

Eric Feron
Professor of Aerospace Engineering
Georgia Institute of Technology
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Eric Feron
Professor of Aerospace Engineering
Georgia Institute of Technology

Date: March 2018

Full Name: Eric Marie Jacques FERON

Professor of Aerospace Engineering, Georgia Institute of Technology, USA
Director, Decision and Control Systems Laboratory (dcl.gatech.edu)

Date of Birth: February 19, 1967

Citizenship: US, France

Title of Thesis for Most Advanced Degree: Linear Matrix Inequalities for the Problem of Absolute Stability of Automatic Control

Principal Fields of Interest: System Guidance and Control, Optimization, and Computer Science with applications to autonomous aerial vehicles, air transportation systems, and embedded software.

Name and Rank of Other Faculty in the Same Field at same institution:

John-Paul Clarke, Professor, Aerospace Engineering
Panagiotis Tsiotras, Professor, Aerospace Engineering
JVR Prasad, Professor, Aerospace Engineering
Mark Costello, Professor, Aerospace Engineering
Wassim Haddad, Professor, Aerospace Engineering
Arkadiy Nemirovski, Professor, Industrial and Systems Engineering
Magnus Egerstedt, Professor, Electrical and Computer Engineering
Yorai Wardi, Professor, Professor, Electrical and Computer Engineering
Patricio Vela, Associate Professor, Electrical and Computer Engineering
Santosh Pande, Professor, College of Computing
Alessandro Orso, Professor, College of Computing

I EARNED DEGREES

<u>School</u>	<u>Degree</u>	<u>Date</u>
Stanford University	Ph.D.	01/1994
École Polytechnique	DEA (equivalent M.S.)	09/1990
École Polytechnique	B.S.	09/1989

II EMPLOYMENT HISTORY

<u>Employer</u>	<u>Position</u>	<u>Beginning</u>	<u>Ending</u>
Inst. Sup. Aero. Espace	Associate Researcher	2017	2018
Surentez, LLC.	Chief Scientist	2014	2016
Ecole Nationale Aviation Civile	Consulting Professor	2012	2014
Georgia Institute of Technology	Professor	2005	----
Nascent Technology Corp.	Chairman Board	2002	2005
Massachusetts Inst. Technology	Associate Professor	1999	2005
Massachusetts Inst. Technology	Assistant Professor	1993	1999
Ministry of Defense, France	Engineer	1990	1993

III TEACHING

A INDIVIDUAL STUDENT GUIDANCE

A1. Postdoctoral Fellows

Sang Hyun Kim (2013)
Air Transportation
Department of Transportation, Korea

Alireza Esna-Ashari (2012-2014)
Control Systems and Software Engineering
under way

Erwan Salaun (2008-2010)
Air Transportation
GNC research scientist, SAFRAN

Mazen Farhood (2006-2007)
Control Systems
Associate Professor (tenured), Virginia Tech

Viswesh Kulkarni (2002-2004)
Control Systems
Research Professor, U. Colo. Boulder

Berenice Mettler (2001-2005)
Human factors and Control Systems
Associate Professor (tenured), U. of Minnesota.

Yong Wang (2001-2003)
Control Systems and Software Engineering
Professor, Beijing University

Jae Hyuk Oh (1995-1997)
Air Transportation
United Technologies Research Center

A2. Ph.D. Students

Doctoral Theses, Supervisor

M. W. McConley,
Major: Control Systems
Graduation: 01/97
"A computationally Efficient Lyapunov-Based Procedure for Control of Nonlinear Systems with Stability and Performance Guarantees".
Current Position: Technical Staff, Draper Laboratory.

N. Pujet
Major: Air Transportation
Graduation: 08/99
Thesis title: "Modeling and Control Airport of Departure Processes at Busy Airports".
Current Position: VP Research, Level 3 optical communication systems.

E. Frazzoli,
Major: Control Systems
co-Advisor: Munther Dahleh
Graduation: 08/2001
Thesis title: "Robust hybrid control for autonomous vehicle motion planning".
Current Position: Professor, ETH Zurich, Co-founder, Nutaunomy

L. McGovern,
Major: Optimization
Graduation: 05/00
Thesis title: "Computational Analysis of Real-Time Convex Optimization for Control Systems".
Current Position: Loral Corp.

Vladislav Gavrilets
Major: Robotics
Graduation: 08/03
Thesis Title: "Autonomous aerobatic maneuvering of miniature helicopters".

Current Position: Technical Fellow, Rockwell-Collins.

S. Gentry,
Major: Robotics and Human-Centered Engineering
Graduation: 06/05
Thesis Title: "Dancing cheek to cheek : haptic communication between partner dancers and swing as a finite state machine".
Current Position: Professor of Mathematics (tenured), US Naval Academy. Research fellow, Johns Hopkins U.

J. DeMot,
Major: Robotics
Graduation: 06/05
Thesis Title: "Optimal agent cooperation with local information"
Current Position: Leadership, the Coca-Cola company

F. Carr
Major: Air Transportation
Graduation: 01/04
Thesis Title: "Robust Decision-Support Tools for Airport Surface Traffic"
Current Position: Technical Staff, Draper Laboratory

Chris Dever
Major: Autonomy
Graduation: 08/04
Thesis Title: "Path planning of unmanned helicopter using parameterized aggressive maneuvers and Integer Programming"
Current Position: Technical staff, Draper Laboratory

Z. H. Mao
Major: Neuroscience
Co-Advisor: Steve Massaquoi
Graduation: 06/05
Thesis Title: "Modeling the role of the basal ganglia in motor control and motor programming"
Current Position: Associate Professor (tenured), University of Pittsburgh

T. Schouwenaars,
Major: Autonomy
Co-Advisor: Jonathan How
Graduation: 08/05
Thesis Title: "Safe trajectory planning for multiple unmanned vehicles"
Current Position: Financial Analyst, Goldman Sachs

Mardavij Roozbehani,
Major: Software Analysis
Co-Advisor: Alexandre Megretski
Graduation: 08/08

Thesis Title: "Optimization of Lyapunov Invariants in Analysis and Implementation of Safety-Critical Software Systems".
Current Position: Principal Research Engineer, MIT

Animesh Chakravarthy,
Major: Traffic Engineering
Co-Advisor: Jaime Peraire
Graduation: 11/06

Thesis Title: "Safety of a multi-vehicle system in mixed communication environments"
Current Position: Associate Professor (tenured), Wichita State U.

J H Yang,
Major: Human Centered-Engineering
Co-Advisor: Joseph Coughlin
Graduation: 08/07

Thesis Title: "Analysis and Detection of Driver Fatigue Caused by Sleep-deprivation" Current
Position: Associate Professor, Kookmin University, Korea

Jerome Le Ny
Major: Control Systems
Co-Advisor: Munther Dahleh
Graduation: 08/08

Thesis Title: "Performance Optimization for Unmanned Vehicle Systems"
Current Position: Assistant Professor, Université Polytechnique de Montréal

Keumjin Lee
Major: Air Transportation
Co-Advisor: Amy Pritchett
Graduation: 12/07

Thesis Title: "Describing Airspace Complexity: Airspace response to disturbances"
Current Position: Assistant Professor, Korea Aerospace University

Maxime Gariel
Major: Air Transportation
Graduation: 08/2010

Thesis Title: "Towards a Graceful Degradation of Air Traffic Management Systems"
Current Position: Chief Technology Officer, Cavorite Research.

Pierrick Burgain
Major: Air Transportation
Graduation: 01/2013

Thesis Title: "On the Control of Airport Departure Operations"
Current Position: Financial Analyst, Capital One

Mehrdad Pakmehr,
Major: Control Systems
Graduation: 06/2013

Thesis title: TOWARDS VERIFIABLE ADAPTIVE CONTROL OF GAS TURBINE ENGINES"

Current Position: SF Bay Area Controls Startup

Sang Hyun Kim,

Major: Air Transportation

Graduation: 08/2013

Thesis title: AIRPORT CONTROL THROUGH INTELLIGENT GATE ASSIGNMENT

Current Position: Research Engineer, Department of Transportation, Korea

Timothy Wang

Major: Software Engineering

Graduation: 08/2015

Thesis title: Credible autocoding of hierarchical control systems

Current Position: Research Engineer, United Technologies Research Center.

