Curriculum Vitae
Jerome Le Ny

Polytechnique Montreal
Department of Electrical Engineering
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RESEARCH INTERESTS

Control theory, privacy and security for cyber-physical systems, mean-field games and control, dynamic planning under uncertainty and resource allocation problems, robotics, machine perception, signal processing. Applications to the design of networked and embedded control systems, navigation systems, autonomous systems, mobile robotic networks and unmanned vehicle systems, intelligent infrastructure systems.

ACADEMIC EMPLOYMENT

Associate Professor   June 2017 onwards
Ecole Polytechnique de Montréal (Université de Montréal), QC, Canada
Department of Electrical Engineering and GERAD (Multi-University Research Center on Decision Analysis)

Assistant Professor   May 2012 to May 2017
Ecole Polytechnique de Montréal (Université de Montréal), QC, Canada
Department of Electrical Engineering and GERAD

Postdoctoral Researcher   September 2008 to April 2012
University of Pennsylvania, PA, USA
Department of Electrical and Systems Engineering, GRASP Laboratory (Robotics) and PRECISE Center (Embedded Systems). Advisor: George J. Pappas

OTHER EMPLOYMENT AND VISITING POSITIONS

Alexander von Humboldt Research Fellow   August 2018 to August 2019
Technical University of Munich, Germany
Chair for Information-Oriented Control, Department of Electrical and Computer Engineering.
Host: Sandra Hirche.

Software Engineer, Automotive Control Systems   December 2003 to July 2004
Robert Bosch GmbH, Saint-Ouen, France

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA, USA
Ph.D. in Aeronautics and Astronautics - Controls   September 2008
Thesis: *Performance Optimization for Unmanned Vehicle Systems*

Affiliated with the Laboratory for Information and Decision Systems (LIDS)
Advisors: Munther A. Dahleh, Eric Feron and Emilio Frazzoli

University of Michigan, Ann Arbor, MI, USA
M.Sc. in Electrical Engineering   May 2003
Advisors: Linda P.B. Katehi and Nicolas Triantafyllidis

Ecole Polytechnique, Palaiseau, France
Diplôme d'Ingénieur   July 2001

Honors, Awards and Competition Results

Fellowship for Experienced Researchers, Alexander von Humboldt Foundation, 2018-2019.

NSERC Discovery Accelerator Supplement Award, 2018-2021.

Senior Member, IEEE, 2016.

Best Student Paper Award, Conference on Decision and Control, 2016 (as advisor, award to R. Salhab).

Finalist team (top 10 teams out of 135), DJI Developer Challenge, 2016 (as advisor).

Registration Support Program for Young Researchers, Conference on Decision and Control, 2015 (C$700 awarded by the IEEE CSS Outreach Fund).

Polytechnique Paris Best Internship Prize in Cognitive Science (as advisor, award to G. Chevalier), 2014.

Early Career Professor Award, Polytechnique Montreal Foundation, 2013.

Best Presentation Award, Conference on Information Processing in Sensor Networks (IPSN), 2012 (presentation by M. Pajic).

Travel award, IEEE International Conference on Robotics and Automation (ICRA), 2012 (US$800 awarded by the NSF).

Best Presentation in Session Award, American Control Conference (ACC), 2012.

Fellowship of the Ecole Polytechnique Foundation (for studies in the USA), 2001.

Full Fellowship, Ecole Polytechnique, 1998-2001.

Research Group

Current Members

1. Justin Cano, Ph.D. graduate student, EE, May 2019-present.
2. Sophie Chaudonneret, M.S. graduate student, EE, January 2020-present.
3. Tzu-Yi Chiu, M.S. graduate student, EE, September 2020-present.
4. Gerard Degue, Ph.D. graduate student, EE, September 2015-present.
5. Clémence Dubois, M.S. graduate student, EE, January 2019-present.
6. Raihan Seraj, Ph.D. graduate student, McGill ECE, January 2019-present.
7. Mohammed Shalaby, Ph.D. graduate student, McGill ME, September 2019-present.
8. Noureddine Toumi, Ph.D. graduate student, EE, January 2018-present.

Former Members

1. Anthea Comellini, visiting Ph.D. student (ISAE-Supaero, France), January-May 2020.

2. Arnaud Venet, M.S., EE, January 2018-December 2019. Thesis: "Localization and Mapping with Superquadrics as Geometric Primitives". Now automation and mapping systems specialist, Jakarto, Montreal, QC, Canada.

3. Benoit Delcroix, IVADO postdoctoral researcher, October 2018-May 2019. Now research scientist, IREQ.

4. Hamza Benzerrouk, postdoctoral researcher, July 2017-June 2018. Now postdoctoral researcher, ETS.

5. Rabih Salhab, Ph.D., EE, September 2013-April 2018. Thesis: "Collective Stochastic Discrete Choice Problems : A MIN-LQG Game Formulation". IVADO Postdoctoral researcher, June 2018-May 2019. Now postdoctoral researcher, IDSS, MIT.

6. André Phu-Van Nguyen, M.S., EE, September 2015-December 2017. Thesis: "Autonomous Infrastructure Inspection Strategies for Mobile Robots". Now autonomous system engineer, Applanix, ON, Canada.

7. Hubert André, M.S., EE, January 2015 - May 2017. Thesis: "A Differentially Private Ensemble Kalman Filter for Road Traffic Estimation". Now software architect, Alstom, France.

8. Feng Li, M.S., EE, September 2014-December 2016. Thesis: "Mean Field Game Based Control of Dispersed Energy Storage Devices with Constrained Inputs". Now software developper, Montreal, QC, Canada.

9. Jacques Michiels, M.S., EE, January 2014-January 2016. Thesis: "Semantic Instructions for the Guidance of a Mobile Robot". Now systems engineer, Proboter, Montreal, QC, Canada.

10. Wassim Rafrafi, M.S., EE, September 2014-June 2016. Thesis: "A Low-Cost High-Accuracy Integrated UWB-Inertial Navigation System for Mobile Robots: Design and Experiments". Now applied deep learning engineer, Analog Devices, Toronto, Canada.

11. Nikolay Atanasov, Ph.D., University of Pennsylvania, ESE, September 2010-August 2015. Thesis: "Active Information Acquisition with Mobile Robots". Now assistant professor, University of California in San Diego, CA, USA.

