, June 9-13, 2014, MSEC2014-3974
- S. I. Briceno, O. J. Pinon, B. Laughlin and D. N. Mavris, *Addressing Integration Challenges in the Design of Complex Aerospace Systems*, NAFEMS World Congress (NWC), Salzburg, Austria, June 9-12, 2013
- O. J. Pinon, E. Garcia and D. N. Mavris, *Evaluating Flexibility in Airport Capacity-Enhancing Technology Investments*, Accepted to the 28th Congress of International Council of the Aeronautical Sciences (ICAS), Brisbane, Australia, September 23-28, 2012
- D. N. Mavris and O. J. Pinon, *An Overview of Design Challenges and Methods in Aerospace Engineering*, **Invited Paper**, in Proceedings of the Second International Conference on Complex Systems Design & Management (CSDM 2011), pp 1-25, Omar Hammami, Daniel Krob and Jean-Luc Voirin (Eds), Springer, January 2012. doi: 10.1007/978-3-642-25203-7_1
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Service

Present	**Member**, American Institute of Aeronautics and Astronautics (AIAA)
Present	**Contributor**, AIAA Certification/Qualification by Analysis Community of Interest (CQbA COI)
Present	**Member**, AIAA Digital Engineering Integration Committee (DEIC)
Present	**Member**, AIAA Air Transportation Systems Technical Committee
Present	**Member**, Women Who Code (WWC)
Present	**Member**, Women in Machine Learning & Data Science (WiMLDS)
Present	**Member**, Society of Women Engineers (SWE)
Present	**Member**, Soaring Society of America (SAA)
Present	**Reviewer**, Transactions on Intelligent Transportation Systems, Research in Engineering Design, Journal of Aircraft
2018	**Session chair**, 31st Congress of the International Council of the Aeronautical Sciences (ICAS)
2018	**Session chair**, 26th Annual ASDL External Advisory Board (EAB)
2017	**Session chair**, 25th Annual ASDL External Advisory Board (EAB)
2016	**Session chair**, 24th Annual ASDL External Advisory Board (EAB)
2015	**Organizing chair**, 23rd Annual ASDL External Advisory Board (EAB)
2014	**Mentor**, Mentor Jacket Program