Romain Jobredeaux

Major: Software Engineering

Graduation: 08/2015

Thesis title: Analysis of credibly autocoded software

Current position : Google, Inc.

Emmanuel Boidot

Major: Robotics

Expected Graduation: 12/2017

Thesis title: Path Planning in Ambush Games

Current position: Research Engineer, Mercedes, Silicon Valley

Aude Marzuoli

Major: Air Transportation

Graduation: 08/2015

Thesis Title: Multimodal Operations during Major Air Transportation Disruptions.

Current Position: Verizon Research, Palo-Alto

Romarc Breil (co-advisor, Ecole Nationale de l'Aviation Civile, France)

Major: Air Transportation and Computer Science

Graduation: 10/2017

Thesis Title: Emergent behaviors in decentralized air transportation operations.

Raphael Cohen (co-tutelle with ONERA-Toulouse, France)

Major: Software Engineering

Expected Graduation: 2018

Thesis title: Certification of embedded optimization algorithms for online vehicle guidance

Guillaume Davy (co-advisor, ONERA-Toulouse, France)

Major: Software Engineering

Expected Graduation: 2018

Thesis title: Semantics of autcoded optimization programs.

Thomas Gurriet

Major: Control systems

Expected graduation: 2019

Thesis title: Barrier functions for agile robotics.

Mark Mote

Major: Control systems

Expected graduation: 2020

Thesis: Safety verification of open experimental testbeds.

Philippe Monmousseau

Major: Controls

Expected graduation: 2022

Thesis: Big data for Aerospace applications

Hanqing Zhu

Major: Robotics

Expected graduation: 2022

Thesis: Foundations of Robotics Intelligence.

Olatunde Sanni

Major: Controls

Expected graduation: 2023

Kerianne Hobbs

Major: Controls and Formal Methods

Expected graduation: 2021

Corbin Klett

Major: Controls and Formal Methods

Expected graduation: 2022

Thesis: Formal methods for aerospace system validation.

Pablo Afman

Major: Robotics

Expected graduation 2020

Thesis: Stable maneuver automata and aerospace applications.

Gabriel Jarry (co-adviser, ENAC)

Major: Big Data and Air Transportation

Expected graduation: 2020.

Thesis: Data science for detection of non-conforming approaches.

A3. M.S. Students

S.M. Theses

C. Sabol, MIT, "Application of Sun-Synchronous, Critically Inclined Orbits of Global Personal Communications Systems," February 1994.

F. Niles, MIT, "Noise Covariance Change Detection Using Kalman Filtering", May 1996.

L. Lintereur, MIT, "Optimal Trajectory Determination for Strapdown IMU Calibration", May 1996.

X. Paternot, ETH Zurich, "F18-SRA analysis via Wavelets and Identification", May 1996.

L. Duchesne, MIT, "A Novel Algorithm for Flutter Boundary Determination", January 1997.

M. Shewchun, MIT, "Linear Matrix Inequalities for Control Problems with Pointwise-in-Time Constraints", August 1997.

A. Turevskiy, MIT, "Flutter Boundary Prediction Using Experimental Data", January 1998.

C. Sanders, MIT, "Real-Time Collision Avoidance for Autonomous Air Vehicles", January 1998.

G. Desilles, MIT, "Differential Kolmogorov Equations for Transiting Processes", May 1998.

B. Lintereur, MIT, "Control System Design Using Convex Constraint Specification and Youla Controller Parameterization", May 1998.

B. Delcaire, MIT, "Dealing with Airport Congestion: Development of Tactical Tools for the Departure Flows from a Large Airport", May 1998.

A. Budge, MIT, "Aerodynamic Fuze Characteristics for Trajectory Control", May 1998.

S. George, MIT, "The Effect of Configurational Asymmetries on Projectile Aerodynamics, Stability, and Guidance", May 1998.

M. Jamoom, MIT, "Constrained Optimization for Hierarchical Control System Design", May 1999.

H.-F. Vuong, MIT, "Modeling and Analysis of Software Specifications for an Autonomous Aerial Vehicle", May 1999.

K. Andersson, MIT, "Potential Benefits of Information Sharing During the Arrival Process at Hub Airports", May 2000.

A. Shterenberg, MIT, "Instrumentation and System Identification for a Small Autonomous Helicopter", September 2000.

Z.-H. Mao, MIT, "Stability and Performance of Intersecting Aircraft Flows under Decentralized Conflict Resolution", May 2000.

F. Carr, MIT, "Stochastic Modeling and Control of Surface Traffic", February 2001.

T. Schouwenaars, KU Leuven, "Path planning of several vehicles using mixed-integer programming" 2001, KU Leuven

D. Dugail, MIT, "En-route airspace capacity under flow separation and scheduling constraints", 2002

K. Sprague, MIT, Avionics System for highly agile autonomous Systems 2002

I. Martinos, MIT, "Path Planning for highly agile autonomous systems" 2003

Ji Hyun Yang, MIT, "Development of a Performance-Based Approach for Collision Avoidance and Mitigation, May 2003

Mario Valenti, MIT, "reconfigurable guidance systems", june 2003.

M. Ishutkina, MIT, "Design and analysis of safe laboratory flight systems", completed 06/04

Rodin Lyasoff, MIT, "Syntax-based guidance for autonomous aggressive aerobatics in urban environments." Completed 08/04

Emily Craparo, MIT, "Natural language processing for unmanned aerial vehicle guidance interfaces": Completed 06/04

Farmey Joseph, MIT: "planning randomized paths for personnel and vehicle security management", 06/05.

Greg Marks, MIT : "Flexibility in Unmanned Rotorcraft design", 06/05

Olivier Toupet, MIT: "Path planning of Unmanned Rotorcraft using Linear and Integer Programming", 01/06.

K. Sprague, MIT Technology & Policy Program, " Civilian applications and policy implications of commercial unmanned aerial vehicles" 08/04

Phillip Root, MIT, "Randomized path planning for invasion route reconnaissance by unmanned aerial helicopters", 06/05.

Glenn Tournier, MIT "Six degrees of freedom estimation using monocular vision and moiré patterns", 05/2006

Nicolas Barbieri, Georgia Tech – "Positioning applications of lenticular sheets" – 05/2008

Aude Marzuoli - Georgia Tech "Enroute Air Traffic Optimization under Nominal or Perturbed Conditions, on a 3D Data-Based Network Flow Model", 05/2012

Timothee Cazenave - "Peak-Seeking Control of Propulsion Systems", 05/2012

Troy Hand , "Self-Organized Traffic Flows: A Sequential Conflict Resolution Approach", 2013

Raphael Cohen (ENSMA, France) "Modeling and control of small jet engine", September 2014.

Tom Guillaumet “System on a chip architectures for safety-critical applications”, May 2017.

Hélène Piquet “Performance metrics for the air transportation system”, May 2017.

Louis Sutter, TBD

Kevin Garanger, “3D printing computational infrastructure” expected june 2018.

Gabriel Jarry, “New air transportation performance measures to support Air Navigation Service Providers”, September 2017.

Elaud Amegboh, “Semantics for Multiphysics Simulations”, September 2017.

A4. Undergraduate Students

S.B. Theses

Christophe Martin 1995, ecole Polytechnique SB thesis

A. Otero Saenz and D. Matsumoto, “Control of a Tethered Grapple,” 1997. Award Winning team.

D. McIvor, “Experimental Evaluation of an Artificial Vision System”, 1997.

P. Kuo, K. Peters and T. Wang, “Modeling an Airline Operations Center,” UROP project, 1997-98.

K. Dyer, P. Eremenko and J. Markish, “Autonomous Helicopter Supervisory Control,” UROP project, 1997-98.

M. Pirri, “Analysis and Design of an Airport Simulation Tool,” UROP project, 1998.

P. Elliott and Benjamin Ingram, “Automatic Control of an Autonomous Helicopter”, 1999.

A. Matusevski and A. Shterenberg, “Analysis and design of mechanical and electronic data processing system for autonomous vehicle system inertial management unit.”, 1999.