12. Meisam Mohammady, M.S., EE, May 2013-April 2015. Thesis: "Differentially Private Event Stream Filtering with an Application to Traffic Estimation". Now Ph.D. student, Concordia University, Montreal, QC, Canada.

13. Antoine Mignon, M.Eng., EE, January 2013-January 2015. Now software engineer at Airbus Defense and Space, France.

14. Alexandre Willame, M.S., EE, January 2013-January 2015. Thesis: "Sequencing Primitives to Synthesize Natural Motions in Robotics". Now mechatronics engineer, Mechatronics Art, Montreal, QC, Canada.

15. Antoine Berthelemot, M.Eng., EE, January 2013 - July 2014. Now UAV systems engineer, SAFRAN / Sagem, France.

Past Visiting Students

1. Ali Alnashashibi, undergraduate student, McGill University, Montreal, Canada, April 2015 - July 2015.

2. Laura Artigas Aranda, undergraduate student, Polytechnic University of Catalonia, Barcelona, Spain, September 2014 - April 2015.

3. Aitor Artola, undergraduate student, École Normale Supérieure de Paris-Saclay, France, June 2018 - August 2018.

4. Simon Chauvière, undergraduate student, École Normale Supérieure de Paris-Saclay, France, June 2017 - August 2017.

5. Geoffroy Chevalier, undergraduate student, Ecole Polytechnique, France, April 2014 - August 2014.

6. Rong Fu, undergraduate student, Beihang University, Beijing, China, January 2016 - April 2016.

7. Erik Hailer, M.S. graduate student, Aerospace Engineering, University of Stuttgart, Germany, June 2013 - June 2014.

8. Sai Anirudh Kondaveeti, undergraduate student, IIT Guwahati, India, April 2015 - July 2015.

9. Nicholas Kwan-Wong, undergraduate student, University of Alberta, Canada, January 2015 - April 2015.

10. Carlos Luis, undergraduate student, University Simon Bolivar, Venezuela, September 2015 - August 2016.

11. Srinivasan Ramanagopal Manikandasriram, undergraduate student, IIT Madras, India, May 2015 - August 2015 (MITACS Globalink fellow).

12. Alexis Mocellin, undergraduate student, Ecole Polytechnique, France, April 2014 - July 2014.

13. Miriam Romero, undergraduate student, Polytechnic University of Catalonia, Barcelona, Spain, September 2013 - May 2014.

14. Romil Sandal, undergraduate student, IIT Guwahati, India, May 2013 - August 2013 (MITACS Globalink fellow).

15. Julien Sulpis, undergraduate student, École des Mines de St-Étienne, France, June 2017 - August 2017.

16. Sagar Supe, undergraduate student, VJTI Mumbai, India, April 2016 - July 2016 (MITACS Globalink fellow).

17. Akshita Sukhlecha, undergraduate student, IIT Roorkee, India, May 2014 - August 2014 (MITACS Globalink fellow).

18. Ahmed Touati, undergraduate student, Ecole Polytechnique, France, April 2013 - July 2013.

Student Fellowships

1. R. Salhab: IVADO Postdoctoral Research Fellowship, 2018

2. B. Delcroix: IVADO Postdoctoral Research Fellowship, 2018

3. H. Benzerrouk: GERAD Postdoctoral Fellowship, 2017

4. G. Degue: FRQNT PhD Fellowship (B2X), 2019

5. N. Toumi: FRQNT PhD Fellowship, 2020

PUBLICATIONS

Book

1. J. Le Ny, "Differential Privacy for Dynamic Data". *SpringerBriefs in Electrical Engineering*, Springer, March 2020.

Refereed Journal Articles

1. A. Comellini, J. Le Ny, E. Zenou, C. Espinosa and V. Dubanchet, "Global Descriptors for Visual Pose Estimation of a Non-Cooperative Target in Space Rendezvous". Submitted, July 2020.

2. K. H. Degue and J. Le Ny, "Differentially Private Kalman Filtering and LQG Control with Signal Aggregation". Submitted, February 2020.

3. R. Salhab, J. Le Ny, R. P. Malhamé and G. Zaccour, "Dynamic Marketing Policies with Online-Review-Sensitive Consumers: A Mean-Field Games Approach". Submitted, July 2019.

4. B. Delcroix, J. Le Ny, M. Bernier, M. Azam, P. Qu and J.-S. Venne, "Autoregressive Neural Networks with Exogenous Variables for Indoor Temperature Prediction in Buildings". *Building Simulation*, February 2020.

5. R. Salhab, R. P. Malhamé and J. Le Ny, "Collective Stochastic Discrete Choice Problems: A Min-LQG Game Formulation", Accepted for publication in the *IEEE Transactions on Automatic Control*, September 2019.

6. K. H. Degue and J. Le Ny, "Estimation and Outbreak Detection with Interval Observers for Uncertain Discrete-Time SEIR Epidemic Models". *International Journal of Control*, July 2019.

7. J. Le Ny, "Differentially Private Nonlinear Observer Design Using Contraction Analysis", *International Journal on Nonlinear and Robust Control*, Special Issue on Privacy and Security of Cyber-Physical Systems, November 2018.

8. R. Salhab, J. Le Ny and R. P. Malhamé, "A Dynamic Game Model of Collective Choice: Social Optima", *IEEE Transactions on Automatic Control*, Vol. 63(10), October 2018.

9. R. Salhab, R. P. Malhamé and J. Le Ny, "A Dynamic Collective Choice Model with an Advertiser", *Dynamic Games and Applications*, Vol. 8(3), September 2018.

10. R. Salhab, R. P. Malhamé and J. Le Ny, "A Dynamic Game Model of Collective Choice in Multi-Agent Systems", *IEEE Transactions on Automatic Control*, Vol. 63(3), March 2018.

11. S. R. Manikandasriram, A. P.-V. Nguyen and J. Le Ny, "A Motion Planning Strategy for the Active Vision-Based Mapping of Ground-Level Structures", *IEEE Transactions on Automation Science and Engineering*, Vol. 15 (1), January 2018.

12. J. Le Ny and M. Mohammady, "Differentially Private MIMO Filtering for Event Streams", *IEEE Transactions on Automatic Control*, Vol. 63(1), January 2018.

13. A. Borowczyk, D.-T. Nguyen, A. Phu-Van Nguyen, D. Q. Nguyen, D. Saussié, J. Le Ny, "Autonomous Landing of a Quadcopter on a High Velocity Ground Vehicle", *AIAA Journal of Guidance, Control and Dynamics*, vol. 40 (9), Special Issue on The Kalman Filter and Its Aerospace Applications, pp. 2378-2385, September 2017.

14. N. Atanasov, J. Le Ny and G. J. Pappas, "Distributed Algorithms for Stochastic Source Seeking with Mobile Robot Networks", *ASME Journal of Dynamic Systems, Measurement, and Control* (Special Issue on Stochastic Models, Control and Algorithms in Robotics), Vol. 137 (3), March 2015.

15. N. Atanasov, B. Sankaran, J. Le Ny, G. J. Pappas, and K. Daniilidis, "Nonmyopic View Planning for Active Object Detection", *IEEE Transactions on Robotics*, Vol. 30 (5), pp. 1078-1090, October 2014.

16. J. Le Ny and G. J. Pappas, "Differentially Private Filtering", *IEEE Transactions on Automatic Control*, Vol. 59 (2), pp. 341-354, February 2014.

17. J. Le Ny and G. J. Pappas, "Adaptive Deployment of Mobile Robotic Networks", *IEEE Transactions on Automatic Control*, Vol. 58 (3), pp. 654-666, March 2013.

18. J. Le Ny, A. Ribeiro and G. J. Pappas, "Adaptive Communication-Constrained Deployment of Unmanned Vehicle Systems", *IEEE Journal on Selected Areas in Communications*, Vol. 30 (5), June 2012.

19. J. Le Ny, E. Frazzoli, E. Feron, "On the Dubins Traveling Salesman Problem", *IEEE Transactions on Automatic Control*, Vol. 57 (1), January 2012.

20. J. Le Ny and G. J. Pappas, "Joint Metering and Conflict Resolution in Air Traffic Control" *AIAA Journal of Guidance, Control and Dynamics*, Vol. 34 (5), September/October 2011.

21. J. Le Ny and H. Balakrishnan, "Feedback Control of the National Airspace System", *AIAA Journal of Guidance, Control and Dynamics*, Vol. 34 (3), May/June 2011.

22. J. Le Ny, E. Feron, M. A. Dahleh, "Scheduling Continuous-Time Kalman Filters", *IEEE Transactions on Automatic Control*, Vol. 56 (6), June 2011.

Refereed Conference Proceedings

1. C. Dubois and J. Le Ny, "Adaptive Task Allocation in Human-Machine Teams with Trust and Workload Cognitive Models", Proceedings of the *International Conference on Systems, Man, and Cybernetics*, Toronto, Canada, October 2020.

2. K. H. Degue and J. Le Ny, "Differentially Private Interval Observer Design with Input Perturbation". Proceedings of the *American Control Conference*, Denver, CO, July 2020.

3. K. H. Degue, D. Efimov and J. Le Ny, "Interval Observer-based Feedback Control for Rehabilitation in Tremor". Proceedings of the *European Control Conference*, Saint-Petersburg, Russia, May 2020.

4. J. Le Ny and S. Hirche, "Differentially Private Event-Triggered Sampling". Proceedings of the *8th IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys)*, Chicago, IL, September 2019.

5. J. Cano, S. Chidami and J. Le Ny, "A Kalman Filter-Based Algorithm for Simultaneous Time Synchronization and Localization in UWB Networks". *Proceedings of the International Conference on Robotics and Automation* (ICRA), Montreal, QC, May 2019.

6. K. H. Degue, D. Efimov, J. Le Ny and E. Feron, "Interval Observers for Secure Estimation in Cyber-Physical Systems". *Proceedings of the 57th Conference on Decision and Control (CDC)*, Miami Beach, FL, December 2018.

7. R. Salhab, J. Le Ny and R. P. Malhamé, "A Mean Field Route Choice Game Model". *Proceedings of the 57th Conference on Decision and Control (CDC)*, Miami Beach, FL, December 2018.

8. K. H. Degue and J. Le Ny, "On Differentially Private Gaussian Hypothesis Testing". *Proceedings of the 55th Annual Allerton Conference on Communications, Control and Computing*, October 2018.

9. G. Degue and J. Le Ny, "SEIR Discrete-Time Models For Epidemic Outbreak Detection: Interval Observer-Based Framework", *Proceedings of the American Control Conference*, Milwaukee, WI, June 2018.

10. J. Le Ny and S. Chauvière, "Localizability-Constrained Deployment of Mobile Robotic Networks with Noisy Range Measurements", *Proceedings of the American Control Conference*, Milwaukee, WI, June 2018.

11. R. Salhab, J. Le Ny and R. P. Malhamé, "A Dynamic Ride-Sourcing Game with Many Drivers", *Proceedings of the 55th Annual Allerton Conference on Communications, Control and Computing*, October 2017.

12. G. Degue, J. Le Ny, "On Differentially Private Kalman Filtering", *Proceedings of the 5th IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Montreal, Canada, November 2017.

13. A. Borowczyk, D.-T. Nguyen, A. Phu-Van Nguyen, D. Q. Nguyen, D. Saussié, J. Le Ny, "Autonomous Landing of a Multirotor Micro Air Vehicle on a High Velocity Ground Vehicle", *Proceedings of the 20th IFAC World Congress, Toulouse*, France, July 2017.

14. G. Degue, D. Efimov, J. Le Ny, "Interval Observer Approaches to Output Stabilization of Linear Impulsive Systems", *Proceedings of the 20th IFAC World Congress*, Toulouse, France, July 2017.

15. H. André and J. Le Ny, "A Differentially Private Ensemble Kalman Filter for Road Traffic Estimation", *Proceedings of the 42nd IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, New Orleans, LA, March 2017.

16. F. Li, R. P. Malhamé and J. Le Ny, "Mean Field Game Based Control of Dispersed Energy Storage Devices with Constrained Inputs", *Proceedings of the 55th IEEE Conference on Decision and Control (CDC)*, Las Vegas, NV, December 2016.