T. Borrego and J. Wright, “Helicopter aggressive maneuvering: Human performance”, 1999.

T. Melconian, “Open-loop vibrational magnetic control of small devices”, 1999.

M. Coudyser, “abstract interpretation for linear control systems”, 2001

Timothee de Mierry “Ground Vibration test of Hind Helicopter”, 2002

Adrian Townsend and John Sims, “Air-Levitated Systems,” 2004.

Timothée Hunter, “Landing of autonomous helicopters at unusual attitudes,” 2007.

Keenan Jones, David Miculescu “Peak Seeking control of propulsion systems”, 2011-2012.

Mark Mote, Corey Mercurio “Aerospace information systems security”, 2014.

Matthieu Capuano “Miniature educational control experiment”, 2017.

Katherine Kwasniak and Madison Stein “Zero-g atmospheric environments: applications and customer discovery” 2017-2018

Shaheer Sajit “Dynamics of extruded materials” 2017-2018

Joseph Bakhtiar “agile drones” 2017-2018

Morgan Cook and Brian Kaplan “Miniature educational control experiment”, 2017-2018.

A.5 Doctoral Theses, Reader and committee membership

K. Y. Yang, “Efficient Design of Robust Controllers for H2 Performance”, MIT, 1997.

P. Miotto, “Fixed Structure methods for Flight Control Analysis and Automated Gain Scheduling”, MIT, 1997.

J. F. Bosc, “Techniques d’évitement réactif et simulation du trafic aérien”, (Reactive conflict avoidance and simulation of air traffic). ENAC, Toulouse, France. 1998

K. Gandhi, “Nonlinear Modeling and Characterization Techniques for Phase Transitions in Electro-Mechanically Coupled Devices”, MIT, 1998.

R. Kornfeld, “The Impact of GPS Velocity Vector Based Flight Controls on Flight Instrumentation Architecture”, MIT, 1999.

W. Hall, “Efficient Capacity Allocation in a Collaborative Air Transportation System”, MIT, 1999.

William Kaliardos, "Semistructured Decision Processes", MIT, 1999.

Gregory Mallory, "Development and Experimental Validation of Direct Controller Tuning for Spaceborne Telescopes", MIT, April 2000.

Jorge M. Gonçalves, "Stability Analysis of Hybrid Systems", MIT, September 2000.

Jerry Wohletz, "Retrofit Systems for Reconfiguration in Civil Aviation", MIT, January 2000.

Olivier DeWeck, "Multivariable isoperformance methodology for precision opto-mechanical systems", MIT.~2000

Kuan Hang Chen, "Data-rich correlations", MIT.~2000

Shen-Fang Liao, "Robust Control of Surge and Rotating Stall in an Axial Compressor", MIT, September 2000.

David Benson, "A Gauss pseudospectral transcription for optimal control", MIT, 2005.

Alvar Saenz-Otero, : "[Design Principles for the Development of Space Technology Maturation Laboratories Aboard the International Space Station.](#)"MIT, 2005.

Arthur Richards, "Robust constrained model predictive control", MIT, 2005.

Erwan Salaun, "FILTERING ALGORITHMS AND AVIONICS SYSTEMS FOR UNMANNED AERIAL VEHICLES", 01/09, Ecole des Mines, Paris, France.

Gauthier Hattenberger: " Vol en Formation sans Formation" (Formation Flight without Training). Laboratoire d'Automatique et d'Analyse des Systèmes + ENAC, France. 2009.

Assale Adje: "Optimisation et jeux appliqués à l'analyse statique de programmes par interprétation abstraite", (Optimization and games applied to static program analysis via abstract interpretation), Ecole Polytechnique, France. 2010

Raphael Deaux, (ENAC, France) "Airport control systems", 2009.

Efstathios Bakolas "OPTIMAL STEERING FOR KINEMATIC VEHICLES WITH APPLICATIONS TO SPATIALLY DISTRIBUTED AGENTS", 2011, Georgia Tech.

Raghvendra V Cowlagi "Hierarchical Motion Planning for Autonomous Aerial and Terrestrial Vehicles", 2010, Georgia Tech.

Allen Wu, "Vision-Based Navigation and Mapping for Flight in GPS-Denied Environments" , 2010,Georgia Tech.

Jonathan Nusse, “Adaptive control” ~2009. Georgia Tech.

Bhenood Gholami “Closed-Loop Control for Cardiopulmonary Management and Intensive Care Unit Sedation using Digital Imaging”, 2010. Georgia Tech.

Claus Christmann Multi-hop multi-UAS surveillance systems , 2011, Georgia Tech.

Olivia Pinon, “A METHODOLOGY FOR THE VALUATION AND SELECTION OF ADAPTABLE TECHNOLOGY PORTFOLIOS AND ITS APPLICATION TO SMALL AND MEDIUM AIRPORTS”, 2012, Georgia Tech.

Yimin Zhao “EFFICIENT AND ROBUST AIRCRAFT LANDING TRAJECTORY OPTIMIZATION”, 2011, Georgia Tech.

Efstathios Bakolas "OPTIMAL STEERING FOR KINEMATIC VEHICLES WITH APPLICATIONS TO SPATIALLY DISTRIBUTED AGENTS", October 2011, Georgia Tech.

Jean Francois Castets " RELIABILITY, MULTI-STATE FAILURES AND SURVIVABILITY OF SPACECRAFT AND SPACE-BASED NETWORKS", 12/12, Georgia Tech.

Greg Dubosc "Satellite Flexibility", 2009, Georgia Tech.

Ioannis Simaiakis (MIT) “Airport operations optimization”, Massachusetts Institute of Technology.09/26/2012

Nour Dougui (ENAC, rapporteur) “Aircraft trajectories planning : light propagation model”, 2009

Adan Vela, "Understanding Conflict-Resolution Taskload: Implementating Advisory Conflict-Detection and Resolution Algorithms in an Airspace", 2011.

Ryder C Winck: “SIMULTANEOUS CONTROL OF COUPLED ACTUATORS USING SINGULAR VALUE DECOMPOSITION AND SEMI ON-NEGATIVE MATRIX FACTORIZATION”, 08/2012 . Georgia Tech

Mike Ward: “ADAPTIVE GLIDE SLOPE CONTROL FOR PARAFOIL AND PAYLOAD AIRCRAFT” (2012) Georgia Tech.

Shanewaz Siddique: COMPLEX SYSTEMS: FAILURE MECHANISMS AND MITIGATION STRATEGIES. (2013) Georgia Tech.

Carlos Montalvo: "META AIRCRAFT FLIGHT DYNAMICS AND CONTROLS", 11/2013. Georgia Tech.

Mickael Lefebvre (ISAE-Supaéro, jury president): Contrôle d’altitude des avions de transport pour approches à pente raides (Altitude control of commercial aircraft for steep descent

approaches). (2011)

Cyril Allignol (ENAC, jury president) : Planification de trajectoires pour l'optimisation du trafic aérien. (Trajectory planning to optimize air traffic) (2012)

Philip Y. Twu : " CONTROL OF MULTI-AGENT NETWORKS: FROM NETWORK DESIGN TO DECENTRALIZED COORDINATION", 05/2012, Georgia Tech.

Murat BRONZ (ISAE-Supaero, Rapporteur and jury president, 10/1/2012): a methodology to design long endurance mini unmanned aerial vehicles .

Vlad Popescu: A modular process for the Optimal Design of Airspace Structures. Georgia Tech, 2012.

David Rey (LICIT, Traffic Engineering and Transportation laboratory, Grenoble): Minimisation des conflits aériens par des modulations de vitesse. PhD Thesis. December 14, 2012.

Clement Peyronne (ENAC, Toulouse): Modélisation mathématique et résolution automatique de conflits par algorithmes génétiques et par optimisation locale continue. ENAC. December 12, 2012.

Kairat Tastambekov (INSA, Toulouse): Aircraft Trajectory Prediction by Local Functional Regression in Sobolev Space. ENAC. December 18, 2012. President Jury.

Hancao Li: "Modeling and Control of a Pressure-Limited Respirator and Lung Mechanics System using a Multi-Compartment Model", 2013, Georgia Tech.

Oscar Gonzalez: "Dimensionnement et contrôlabilité de configurations avion innovantes", ENAC, 2013.

Evan McClain "Metroplex Identification, Evaluation, and Optimization, Georgia Institute of Technology, March 2013

René Valenzuela, "Compact reliability and maintenance modeling of complex repairable systems", 2013

Antoine Varet, " Conception, Mise en OEuvre et Évaluation d'un routeur embarqué pour l'avionique de nouvelle génération (certifiable router for air transport applications)". ENAC. October 2013. jury president

Mohammad Ghasemi Hamed: " Méthodes non-paramétriques pour la prévision d'intervalles avec haut niveau de confiance : application à la prévision de trajectoires d'avions"; ENAC, January 2014

Yasin Yazicioglu, " DECENTRALIZED GRAPH PROCESSES FOR ROBUST MULTI-AGENT NETWORKS", 08/2014. Georgia Tech.

Yusun Lim: " GAME THEORETIC DISTRIBUTED COORDINATION: DRIFTING ENVIRONMENTS AND CONSTRAINED COMMUNICATIONS", aug. 2014. Georgia Tech.

Derya Aksaray: " CONSIDERATION OF CONTROL IN EARLY DESIGN FOR MULTI-AGENT SURVEILLANCE SYSTEMS", aug 2014. Georgia Tech.

Gaetan Marceau-Caron: "Optimization and Uncertainty Handling in Air Traffic Management". Paris University (Orsay), Sep 2014.

Supatcha Chaimatana: " Strategic Planning of Flight Trajectories", July 2014. Ecole Nationale de l'Aviation Civile.

Laureline Guys: " Planification de Trajectoires d'Avions sans Conflit : Fonctions Biharmoniques et Fonction de Navigation Harmonique" ENAC (2014)

Richard Alligier (11/ 2014), " Apprentissage artificiel appliqué à la prévision de trajectoire d'avion", Ecole Nationale de l'Aviation Civile.

Brunhilde Girardet (12/ 2014), Ecole Nationale de l'Aviation Civile. Jury president.

Jean-Philippe Condomines (02/2015), Institut Supérieur de l'Aéronautique et de l'Espace. Jury president.

Fancesca Favaro (03/2016), Georgia Tech, "Safety Supervisory Control, Model-Based Hazard monitoring, and Temporal Logic: Dynamic Risk-Informed Safety Interventions and Accident Prevention".

Muhammad Umer Tariq (04/2016), Georgia Tech, "Service-Oriented Reference Model for Cyber-Physical Systems".

Youngjun Choi (06/2016), Georgia Tech.

Tambet Threimur (01/2018), ENAC, "Dynamic airspace partitioning"

A6. Mentorship of Visiting Students/Scholars/Teachers

Dr. Philippe Roux (from ONERA), circa 2011.

Mr. Raphael Cohen (from ENSMA, now PhD student), 2013.

Mr. Pablo Roig Colomar (from TU Munich), 2014.

Mr. Christophe Brunner (from ENAC), 2014.

Prof. Emmanuel Grolleau (ENSMA), 2014.

Guillaume Davy (ENS Cachan), 2014-2015.

Gabriel Jarry (ENAC), 2016

Arthur Clavière (SUPAERO), 2017

Pierre Civit (SUPAERO), 2017

Tanguy (SUPAERO), 2017

Prof. Fabien Dagnat, 2017-2018

Miscellaneous student awards

1. Student supervisor, International Aerial Robotics Contest team. (Ranked second, 1997, best paper presentation, 1998, best oral presentation (by club president, **Paul Eremenko**), AIAA student conference, April 1999).
2. Tech Review 35, **Vlad Gavrilets**, 2001 (35 most promising researchers under 35 according to MIT Tech Review).
3. Advisor, Georgia Tech University Student Launch Initiative (4th place, 2012). **Richard Zappulla** and **Kevin Reiley**
4. William Jackson award, RTCA, **Maxime Gariel** (2011).
5. **Aude Marzuoli** AIAA Guidance and Control student award, 2013
6. **Vlad Gavrilets** AIAA Guidance and Control student award, 2001.
7. **Mardavij Roozbehani**, AIAA Software student award, 2004.
8. Georgia Tech zero gravity atmospheric flight, May 2013, **Richard Zappulla** and **Kevin Reiley**.
9. Best Student Paper Award, **Timothy Wang** and **Romain Jobredeaux**, Digital Avionics Systems Conference, 2014.
10. **Tom Guillaumet**, Student paper semi-finalist and best paper of session, Digital Avionics Systems Conference, 2017.

• *OTHER TEACHING ACTIVITES*

Term	Subject Number	Title	Role	Course type	Course evaluation survey given
MIT/S T94	16.921	Advanced Analysis of Control Systems	Instructor	Lecture	No
FT94	16.060	Principles of automatic control	Recitation Instructor	Lecture	No
ST95	16.410	Intro. to Optimization and Decision Analysis	Instructor	Lecture	No
Su95	16.30S	Practical Methods for Robust Control	Instructor	Lecture	No
FT95	16.338	Nonlinear Aerospace Control Systems	Instructor	Lecture	No

ST96	16.410	Intro. to Optimization and Decision Analysis	Instructor	Lecture	No
FT96	16.31	Feedback Control Systems	Instructor	Lecture	No
IAP97		Aerial Robotics Control	Supervisor	Lecture	No
ST97	16.410	Intro. to Optimization and Decision Analysis	Instructor	Lecture	No
FT97	16.338	Nonlinear Aerospace Systems	Instructor	Lecture	No
IAP98		Aircraft Pilot Ground School	Supervisor	Lecture	No
ST98	16.410	Intro. to Optimization and Decision Analysis	Instructor	Lecture	No
FT98	16.31	Feedback Control Systems	Instructor	Lecture	No
IAP99		Aircraft Pilot Ground School	Supervisor	Lecture	No
IAP99		Logan Airport Tower Visit	Supervisor	Lecture	No
ST99	16.410	Intro. to Optimization and Decision Analysis	Instructor	Lecture	No
FT99	16.338	Nonlinear Aerospace Systems	Instructor	Lecture	No
IAP00		Aircraft Pilot Ground School	Supervisor	Lecture	No
ST00	16.410	Intro. to Optimization and Decision Analysis	Instructor	Lecture	No
ST01	16.30	Estimation and Control of Aerospace Systems	Instructor	Lecture	Yes

ST01	16.410	Principles of Automated Reasoning and Decision Making	Instructor	Lecture	Yes
FT01	6.251/ 15.081	Introduction to Linear Programming/Operations Research	Instructor	Lecture	Yes
IAP02	16.900	Intro. to computational methods in Engineering	Instructor	Lecture	Yes
ST02	16.30	Estimation and Control of Aerospace Systems	Instructor	Lecture	Yes
ST02	16.410	Principles of Automated Reasoning and Decision Making	Instructor	Lecture	Yes
FT02	6.242	Control of Complex Dynamical Systems	Guest Instructor	Lecture	Yes
FT03	16.31	Feedback Control Systems	Instructor	Lecture	Yes
IAP04	16.900	Intro. to computational methods in Engineering	Instructor	Lecture	Yes
ST04	16.30	Estimation and Control of Aerospace Systems	Instructor	Lecture	Yes
GTech / FT05	AE4508	Analysis of Computer Programs	Instructor	Lecture	No
GTech / ST06	AE3515	System Dynamics	Instructor	Lecture	Yes
ST06	AE4525	Control Systems Lab	Instructor	Lecture	Yes
FT06	AE8803	Analysis of Computer Programs	Instructor	Lecture	No