17. R. Salhab, R. P. Malhamé and J. Le Ny, "A Dynamic Collective Choice Model with an Advertiser", *Proceedings of the 55th IEEE Conference on Decision and Control (CDC)*, Las Vegas, NV, December 2016. [**Best Student Paper Award**]

18. J. Le Ny, "Privacy-Preserving Nonlinear Observer Design Using Contraction Analysis", *Proceedings of the 54th IEEE Conference on Decision and Control (CDC)*, Osaka, Japan, December 2015.

19. R. Salhab, R. P. Malhamé and J. Le Ny, "A Dynamic Game Model of Collective Choice in Multi-Agent Systems", *Proceedings of the 54th IEEE Conference on Decision and Control (CDC)*, Osaka, Japan, December 2015.

20. G. Chevalier, J. Le Ny and R. P. Malhamé, "A Micro-Macro Traffic Model based on Mean-Field Games", *Proceedings of the American Control Conference (ACC)*, Chicago, IL, July 2015.

21. N. Atanasov, J. Le Ny, K. Daniilidis and G. J. Pappas, "Decentralized Active Information Acquisition: Theory and Application to Multi-Robot SLAM", *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Seattle, WA, May 2015.

22. R. Salhab, R. P. Malhamé and J. Le Ny, "Consensus and Disagreement in Collective Homing Problems: A Mean Field Game Formulation", *Proceedings of the 53rd IEEE Conference on Decision and Control (CDC)*, Los Angeles, CA, December 2014.

23. J. Le Ny and M. Mohammady, "Differentially Private MIMO Filtering for Event Streams and Spatio-Temporal Monitoring". *Proceedings of the 53rd IEEE Conference on Decision and Control (CDC)*, Los Angeles, CA, December 2014.

24. J. Le Ny, A. Touati and G. J. Pappas, "Real-Time Privacy-Preserving Model-Based Estimation of Traffic Flows", *Proceedings of the Fifth ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS)*, Berlin, Germany, April 2014.

25. N. Atanasov, J. Le Ny, K. Daniilidis and G. J. Pappas, "Information Acquisition with Sensing Robots: Algorithms and Error Bounds", *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Hong-Kong, China, June 2014.

26. J. Le Ny, "On Differentially Private Filtering for Event Streams", *Proceedings of the 52nd IEEE Conference on Decision and Control (CDC)*, Florence, Italy, December 2013.

27. J. Le Ny and G. J. Pappas, "Privacy-Preserving Release of Aggregate Dynamic Models", *Proceedings of the 2nd ACM International Conference on High Confidence Networked Systems (HiCoNS)*, CPSWeek, Philadelphia, PA, April 2013.

28. N. Atanasov, B. Sankaran, J. Le Ny, T. Koletschka, G. J. Pappas, K. Daniilidis, "Hypothesis Testing Framework for Active Object Detection", *Proceedings of the International Conference on Robotics and Automation (ICRA)*, Karlsruhe, Germany, May 2013.

29. J. Le Ny, G. J. Pappas, "Differentially Private Filtering", *Proceedings of the 51st IEEE Conference on Decision and Control (CDC)*, Maui, HI, December 2012.

30. J. Le Ny, G. J. Pappas, "Differentially Private Kalman Filtering", *Proceedings of the 50th Annual Allerton Conference on Communications*, Control and Computing, October 2012.

31. J. Le Ny, A. Ribeiro, G. J. Pappas, "Adaptive Communication-Constrained Deployment of Unmanned Vehicle Systems", *Proceedings of the American Control Conference (ACC)*, Montreal, Canada, June 2012. [**Best Presentation in Session Award**]

32. J. Le Ny, G. J. Pappas, "Sequential Composition of Robust Controller Specifications", *Proceedings of the International Conference on Robotics and Automation (ICRA)*, St. Paul, MN, May 2012.

33. N. Atanasov, J. Le Ny, N. Michael, G. J. Pappas, "Stochastic Source Seeking in Complex Environments", *Proceedings of the International Conference on Robotics and Automation (ICRA)*, St. Paul, MN, May 2012.

34. M. Pajic, S. Sundaram, J. Le Ny, G. J. Pappas, R. Mangharam, "Closing the Loop: A Simple Distributed Method for Control over Wireless Networks", *Proceedings of the 11th ACM International Conference on Information Processing in Sensor Networks (IPSN)*, Beijing, China, April 2012. [**Best Presentation Award**]

35. J. Le Ny, A. Ribeiro, G. J. Pappas, "Robot Deployment with End-to-End Communication Constraints",

Proceedings of the 50th IEEE Conference on Decision and Control (CDC), Orlando, FL, December 2011.

36. J. Le Ny, E. Feron, G. J. Pappas, "Resource-constrained LQR control under Fast Sampling", *Proceedings of the 14th conference on Hybrid Systems: Computation and Control (HSCC)*, Chicago, IL, April 2011.

37. J. Le Ny, G. J. Pappas, "Sensor-Based Robot Deployment Algorithms", *Proceedings of the 49th IEEE Conference on Decision and Control (CDC)*, Atlanta, GA, December 2010.

38. J. Le Ny, H. Balakrishnan, "Feedback Control of the National Airspace System to Mitigate Weather Disruptions", *Proceedings of the 49th IEEE Conference on Decision and Control (CDC)*, Atlanta, GA, December 2010.

39. M. Pajic, S. Sundaram, J. Le Ny, G. J.Pappas, R. Mangharam, "The Wireless Controller Network: Synthesis and Robustness", *Proceedings of the 49th IEEE Conference on Decision and Control (CDC)*, Atlanta, GA, December 2010.

40. J. Le Ny, G. J. Pappas, "Robustness Analysis for the Certification of Digital Controller Implementations", *Proceedings of the First ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS)*, Stockholm, Sweden, April 2010.

41. J. Le Ny, G. J. Pappas, "Geometric Programming and Mechanism Design for Air Traffic Conflict Resolution", *Proceedings of the American Control Conference (ACC)*, Baltimore, MD, June-July 2010.

42. J. Le Ny, M. M. Zavlanos, G. J. Pappas, "Resource Allocation for Signal Detection with Active Sensors", *Proceedings of the 48th IEEE Conference on Decision and Control (CDC)*, Shangai, China, December 2009.

43. J. Le Ny, G. J. Pappas, "On Trajectory Optimization for Active Sensing in Gaussian Process Models", *Proceedings of the 48th IEEE Conference on Decision and Control (CDC)*, Shangai, China, December 2009.

44. J. Le Ny, H. Balakrishnan, "Distributed Feedback Control for an Eulerian Model of the National Airspace System", *Proceedings of the American Control Conference (ACC)*, Saint-Louis, Missouri, June 2009.

45. J. Le Ny, E. Feron, M. A. Dahleh, "Scheduling Kalman Filters in Continuous Time", *Proceedings of the American Control Conference (ACC)*, Saint-Louis, Missouri, June 2009.

46. J. Le Ny, M. A. Dahleh, E. Feron, E. Frazzoli, "Continuous Path Planning for a Data Harvesting Mobile Server", *Proceedings of the 47th IEEE Conference on Decision and Control (CDC)*, Cancun, Mexico, December 2008.

47. J. Le Ny, M. A. Dahleh, E. Feron, "Multi-UAV Dynamic Routing with Partial Observations using Restless Bandit Allocation Indices", *Proceedings of the 2008 American Control Conference (ACC)*, Seattle, WA, June 2008.

48. J. Le Ny, E. Frazzoli, E. Feron, "The Curvature-Constrained Traveling Salesman Problem For High Point Densities", *Proceedings of the 46th IEEE Conference on Decision and Control (CDC)*, New Orleans, LA, December 2007.

49. J. Le Ny, E. Feron, "Performance Evaluation of a Multi-Agent Risk-Sensitive Tracking System", *Proceedings of the 46th IEEE Conference on Decision and Control (CDC)*, New Orleans, LA, December 2007.

50. J. Le Ny, M. A. Dahleh, E. Feron, "Multi-agent Task Assignment in the Bandit Framework", *Proceedings of the 45th IEEE Conference on Decision and Control (CDC)*, San Diego, CA, December 2006. Invited Session on Path Planning and Task Allocation Algorithms for Unmanned Aerial Vehicles.

51. J. Le Ny, E. Feron, "Restless Bandits with Switching Costs: Linear Programming Relaxations, Performance Bounds and Limited Lookahead Policies", *Proceedings of the American Control Conference (ACC)*, Minneapolis, MN, June 2006.

52. J. Le Ny, E. Feron, "An Approximation Algorithm for the Curvature-Constrained Traveling Salesman Problem", *Proceedings of the 43rd Annual Allerton Conference on Communications*, Control and Computing, September 2005.

Book Chapters & Tutorial Papers

1. M. Pelletier, N. Saunier and J. Le Ny, "Differentially Private Analysis of Transportation Data", *Privacy in Dynamical Systems*, F. Farokhi, editor, Springer, November 2019.

2. J. Le Ny, "Privacy in Network Systems", *Encyclopedia of Systems and Control*, J. Baillieul and T. Samad, editors, Springer, 2020.

3. J. Cortes, G. E. Dullerud, S. Han, J. Le Ny, S. Mitra and G. J. Pappas, "Differential Privacy in Control and Network Systems", Tutorial Paper, Proceedings of the 55th Conference on Decision and Control (CDC), Las Vegas, NV, December 2016.

4. J. Le Ny and G. J. Pappas, "Preserving Privacy in Cyberphysical Systems", *The Impact of Control Technology*, 2nd edition, T. Samad and A.M. Annaswamy (eds.), IEEE Control Systems Society, 2014.

INVITED TECHNICAL LECTURES, SEMINARS, COLLOQUIA

1. Fields Institute, Toronto, workshop on Dynamics, Optimization and Variational Analysis in Applied Games, April 30 2020 [online], "Dynamic Marketing Policies with Online-Review-Sensitive Consumers: A Mean-Field Games Approach".

2. Paderborn University, Chair for Automatic Control Seminar, May 7 2019: "Differential Privacy for Dynamic Data".

3. Technical University of Munich, Chair for Information-Oriented Control Seminar, September 25 2018: "Differential Privacy for Dynamic Data".

4. Dutch Institute of Systems and Control (DISC), Summer School on "A Systems and Control Perspective on Privacy, Safety, and Security in Large-Scale Cyber-Physical Systems", The Hague, Netherlands, July 3 2017: "Privacy in Systems and Control". Keynote speaker, full day course on "Differential Privacy in Systems and Control".

5. Aerial Robotics International Research Symposium, Centre for Aerial Robotics Research and Education, University of Toronto, ON, Canada, June 22 2017: "Information Acquisition for Autonomous Mobile Robots".

6. Department of Electrical Engineering and Computer Science Seminar, University of Michigan, Ann Arbor, MI, March 29 2017: "Differential Privacy for Dynamic Data".

7. Department of Aerospace Engineering Seminar, University of Michigan, Ann Arbor, MI, January 24 2017: "Mobile Robotic Network Deployment for Information Acquisition".

8. School of Aerospace Engineering Seminar, Georgia Institute of Technology, Atlanta, GA, January 17 2017: "Mobile Robotic Network Deployment for Information Acquisition".

9. 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, FL, July 2nd 2016: "Dynamic Collective Choice: A Mean Field Games Formulation".

10. Biannual Control Meeting, Queen's University, Kingston, ON, May 11 2016: "Differentially Private Filtering".

11. Decision and Control Laboratory Seminar, Georgia Institute of Technology, Atlanta, GA, April 15 2016: "Differentially Private Filtering".

12. Workshop on Traffic Estimation, Institute for Pure and Applied Mathematics (IPAM), UCLA campus, Los Angeles, CA, October 12 2015: "Differentially Private Filtering: Application to Traffic Estimation".

13. Polytechnique Montreal, PLOW Workshop, "Adaptive Deployment of Mobile Robotic Networks", June 19 2015.

14. CORS/INFORMS Conference, "Mechanism Design for the Resolution of Air Traffic Conflicts", Montreal, June 15 2015.

15. University of Illinois at Urbana Champaign, Decision and Control Laboratory Seminar, April 15 2015: "Differentially Private Filtering".

16. McGill University, Montreal, Informal Systems Seminar, February 6 2015: "Privacy in Systems and Control".

17. Université de Montréal, GERAD Seminar, April 3 2014: "Privacy in Systems and Control".

18. Information Theory and Applications Workshop, University of California in San Diego, February 14 2014: "Differentially Private Filtering".