ST07	AE3521	Aircraft and Spacecraft Dynamics & Control	Instructor	Lecture	Yes
SuT07	AE2220	Dynamics	Instructor	Lecture	Yes
FT07	AE3521	Aircraft and Spacecraft Dynamics & Control	Instructor	Lecture	Yes
ST08	AE6531	Robust Control I	Instructor	Lecture	Yes
ST08	AE6561	Real-Time Control Software	Instructor	Lecture	Yes
SuT08	AE3515	System Dynamics	Instructor	Lecture	Yes
FT08	AE3521	Aircraft and Spacecraft Dynamics & Control	Instructor	Lecture	Yes
ST09	AE3515	Systems Dynamics	Instructor	Lecture	Yes
SuT09	AE3521	Flight Dynamics	Instructor	Lecture	Yes
FT09	AE3521	Flight Dynamics	Instructor	Lecture	Yes
ST10	AE2220	Dynamics	Instructor	Lecture	Yes
FT10	AE3521	Flight Dynamics	Instructor	Lecture	Yes
ST11	AE6531	Robust Control Systems	Instructor	Lecture	Yes
FT11	AE3521	Flight Dynamics	Instructor	Lecture	Yes
FT11	ECE2991	VIP/USLI Contest	Instructor	Lecture	No
ST12	ECE2991	VIP/USLI Contest	Instructor	Lecture	No
FT12	AE3521	Flight Dynamics	Instructor	Lecture	Yes
FT12	AE2220	Dynamics	Instructor	Lecture	Yes
ST13	AE6561	Aerospace Software Engineering	Instructor	Lecture	Yes
ST13	ECE2991	VIP/USLI Contest	Instructor	Lecture	No
FT13	ECE2991	VIP/USLI Contest	Instructor	Lecture	No
ST14	ECE2991	VIP/Rocket Launch Contest	Instructor	Lecture	No

ST14	AE6521	Adv. Flight Dynamics	Instructor	Lecture	Yes
ST14	AE3515	System Dynamics and Control	Instructor	Lecture	Yes
SuT14	AE 2220	Dynamics	Instructor	Lecture	Yes
FT14	AE 3521	Flight Dynamics	Instructor	Lecture	Yes
FT14	ECE2991	VIP/Rocket Launch Contest			No
FT14	None	Short Graduate Course: Cyber-physical Systems	Co-instructor	Lecture	No
ST15	AE6561	Aerospace Software Engineering	Instructor	Lecture	yes
ST15	ECE2991	VIP/ Student Launch Initiative	Instructor	Lecture	no
FT15	AE6531	Robust Control Systems	Instructor	Lecture	yes
FT15	CS6310	Software Architecture and Design	Instructor	MOOC	no
FT15	ECE2991	VIP/ Student Launch Initiative	Instructor	Lecture	No
ST 16	AE3521	Flight Dynamics	Instructor	Lecture	Yes
ST 16	ECE2991	VIP/Student Launch Initiative	Instructor	Lecture	No
FT 16	AE2220	Dynamics	Instructor	Lecture	Yes

FT 16	ECE2991	VIP/Student Launch Initiative	Instructor	Lecture	No
ST 17	AE3530	System Dynamics and Vibrations	Instructor	Lecture	yes
ST 17	ECE2992	VIP/Student Launch	Instructor	Lecture	No
FT 17	AE 6530	Multivariable Control Systems	Instructor	Lecture	Yes
FT 17	CS 8803-009	Cyber-Physical Systems Design and Analysis	Instructor	Lecture	Yes
ST 18	AE 3531	Control System Design	Instructor	Lecture	Yes
ST 18	CS 8803-009	Cyber-Physical Systems Design and Analysis	Instructor	Lecture	Yes

• **SCHOLARLY ACCOMPLISHMENTS**

Google scholar statistics: h-index:51, citations >31,000

A. PUBLISHED BOOKS AND PARTS OF BOOKS

A1. Books

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12. Feron, E. and Johnson, E. "Aerial Robotics", in Handbook of Robotics, O. Khatib and B. Siciliano, Eds. 2009. Winner of PROSE Award,
13. Animesh Chakravarthy, Kyungyeol Song, Jaime Peraire and Eric Feron, "Study of Mobile Mixed Sensing Networks in an Automotive Context", Springer Optimization and Its Applications, 1, Volume 61, Sensors: Theory, Algorithms, and Applications, Part 3, Pages 165-198, 2011.
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A3. Other Parts of Books

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6. Pélegrin, M., Feron, E., and Delcaire, B., "L'Aéroport Bloquera-t-il le Développement du Transport Aérien?", (Will the airport be the bottleneck of Air Transportation Growth?), in *La Jaune et la Rouge*, E. Feron and M. Pélegrin Eds. May 1998. **
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B. REFEREED PUBLICATIONS

B1. Published and Accepted Journal Articles

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3. Feron, E., Apkarian, P., and Gahinet, P., "Analysis and Synthesis of Robust Control Systems via Parameter-Dependent Lyapunov Functions," *IEEE Trans. on Automatic Control*, vol. 41, no. 7, pp. 1041-1046, July 1996.
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B2. Conference Presentation with Proceedings (Refereed)

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157. R. Jobredeaux; H. Herencia-Zapana; N. Neogi; E. Feron "Developing proof carrying code to formally assure termination in fault tolerant distributed controls systems", 2012 IEEE 51st IEEE Conference on Decision and Control (CDC) Year: 2012 Pages: 1816 - 1821
158. Boidot, E. ; Feron, E. "[Planning random path distributions for ambush games in unstructured environments](#)", 2012 IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR).
159. A. Marzuoli; C. Hurter; E. Feron "Data visualization techniques for airspace flow modeling" Intelligent Data Understanding (CIDU), 2012 Conference on Year: 2012 Pages: 79 - 86
160. Sang Hyun Kim; Eric Feron "Impact of gate assignment on gate-holding departure control strategies", 2012 IEEE/AIAA 31st Digital Avionics Systems Conference (DASC).
161. A. Marzuoli; E. Feron; A. Vela "Analysis of airspace degradation and optimization of en-route traffic under degraded conditions" 2012 IEEE/AIAA 31st Digital Avionics Systems

Conference (DASC).

162. A. Marzuoli, C. Hurter, E. Feron, "Data Visualization Techniques for Airspace Flow Modeling", Conference on Intelligent Data Understanding (CIDU), Denver, Co., 2012.
163. Aude Marzuoli, Isabelle Laplace, Eric Feron, "Multimodal, Efficient Transportation in Airports and Collaborative Decision Making", ATOS conference, 2013, Toulouse, France.
164. A. Marzuoli; E. Boidot; E. Feron, "Large-scale data-based collaborative air traffic optimization for congestion management", 2013 IEEE/AIAA 32nd Digital Avionics Systems Conference (DASC), 2013.
165. A. Marzuoli, S. H. Kim, D. Delahaye and E. Feron, "Airport Gate Scheduling for Passengers, Aircraft, and Operation", USA/Europe Air Traffic Management Seminar, June 2013.
166. A. Marzuoli, E. Feron, M. Hansen, A. Bayen, E. Boidot, Multimodality in a Metroplex Environment: A case study in the San Francisco Bay Area, AIAA Sciences and Technology Forum 2015.
167. A. Marzuoli, E. Feron, M. Hansen, A. Bayen, E. Boidot, P. Van Erp, A. Ucko, Multimodal Impact Analysis of an Airside Catastrophic Event, INFORMS Annual Meeting, 2014.
168. A. Marzuoli, E. Boidot, E. Feron, Resilience of the National Airspace System Structure: a Data-Driven Network Approach, Digital Avionics Systems Conference (DASC), 2014.
169. A. Marzuoli, I. Laplace, E. Feron, L. Dray, Multimodal Efficient Transportation in Airports and Collaborative Decision Making, Air Transport Research Society Conference Proceedings, 2014.
170. S. H. Kim, A. Proal, and E. Feron. "Ramp Operation Model Based on Observation in Hartsfield-Jackson Atlanta Airport", 2013 Aviation Technology, Integration, and Operations Conference, AIAA Aviation, (AIAA 2013-4206)
171. A. Marzuoli, I. Laplace, E. Feron, Multimodal Efficient Transportation in Airports and Collaborative Decision Making, Airports in Urban Networks, 2014.
172. T. Wang, R. Jobredeaux, M. Pakmehr, M. Vivies and E. Feron, "An Application of a Prototype Credible Autocoding and Verification Tool-chain", best student paper, Digital Avionics Systems Conference, Colorado Springs, October 2014.
173. A. C. Marzuoli, E. Feron, M. Hansen, A. Bayen, and E. Boidot. "Multimodality in a Metroplex Environment: A case study in the San Francisco Bay Area", AIAA Infotech @ Aerospace, AIAA SciTech, (AIAA 2015-1571)

174. L. Dray, A. Marzuoli, A. Evans, I. Laplace, E. Féron “Air Transportation and Multimodal, Collaborative Decision Making during Adverse Events “ 11th USA/EUROPE Air Traffic Management R&D Seminar, Jun 2015, Lisboa, Portugal
175. M. Wolf and E. Feron “What don't we know about CPS architectures?” 2015 52nd ACM/EDAC/IEEE Design Automation Conference (DAC), Pages: 1 - 4, D
176. R. Cohen; A.-T. Bui Long; R. Jobredeaux, E. Feron, “A credible autocoding application within a rocket and its payload” Eric Feron, 2015 IEEE/AIAA 34th Digital Avionics Systems Conference (DASC) Year: 2015
177. E. Boidot, A. Marzuoli, and E. Feron. “Optimal Planning Strategy for Ambush Avoidance” AAAI Publications, Workshops at the Twenty-Ninth AAAI Conference on Artificial Intelligence, 2015
178. E. Boidot; A. Marzuoli; E. Feron, “Optimal navigation policy for an autonomous agent operating in adversarial environments”, 2016 IEEE International Conference on Robotics and Automation (ICRA), Pages: 3154 - 3160,
179. R. Breil, D. Delahaye, L. Lapasset and E. Feron, “Multi-agent Systems for Air Traffic Conflicts Resolution by Local Speed Regulation and Departure Delay”, best student paper, Digital Avionics Systems Conference, Sacramento, October 2016.
180. H. Piquet, G. Jarry, M. Luce and E. Feron, “Evaluation of New Enroute Performance Measures for Air Navigation Service Providers”, Digital Avionics Systems Conference, Sacramento, October 2016.
181. T. E. Wang, P.-L. Garoche, P. Roux, R. Jobredeaux, and É. Féron. 2016. Formal Analysis of Robustness at Model and Code Level. In Proceedings of the 19th International Conference on Hybrid Systems: Computation and Control (HSCC '16). ACM, New York, NY, USA, 125-134
182. T. Guillaumet, A. Sharma, E. Feron, M. Krishna, R. Narayan, P. Baufreton, and E. Grolleau, “Using Reconfigurable Multi-Core Architectures for Safety-Critical Embedded Systems”, Digital Avionics Systems Conference, Sacramento, October 2016.
183. T. Yucelen , W. M. Haddad and E. M. Feron “Adaptive control architectures for mitigating sensor attacks in cyber-physical systems” 2016 American Control Conference (ACC) Year: 2016 Pages: 1165 - 1170.
184. S. G. Park, J.-P. B. Clarke, E. Feron, and H. Jimenez. "Encounter Rate Estimation of Continuous Descent Arrival Procedures in Terminal Area", AIAA Guidance, Navigation, and Control Conference, AIAA SciTech, (AIAA 2016-1630)
185. E. M. Feron, R. P. Cohen, G. Davy, and P.-L. Garoche, “Validation of Convex Optimization Algorithms and Credible Implementation for Model Predictive Control” (AIAA

paper 2017-0562) AIAA Information Systems-AIAA Infotech @ Aerospace, 2017.

186. D. Pickem, P. Glotfelter, L. Wang, M. Mote, A. Ames, E. Feron, M. Egerstedt “The Robotarium: A remotely accessible swarm robotics research testbed”, International Conf. on Robotics and Automation, 2017.
187. Tom Guillaumet, Eric Feron, Philippe Baufreton, François Neumann, Kavitha Madhu, Madhava Krishna, S. K. Nandy, Ranjani Narayan and Chandan Haldar, “Task Allocation of Safety-Critical Applications on Reconfigurable Multi-Core Architectures”, AIAA/IEEE Digital Avionics Systems Conference, September 2017.
188. Mark Mote, J. Pablo Afman, Eric Feron “Robotic Trajectory Planning through Collisional Interaction”, IEEE Conference on Decision and Control, Melbourne, Aust., dec. 2017.
189. Pablo Afman, Eric Feron, and John Hauser “Triple integral control strategies for reduced-g atmospheric platforms”, American Control Conference, Millwaukee, WI, june 2018.
190. K. Garanger, T. Khamvilai, and E. Feron, " 3D printing of a leaf spring: A demonstration of closed-loop control in additive manufacturing", to appear, IEEE Conf. Control Technology and Applications, Copenhagen, Denmark, August 2018.

C. OTHER PUBLICATIONS

1. JP Clarke, E Feron, SH Kim “Reducing ramp delay”, International Airport Review, 2013
2. Eric Feron, “L’algorithmique des Objets Cyber-Physiques” (Cyber-Physical Objects Algorithmics), Special issue on *Homo Algorithmus*, revue France-Forum, number 61, April 2016.

D. PRESENTATIONS

D1. Invited Talks

August 1995, “More reliable robustness indicators for linear systems subject to parametric uncertainties,” California Institute of Technology, Pasadena, CA.

1996, “Robust and computational viewpoint on nonlinear systems,” United Technologies Research Center, Hartford, CT.

February 1997, “Robust control systems and identification,” Honeywell Research Center, Minneapolis, MN.

January-July 1997, “Time-Frequency Analysis for Transfer Function Identification and Application to F/A-18,” presented at: UCLA , Hughes Communications, Catholic University of Leuven (Belgium)

January 1998, “Design and Analysis of Conflict Resolution Algorithms via Positive

Semidefinite Programming,” presented at: UC Berkeley, UCLA, UC Santa Barbara, Cal Tech.

March 1998, “Control of Linear Systems subject to Actuator Rate and Position Saturation,” U. of Minnesota, Minneapolis, MN.

January - November 1999, “Identification and control of departure processes at busy airports”, U. of Michigan, Catholic University of Leuven (Belgium), Eurocontrol Experimental Center (France), UCLA, UC Berkeley, Yale University, Boston University, ONERA (France), CNES (France), Stanford University.

May 1999, “Semidefinite Programming to Solve Conflicts Arising among many Aircraft”, invited talk, workshop on Advances in Linear Matrix Inequalities in Systems and Control, Compiègne, France.

May 1999 “Aggressive Maneuvering of small autonomous Aerial Vehicles”, invited talk, Catholic University of Leuven, Belgium.

August 1999, “Nonconvex quadratic programming”, UC Berkeley.

March-November 2000, “Robust Hybrid Control for Autonomous Vehicles Motion Planning”, United Technologies Research Center, Catholic University Leuven (Belgium), ESSI (Sophia-Antipolis, France), Stanford University, Princeton University.

March 2001 “Recent progress in Multi-Vehicle Coordination and Control”, University of Illinois, Urbana-Champaign.

June 2001 “L’Aéroportuaire du Futur”, Académie des Technologies, Séance plénière, Poitiers, France.

November 2001 “Acrobatic helicopter”, Upenn, Philadelphia, PA.

June 2002: “Engineering education Challenges”, National Academy of Air and Space, Ecole Nationale Supérieure de Techniques Avancées, Paris, France.