19. McGill University, Montreal, Informal Systems Seminar, June 15 2012: "Adaptive Deployment of Mobile Robotic Networks".

20. Vanderbilt University, Nashville, TN, Institute for Software Integrated Systems, September 29 2011: "Resource Management in Networked Embedded Control Systems".

21. Ecole Polytechnique Montreal, EE Seminar, April 29 2011: "Adaptive Deployment of Mobile Robotic Networks".

22. Purdue University, Aero/Astro Seminar, April 29 2011: "Adaptive Deployment of Mobile Robotic Networks".

23. University of Pittsburgh, ECE Seminar, March 23 2011: "Adaptive Deployment of Mobile Robotic Networks".

24. Carnegie Mellon University, ECE Seminar, March 21 2011: "Adaptive Deployment of Mobile Robotic Networks".

25. Rutgers University, ECE Seminar, March 9 2011: "Adaptive Deployment of Mobile Robotic Networks".

26. Arizona State University, SEMTE Seminar, March 3 2011: "Adaptive Deployment of Mobile Robotic Networks".

27. University of Notre Dame, EE Seminar, February 28 2011: "Adaptive Deployment of Mobile Robotic Networks".

28. MIT, Aero/Astro Seminar, April 1st 2010: "Resource Management in Aerospace Systems".

29. University of Pennsylvania, GRASP Seminar, Feb. 20 2009: "Performance Optimization for Unmanned Vehicle Systems".

30. University of Pennsylvania, GRASP Special Seminar, Oct. 26 2007: "Task Allocation and Path-Planning for Groups of Autonomous Vehicles".

UNIVERSITY ACTIVITIES

Research Centers and Laboratories

Member of GERAD (Research Group in Decision Analysis)	Since November 2013
Director, Mobile Robotics and Autonomous Systems Laboratory	Since September 2012

Committees and University Service

GERAD Scientific Committee	2019 -
Sabbatical Leave Committee, Polytechnique Montréal	2019 - 2022
Faculty Search Committee, EE Department	2017 -

2017 GERAD Postdoctoral Fellowship evaluation committee	Feb. 2017
Faculty Council for Graduate and Postdoctoral Studies, Université de Montréal	2016 - 2018
Academic Program Committee, EE Department	2016 - 2018
Evaluation of first year student projects, EE Department	Winter 2015, Fall 2015, Fall 2016
Fraud Examination Committee, Polytechnique Montréal	2016
Research Seminar Committee, EE Department	Sept. 2013 to May 2014

Teaching

At Polytechnique Montreal:
1. Robotics: Fall 2020.
2. Navigation Systems (ELE6209A, Graduate): every year since 2013.
3. Active Circuits (ELE2611, Undergraduate): Winter 2014, then every Fall since 2014.
4. Cyber-Physical Systems and the Internet of Things (ELE6953E, Graduate): Winter 2018.
5. Introduction to Automatic Control (ELE3202, Undergraduate): Winter 2013.
6. Systems and Simulation, laboratory component (ELE2200, Undergraduate): Winter 2016.
7. Course coordinator for Avionics (AER4715, Undergraduate) and Avionic Systems Integration (AER4720, Undergraduate) since Winter 2013. The instructors are engineers from Bombardier and CAE Inc.

At the University of Pennsylvania:
1. Networked and Embedded Control Systems (ESE 680, Graduate): Spring 2011.
2. Dynamic Programming and Stochastic Control (ESE 680, Graduate): Fall 2009.

At MIT:
1. Dynamic Programming and Stochastic Control (6.231, Graduate): Fall 2007 (teaching assistant).

K-12 Outreach

1. SEUR Project (Sensibilisation aux Etudes, à l'Université et à la Recherche). Visit of our mobile robotics laboratory and presentation of the field of Electrical Engineering to secondary school students: Summer 2015.

External Thesis Committee Member

1. Titouan Le Marec (M.S., Electrical Engineering, Polytechnique Montreal, August 2020): "Conception et développement d'un robot mobile innovant à manipulateurs parallèles intégrés".
2. Habacuc Honvo (Ph.D. proposal, Electrical Engineering, Polytechnique Montreal, November 2019): "Commande d'une unité de production électrique décentralisée raccordée au réseau déséquilibré".
3. Weijie Shen (M.S., Electrical Engineering, Polytechnique Montreal, June 2018): "Optimal Decentralized Load Frequency Control For Power Systems: A Mean-Field Team Approach".
4. Dang Quang Nguyen (M.S., Electrical Engineering, Polytechnique Montreal, December 2017): "Collaborative Control of a Smart Wheelchair in a Partially Known Environment".
5. Louis-Philippe Morel (M.S., Computer and Software Engineering, Polytechnique Montreal, October 2017): "Using Ontologies to Detect Anomalies in the Sky".
6. Maxime McLaughlin (M.S., Applied Mathematics and Industrial Engineering, Polytechnique Montreal, August 2017): "Factorization-Free Methods for Computed Tomography".
7. Jhelum Chakravorty (Ph.D. thesis, Electrical Engineering, McGill University, June 2017): "Fundamental Limits of Remote Estimation".

8. Mehdi Abedinpour Fallah (Ph.D. thesis, Electrical Engineering, Polytechnique Montreal, April 2017: "A Class of Networked Multi-Agent Control Systems: Interference Induced Games, Filtering, Nash Equilibria".

9. Hadhami Dbira (Ph.D. thesis, Electrical Engineering, Polytechnique Montreal, January 2017): "An analysis of jitter in IP networks".

10. Behzad Barzegar (Ph.D. proposal, Mechanical Engineering, Polytechnique Montreal, April 2016): "System Design and Load Management Strategies for Grid-Tied Residential Photovoltaic Systems with Battery Storage".

11. Thibault Lehouillier (Ph.D. thesis, Operations Research, Polytechnique Montreal, December 2015): "Modèles déterministes et stochastiques pour la résolution de conflits entre aéronefs" ("Deterministic and Stochastic Models for the Conflict Resolution Problem in Air Traffic Control").

12. Amir Abiri Jahromi (Ph.D. thesis, Electrical Engineering, McGill University, December 2015): "Demand Response as a Power System Resource".