October 2002: “Real-time system requirements”, real time and embedded systems, CNES, Toulouse, France.

October 2003: “Highly Agile helicopter control”, Kyoto University, Hokkaido University, Japan. Host: Prof. Noboru Noguchi. Talk also delivered to Yamaha & Yanmar.

October 2003: “Collision avoidance issues in automotive applications” Talk delivered to Nissan and Subaru, Tokyo, Japan.

“Depression, a unique illness”, MIT Leonardo dinner, November 2003.

November 2003 “Automated and acrobatic flight”, Aircraft and Automation workshop, Marc Pélegrin host, Office National d’Etudes et Recherches Aérospatiales, Toulouse, France.

“Aerobatic autonomous helicopter flight”, Stanford University, 08/04.

“A new local 6-degree of freedom position sensor”, Columbia University, Oct 2005

“Slowdown warning system for pile-up crash avoidance”, MIT-ILP research conference, october 2004

“Bezout, French Mathematician in the XVIIIth century”, MIT Leonardo dinner, Nov. 2004

“Aerial Robotics: What’s ahead and what have we left behind?”, keynote, Information, Decision and Control conference, Adelaide, Australia, February 12, 2007 .

“Helicopter flight in crowded environments”, LAAS-Toulouse, France, Jan 08.

“Certification of control systems”, UC Berkeley, Sep, 2008.

“Certification of control systems software”, MIT – LIDS seminar, february, 2009.

“Certification of control systems software”, Mathworks seminar, february, 2009.

“Certification of control systems software”, AFRL S45 symposium, june, 2009.

“Certification of Control Systems”, ONERA-Toulouse, July 2009.

“Certification of Control Systems”, CalTech Verification and Validation Workshop, Sep 2009,

“Certification of Control Systems”, Virginia Tech invited lecture, Spring 2010,

“Certification of Control Systems”, Keynote, Numerical Software Verification III, July 14, 2010, Edimborough, Scotland.

“Cascaded control system design with full proof support”, ACGSC forum, Denver, March 2011,

“Cascaded control system design with full proof support”, Georgia Tech Cyber-Physical Systems Seminar, june 2011

“Cascaded control system design with full proof support”, AFRL S5 symposium, june 2011.

“Aviation system safety Industry Panel”, NASA Aviation Safety Meeting, St Louis, may 2011.

“Cascaded control system design with full proof support”, Numerical Software Verification IV,

Snowbird, Utah, July 2011,

“Supporting control designs from specification to code implementation”, Formal Methods in Robotics Workshop, Snowbird, Utah, July 2011,

“Control system verification and validation”, FMCAD ad hoc panel, Nov 2011, Lee Pike, Galois, Inc. organizer

“Collaborative Decision Making at Large Airports”, Ecole Nationale de l’Aviation Civile, October 2011, (European) Academy of Air and Space, February 2012. Plenary

“Credible autocoding of control systems”, ETH Zurich (January 2012), Ecole Nationale de l’Aviation Civile, March 2012.

“Credible autocoding of control systems”, 2nd International Conference on Model & Data Engineering (*MEDI2012*) October 3 - 5 2012. Poitiers, Futuroscope – France. Keynote

“How can automatic control support the certification of safety-critical, embedded software ?” Pluridisciplinary Optimization Seminar in Toulouse (POST), Jan. 7, 2013. Toulouse, France.

« Control of a distributed system with a large number of actuators. » Centres de Compétence Technique – Systèmes de Commande et Automatique. Centre National d’Etudes Spatiales (CNES). January 10, 2013.

"Credible autocoding and model-based control design and validation", Opening keynote, United Technologies Research Center controls conference, October 2013.

"Credible autocoding of control systems: Preserving high-level semantics for process-wide system validation", Massachusetts Institute of Technology, Cambridge, MA, May 2014.

"Verification and Validation of Autonomous Systems (a software view)", workshop on self-driving vehicles. Robotic Science and Systems (RSS) conference, Berkeley, CA, July 13, 2014.

"Path planning in the presence of ambushes", University of Pittsburgh (ECE), Pittsburgh, PA, October 14, 2014.

“Path Planning in the presence of ambushes”, KAUST, Saudi Arabia, November 2014.

“Internet of Things, what can we (not) afford to connect?”, Dubai, Internet of Things forum, 2015

Credible auto coding for autonomy algorithms, NSV, July 2016, Toronto, Canada

“Command and control software for safety critical cyber-physical systems: Carrying the burden of proof.”,

“Cyber-Physical Systems in Aerospace Engineering”, Princeton University, Feb 2017.

“Computer Science in Aerospace Engineering”, GT School of Computer Science, April 2017.

“The growing need for proofs in Aerospace Information systems”, GT School of Mathematics, August 2017.

“Foundations of Intelligent Additive Manufacturing”, United Technologies Research Center, July 2017.

“Guiding aerospace vehicles with real-time optimization algorithms - Supporting a rapidly evolving industrial reality”, Airbus Defence and Space, Munich, September 2017.

“20 years of Aerobatic flight”, Stanford University, October 2017.

“Verification of optimization-based control systems”, Jet Propulsion Laboratory, September 2017.

D2. Keynote Presentations

“L’Aéroportuaire du Futur”, Académie des Technologies, Séance plénière, Poitiers, France. June 2001.

“Credible autcoding of control systems”, 2nd International Conference on Model & Data Engineering (*MEDI2012*) October 3 - 5 2012. Poitiers, Futuroscope – France.

“Collaborative Decision Making at Large Airports”, Ecole Nationale de l’Aviation Civile, October 2011, (European) Academy of Air and Space, February 2012.

"Credible autcoding and model-based control design and validation", United Technologies Research Center controls conference, October 2013.

E. OTHER SCHOLARLY ACCOMPLISHMENTS

Patents and Patent Applications Pending:

US Patent: *Passive stabilization* systems for wheeled objects

Patent number: **7,568,709**

Inventor: Eric Feron

Assignee: Massachusetts institute of technology

Awarded August 4, 2009

US Provisional Patent Application
Optimal Emergency Termination System for Unmanned Aerial Vehicles by Destructive Rotor
Surface Reduction
Application No.: 62/378,923
Filing Date: 24 August 2016
GTRC ID No.: 7329
Our Ref. No.: GTRC7329PRV

US Provisional Patent Application
Design and Development of an Autonomous Microgravity-Enabling Aerial Vehicle
Application No.: 62/557,925
Filing Date: 13 September 2017
GTRC ID No.: 7409/7572 PRV
Our Ref. No.: 011529.112846 (GTRC7409/7572PRV)

U.S. Patent Application No. 62/504,220
“Arrangement for Continuous Wheel Rotation for Systems with Neither Continuous Joint
Rotations Nor Axles”
Filed: May 10, 2017
GTRC Reference Nos.: 7563
Our Reference No.: GTRC7563PRV

Major New Products, Processes, Designs, or Systems:

Wavetool: A software tool to perform transfer function identification
via wavelets. (In use at NASA). 1997.

AOCMOD: A discrete-event software simulation of an Airline Operations Center. (In use at
United Airlines). 1999.

Autonomous agile helicopter: Product manufactured under MIT license by Nascent Technology
Corp. and delivered to Oregon Graduate Institute (1 copy), Lockheed Martin Owego (2 copies),
University of North Carolina (1 copy). Other derivative products: Simulations of small aerobatic
helicopters. 2003.

Gene-Auto*/Gene-check: The next generation, credible autocoding suite for embedded systems.
2014.

Cyber-Physical Systems Design and Analysis: Udacity MOOC built in collaboration with
Jerome Hugues (ISAE-Supaero). URL:
<https://www.udacity.com/course/cyber-physical-systems-design-analysis--ud9876>

- **SERVICE**

A. PROFESSIONAL CONTRIBUTIONS

<u>Employer</u>	<u>Position</u>	<u>Beginning</u>	<u>Ending</u>
École Nationale de l'Aviation Civile	Visiting Professor	2011	2011
Institut Supérieur de l'Aéronatique et de l'Espace	Visiting Professor	2012	2012
École Nationale Supérieure de l'Électricité, Électronique Informatique et Hydraulique	Visiting Professor	2012	2012
Institut Supérieur de l'Aéronautique et de l'Espace	Associate Researcher	2017	2018

Consulting Record:

<u>Firm</u>	<u>Beginning</u>	<u>Ending</u>
ONERA-CERT	05/94	06/98
United Technologies	05/95	05/95
United Technologies	02/97	04/97
Northwest Airlines	06/00	12/00
Valeo	02/04	02/04
Nascent Technology Corp.	01/02	08/05
Firstec, Daejeon, Korea	09/13	09/93
United Technologies	02/15	12/15
A ³ by Airbus Group	02/16	08/16
Aurora Flight Sciences	09/17	-- --

<u>Committee</u>	<u>Beginning</u>	<u>Ending</u>
Third SIAM Conference on Control Theory and Applications, Technical Committee	09/93	04/95
Reviewer for AFOSR and NRC proposals.	09/93	----
Guest Editor for the International Journal of Robust and Nonlinear Control, special issue on Linear Matrix Inequalities.	09/93	09/96
Guest Editor for the Journal of Ecole Polytechnique, France (equivalent MIT Technology Review), special issue on Air Traffic.	03/97	05/98
Associate Editor, IEEE Transactions on Automatic Control.	10/97	12/00

Technical Committee Program Member, 1999 American Control Conference.	12/97	12/98
ONERA Airport Research Project Evaluation	03/00	03/00
Member, panel on "Future Directions in Control and Dynamical Systems", sub panelist in Aerospace and Transportation. Organized by SIAM.	05/00	07/00
NSF proposal review panel member	06/00	06/00
DARPA/NSF hybrid systems panel member	10/00	10/00
Chairman, IEEE Technical Committee on Robust Control	11/00	11/03
North America Advisor for Académie Nationale des Technologies (French equivalent to National Academy of Engineering)	12/00	----
Technical Committee Program Member, 2002 American Control Conference	12/00	12/01
NSF proposal review panel	04/01	---
Associate Editor, International Journal of Robust and Nonlinear Control	01/02	01/03
chair, Local arrangements, 2004 ACC	01/02	08/05
Safety area Program manager, MIT-Ford Alliance	01/02	08/05
US Girls Scout Aeronautical Instructor	01/02	08/05
MIT Museum: Participant and Presenter during National Engineers Week. Theme: Stability and Instability	03/02	04/04
Review of several (>20) promotion cases (tenure, full) for U. Michigan, Stanford U., MIT, U. Berkeley in AE, ME, EE and CS	2001	---
Autonomous Intelligent Network and Systems Conference	2004	2004

Associate Editor, Journal of Field Robotics	2004	---
Abstractions, Robustness and Computations Workshop Upenn: co-organizer with Patrick Cousot	2004	08/05
NSV-II: Second International Workshop on Numerical Software Verification.	01/09	04/09
NSV-II: Second International Workshop on Numerical Software Verification.	01/11	07/11
Associate Editor, IEEE Trans. Systems, Man And Cybernetics, part A	07/11	---
Committee Member, NASA Formal Methods	06/12	---
Organizer, Workshop on Future Directions in Decision and Control in Aerospace	09/11	05/12
Advisory Board member, AIAA JACIC (now JAIS)	06/12	----
Member Committee "Habilitation à Diriger des Recherches" (HdR~Tenure)		
	Daniel Delahaye	03/12
	Stephane Puechmorel	12/12
	David Gianazza	11/15
	Pierre-Loic Garoche	09/16
	Xavier Thirioux	09/16
	Jerome Hughes	02/17
co-Organizer, workshop on "Controls Systems Software Verification", NASA Ames,	06/13	
Organizer, "Aerospace 2050", a workshop to honor Professor Marc Pélegrin for his 90 th birthday at ISAE,	12/13	
NSF Cyber-Physical Systems review panel,	07/14	
co-Organizer, "Semantics of Optimization for Real-Time Embedded Systems", Silverthorne, CO.	03/15	
co-Organizer, "Semantics of Optimization for Real-Time Embedded Systems", Silverthorne, CO.	03/15	

NASA Formal Methods (NSV 2017)	07/16	
NSF review panel,	10/16	
Member, Career, Technical & Agricultural Education advisory committee, Frederick Douglass High School, Atlanta	05/15-	
Ambassador of the city of Toulouse	01/16	----
Examiner and “Rapporteur de séance”	09/16	
International Technical Advisory Board, Saint Exupéry Technical Research Institute	11/16	----
Technical Advisory Board, Formal Methods Research Group, NASA Langley	11/16	----

B. CAMPUS CONTRIBUTIONS

<u>Committee</u>	<u>Beginning</u>	<u>Ending</u>
Organizer, Workshop on Control software Verification, Georgia Tech,	08/11	11/11
co-Organizer, 2-day workshop on "Aerospace Engineering and health sciences", Georgia Tech, (France-Atlanta events)	10/13	
co-organizer, 2-day workshop on Unmanned Aviation, Georgia Tech (as part of France-Atlanta) organizer,	10/14	
Faculty Senate	2012 – 2015	
Research Faculty Promotion committee	2014-	
Faculty Executive Board	2015 –	
Faculty Reappointment Committee	2017 –	
co-organizer, 1 day round table on Airbus – Georgia Tech collaboration (as part of France-Atlanta) organizer,	2017 –	

co-organizer, round table on Toulouse Georgia Tech academic collaborations and research	2017 –
organizer, Georgia Tech Airbus workshop on advances in control systems	2017 –
organizer, 100 years of flight at Georgia Tech	2017

HONORS AND AWARDS

Date

Charles Stark Draper Chair	11/93
NSF Research Initiation Award	09/94
NASA Certificate of Recognition (wavelet analysis)	02/98
ONR Young Investigator Award	02/99
Best paper award, Airport Arrival and Departure Management track, 3 rd USA/Europe Air Traffic Management R&D Seminar	06/00
Advisor, French Academy of Technologies	01/01
Member, Think Tank 30 Club of Rome (resigned 08/01 for lack of time)	7/01
Best paper award, 2001 Digital Avionics Systems Conference, (Unmanned Systems avionics)	10/01
Dutton/Ducoffe Professorship in Aerospace Software Engineering	09/05
Certificate of Appreciation (three certificates), Sope Creek Elementary School Career Day	03/08
Certificate of appreciation, Thank a Teacher Program, Georgia Institute of Technology	03/09
American Publishers Award (PROSE award) (Handbook of Robotics)	04/09
Andrew Sage best paper award, IEEE Transactions on Systems, Man and Cybernetics (Driver drowsiness detection)	10/10
Best track paper award, 2011 Digital Avionics Systems Conference	

(air transportation)	10/11
"Top 10" paper for 2000-2009 period, <i>IEEE Trans. Intell. Transp. Systems</i> (air traffic control conflict avoidance)	08/13
Best student paper award, Digital Avionics Systems Conference, (autocoding of engine control functions)	10/14
Outstanding community contributor, Atlanta Public Schools	06/16
Best paper award, automation track, International Conference on Research in Air Transportation, June 2016	06/16
Best student paper award, Digital Avionics Systems Conference, (agent-based air traffic control simulation)	10/16
“So Toulouse” Ambassador (representative of the city of Toulouse’s economic interests abroad)	06/16
Best Multi-Robot Systems paper award and best paper award finalist, IEEE International Conference on Robotics and Automation. “The Robotarium: A Remotely Accessible Swarm Robotics Research Testbed” by Pickem, Daniel; Glotfelter, Paul; Wang, Li; Mote, Mark; Ames, Aaron; Feron, Eric; Egerstedt, Magnus	06/17

Media Coverage

The Boston Globe, Popular Mechanics, Science et Avenir, French TV, MIT Technology Review, ...