13. Hakim Bennani (Ph.D. proposal, Electrical Engineering, Polytechnique Montreal, December 2014): "Stabilité transitoire des réseaux multiphasés par la matrice nodale modifiée augmentée" ("Transient Stability Simulation of Multiphase Power Networks Using Modified Augmented Nodal Analysis").

14. Simon Rajotte (Ph.D. proposal, Computer Engineering, Polytechnique Montreal, December 2014): "Reconstruction probabiliste d'une scène 3D à partir d'une séquence d'images stéréoscopiques" ("Probabilistic reconstruction of a 3D Scene from a Sequence of Stereoscopic Images").

15. Mohamed Ossama Hassan (Ph.D. proposal, Operations Research, Polytechnique Montreal, December 2014): "Multi Sector Planning Support Model For En Route Air Traffic Control".

16. Ghazi Majdoub (M.S., Electrical Engineering, Polytechnique Montreal, August 2014): "Techniques d'optimisation de la navigation globale d'un fauteuil roulant motorisé intelligent" ("Global Navigation for an Intelligent Wheelchair").

17. Sadegh Bolouki (Ph.D. thesis, Electrical Engineering, Polytechnique Montreal, August 2014): "Linear Consensus Algorithms: Structural Properties and Connections with Markov Chains".

18. Hugo Lhachemi (M.S., Electrical Engineering, Polytechnique Montreal, December 2013): "Synthèse et Validation d'un système de commandes de vol robuste et autoséquencé" ("Synthesis and Validation of a Robust Gain-Scheduled Flight Control System").

19. Armin Najarpour Foroushani (M.S., Electrical Engineering, Polytechnique Montreal, July 2013): "Comparison of Adaptive Behavior of an Animat in Different Markovian Maze Environments using XCS Classifier Systems".

20. Mehdi Abedinpour Fallah (Ph.D. proposal, Electrical Engineering, Polytechnique Montreal, June 2013): "Distributed Estimation and Control for a Class of Large-Scale Multi-Agent Systems".

21. Amin Roubi (M.S., Electrical Engineering, Polytechnique Montreal, June 2013): "Identification and Control of an Electrodynamic Shaker".

22. Augustin Jouy (M.S., Electrical Engineering, Polytechnique Montreal, August 2012): "Integrating Mixed-Criticality Traffic in AFDX Networks".

Professional Activities

Editorship Activities

1. Guest Editor, "The Security and Privacy of Sensor and Actuator Networks", MDPI Sensors, 2021.

Conference Organization Committees

1. Optimization Days 2016, May 2-4 2016, Montreal, QC, Canada.

Conference Program Committees

1. Hybrid Systems: Computation and Control (HSCC), 2020, Montreal, QC, Canada.
2. Hybrid Systems: Computation and Control (HSCC), 2019, Montreal, QC, Canada.
3. Robotics: Science and Systems (RSS), 2018, Pittsburgh, PA, USA.
4. GlobalSIP symposium on Control and Information Theoretic Approaches to Privacy and Security, November 2017, Montreal, QC, Canada.
5. Robotics: Science and Systems (RSS), 2017, MIT, Cambridge, MA, USA.
6. IPCCC 2016 First International workshop on Communication, Computing, and Networking in Cyber Physical Systems (CCN-CPS), December 2016, Las Vegas, NV, USA.
7. 6th ACM/IEEE International Conference on Cyber-Physical Systems, CPS Week, April 14-16, 2015, Seattle, WA, USA.
8. 3rd ACM International Conference on High Confidence Networked Systems (HiCoNS), CPS Week, April 15-17, 2014, Berlin, Germany.
9. 2nd International Conference on Interdisciplinary Science for Air Traffic Management (ISIATM), July 8-10, 2013, Ecole Nationale de l'Aviation Civile, Toulouse, France.
10. Robotics: Science and Systems (RSS), July 9-13, 2012, University of Sydney, Sydney, NSW, Australia.

Invited Session Organizer

1. Co-organized (with L. Schenato, R. Carli, J. Choi and H. Ishii) an Open Invited Track on "Multi-agent distributed learning and optimization of dynamical systems" at the 20th World Congress of the International Federation of Automatic Control, Toulouse, France, July 2017.
2. Participant in the tutorial session "Differential Privacy in Control and Networked Systems" (organized by J. Cortes) at the upcoming 55th IEEE Conference on Decision and Control, December 2016.
3. Organized two invited sessions on "Control of Energy Systems" and "Planning, Optimization and Control in Mobile Robotics" at the Optimization Days, Montreal, May 2016.
4. Co-organized (with S. Han and G. J. Pappas) two invited sessions on "Privacy in Systems and Control" at the 53rd IEEE Conference on Decision and Control, Los Angeles, CA, December 2014.
5. Co-organized (with G. J. Pappas) an invited sessions on "Multivehicle Trajectory Optimization" at the American Control Conference, Baltimore, MD, June 2010.

Proposal Reviewer

Member of the selection committee (2019-2022), NSERC Discovery Grant, Electrical and Computer Engineering Evaluation Group

PROMPT (Public-private partnerships in information technology) : 2017 (1).

Mathematics of Information Technology and Complex Systems (MITACS) : 2016 (1), 2017 (2), 2018 (1).

Natural Sciences and Engineering Research Council of Canada (NSERC): 2013 (1), 2016 (1), 2019 (1), 2020 (1).

Agence Nationale de la Recherche (ANR, France): 2016 (1), 2017 (1), 2018 (1), 2020 (2).

European Research Council (ERC): 2018 (1).

Reviewer for Technical Journals and Conferences

Springer Briefs in Electrical Engineering; IEEE Transactions on Automatic Control; IEEE Transactions on Control of Network Systems; Automatica; Systems and Control Letters; SIAM Journal on Control and Optimization; ASME Journal of Dynamic Systems, Measurements and Control; European Journal of Control;

AIAA Journal of Guidance, Control, and Dynamics; Journal of the Franklin Institute; IEEE Transactions on Robotics; IEEE Robotics and Automation Letters; IEEE Transactions on Automation Science and Engineering; International Journal of Robotics Research; Autonomous Robots; International Journal of Advanced Robotic Systems; Robotica; IEEE Transactions on Signal Processing; IEEE Transactions on Neural Networks and Learning Systems; IEEE Transactions on Aerospace and Electronic Systems; Unmanned Systems; Journal of Aerospace Information Systems; IEEE Transactions on Computers; ACM Transactions on Cyber-Physical Systems; ACM Transactions on Mobile Computing; ACM Transactions on Sensor Networks; IEEE Transactions on Smart Grids; IEEE Transactions on Wireless Technology; Mathematics of Operations Research; European Journal of Operational Research; Journal of Optimization Theory and Applications; SIAM Journal on Computing. Reviewer for various conferences in controls and robotics.

Society and Technical Committee Memberships

Senior Member of IEEE (since 2016, Member since 2003), Control Systems Society (CSS), Robotics and Automation Society (RAS), Signal Processing Society.

Member of the IEEE CSS Technical Committees on Hybrid Systems (since 2018) and on Networks and Communication Systems (since 2018)

Senior Member of AIAA (since 2014, Member since 2005).

Member of SIAM (since 2002), Activity Group on Control and Systems Theory.

IFAC affiliate.

Member of the Order of Engineers of Quebec (Junior Engineer 2013-2015, Engineer since 2015).

Member of the Canadian Mirror Committee, Standards Council of Canada, for the ISO/TC 22/SC 35 "Lighting and visibility" technical committee.

Research Funding

1. *Methods and tools for explainable embedded neural networks: application to transportation systems*
   NSERC Alliance Grant with Thales Montreal (CortAIx) and Zetane.   Sept. 2020-Sept. 2023
   PI: J.-P. David + 2 co-PIs. C\$374,000 (C\$100,000 to Le Ny).

2. *Optimized Teaming and Adaptive Interfaces in Mixed-Initiative Human Automation Systems*
   DND, IDEaS Micro-Net. PI: A. Mahajan + 5 co-PIs   Oct. 2019-March 2023
   C\$1,499,577 (C\$252,100 to Le Ny)

3. *Optimisation de l'efficacité énergétique et de la navigation autonome d'un véhicule autoguidé*
   NSERC CRD Grant with DIVEL. PI: S. Kelouwani   July 2019-March 2024
   C\$1,500,000 (C\$125,000 to Le Ny)

4. *Control of Intelligent Infrastructures with Private and Strategic Sensing Agents*
   Alexander von Humboldt Foundation   Aug. 2018-Aug. 2019
   €45,000 (as fellowship)

5. *Sensing Strategies for Autonomous and Large-Scale Control Systems*
   NSERC, Discovery Grant + Accelerator Supplement   May 2018-March 2024
   C\$230,000 + C\$120,000

6. *UWB-Aided Cooperative Navigation and Control for the Deployment of Mobile Robotic Networks*
   FRQNT, Team research project. Co-PIs: J. Forbes (McGill), D. Saussié   May 2018-March 2022
   C\$162,000 (C\$54,000 to Le Ny)

7. *Collaborative Research Polytechnique Montreal / ISAE-SUPAERO in Unmanned Aerial Systems*
   CFQCU, Programme Samuel-de-Champlain. PI: D. Saussié   July 2017-Dec. 2019
   C\$25,000 (C\$12,500 to Le Ny)

8. *Autonomous Aerial Inspection of Wind Turbines*
   MITACS, Accelerate & NSERC, Engage Grant (with microdrones Canada)   March 2017-Dec. 2017
   C$55,000

9. *Impact of an Integrated Modular Avionics Architecture on the Performance of Aerospace Control Systems*
   MITACS, Accelerate (with Bombardier Aerospace)   May 2015-February 2016
   C$30,000

10. *Distributed Robust Networks of Autonomous and Embedded Systems (DRONES)*
    CFI, John R. Evans' Leaders Fund (equipment grant). Co-PI: D. Saussié   January 2015
    C$314,000

11. *Integrated Modular Avionics Demonstration Platform*
    Bombardier Aerospace, Wind River (equipment and software donations)   January 2015
    US$155,000

12. *High-Precision Radio-Aided Localization for an Inspection Robot*
    NSERC, Engage Grant (with Hydro-Quebec Research Institute)   February 2015-July 2015
    C$25,000

13. *Privacy-Preserving Traffic Estimators*
    FRQNT, New Researchers Start-up Program   May 2014-December 2016
    C$40,000

14. *Differential Privacy for Intelligent Transportation Systems: a Model-Based Approach*
    Foundation of the Ecole Polytechnique de Montréal, Early Career Professor Award   July 2013
    C$15,000

15. *Synthesis of Natural Motions for a Robotic Arm Integrated in Media Applications*
    NSERC, Engage Grant (with Moment Factory)   November 2013-April 2014
    C$25,000

16. *Design of Robust and Privacy-Preserving Control Networks*
    NSERC, Discovery Grant   May 2013-April 2018
    C$125,000

17. *Design and Verification of Complex Control Systems*
    Polytechnique Montreal, Startup Grant   October 2012-October 2014
    C$40,000

Media and Other Presentations and Reports

1. Invited panelist at AIxSPACE, Montreal, January 2021.

2. J. Le Ny, "Controlling Smart Cities with Private and Self-Interested Citizens", Presentation at the Colloquium on *Smart Cities 2017: Quebec and Chinese Innovations*, Montreal, November 1st, 2017.

3. Interview for the article "From wireless connectivity to future of insurance: Montréal gains a reputation for expertise in the fast-growing autonomous vehicle market", ID MTL, Published May 15, 2017.

4. Interview for RDI Matin Weekend on our qualification for the final round of the DJI Challenge, August 13, 2016. Our autonomous landing system was also covered in multiple media outlets including the MIT Technology Review.

5. Interview for Polytechnique Montreal's Magazine: special report on aerospace engineering at Polytechnique Montreal, June 2016.

6. Speaker at the TEDxHEC Montreal conference, "Automation in the Era of the Internet of Things", April 2nd, 2016.

7. Interview for the article "L'ère des drones" ("The Drone Era") published in Quebec Science in December

2014.

8. Interview for radio-Canada on Amazon's project to use octocopters to quickly deliver packages. Aired on "15-18" (Michel C. Auger), on December 2nd, 2013.

<center>Last updated: November 4, 2020</center>