
Abdelhamid Tayebi

Curriculum Vitae

PhD, PEng, FIEEE, FIET, FEIC
Professor and Research Chair
Department of Electrical & Computer Engineering
Lakehead University
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Education

- 🎓 1997: **PhD, Electrical and Computer Engineering (Control Systems)**, *University of Picardie Jules Verne*, Amiens, France.
Thesis: Contribution to the control of nonholonomic mobile robots.
- 🎓 1993: **MSc, Robotics**, *Laboratoire de Robotique de Paris*, *University of Pierre & Marie Curie*, Paris, France.
Thesis: Robust and adaptive control of robot manipulators.
- 🎓 1992: **BSc, Electrical Engineering (Control Systems)**, *Ecole Polytechnique*, Algiers, Algeria.
Capstone project: Adaptive field oriented control for induction motors.

Academic Positions

- 2009-present: **Professor**, *Department of Electrical Engineering*, Lakehead University, Canada.
- 2004-present: **Professor (by courtesy)**, *Department of Electrical and Computer Engineering*, Western University, Canada.
- 2003-2009: **Associate Professor**, *Department of Electrical Engineering*, Lakehead University, Canada.
- 1999-2003: **Assistant Professor**, *Department of Electrical Engineering*, Lakehead University, Canada.
- 1998-1999: **Postdoctoral Fellow**, *Department of Computer Science*, UQO, Canada.
- 1997-1998: **Teaching and Research Assistant**, *IUP*, *University of Picardie Jules-Verne*, Amiens, France.
- 1994-1997: **Lecturer**, *IUT*, *University of Paris XI*, Paris, France.

Administrative and Leadership Positions

- 2016-2021: Director of the PhD program, ECE department, Lakehead University.

- 2008-2011: Director of the Control Engineering Master's program, ECE department, Lakehead University.
- 2008-2012: Member of the Board of Directors of the International Federation of Automatic Control (IFAC-Canada).
- 2003-present: Founder and director of the Robotics and Automatic Control Laboratory, EE department, Lakehead University.
- 2009-2013: Chair of the Committee for the establishment of the ECE Ph.D. Program, LU.
- 2008-2010: Chair of the Engineering Research and Graduate Studies Committee, LU.
- 2002-2004: Chair of the Electrical Engineering Department Curriculum Committee, LU.
- 2004-2015: Chair of the Electrical Engineering Department Hiring Committee, LU.
- 2001-2008: Counselor for the IEEE Student Chapter at Lakehead University.
- 2004-2005: Chair of the Ontario Graduate Scholarship (OGS) panel (Ontario-wide committee).

Professional Associations

- 2001-present: Professional Engineer (PEng), Professional Engineers Ontario (PEO).
- 1997-present: Member of the Institute of Electrical and Electronics Engineers (IEEE), Fellow member since 2023.
- 2024-present: Fellow member of Institution of Engineering and Technology (IET).

Awards, Honors and Recognitions

- 2024: Distinguished Instructor Award. The University's most prestigious teaching award that recognizes an outstanding individual who has made a significant contribution to teaching excellence and educational innovation and leadership at the University over a number of years.
- 2024: Fellow of the Institution of Engineering and Technology (IET).
- 2024: Fellow of the International Artificial Intelligence Industry Alliance (AIIA).
- 2023: Research Chair in Intelligent Robotic Systems. This inaugural Research Chair is awarded to exceptional researchers in the Faculty of Engineering.
- 2023: Fellow of the Institute of Electrical and Electronics Engineers (IEEE). Citation: "For contributions to the control of unmanned aerial vehicles and learning-based control for robot manipulators".
- 2023: Fellow of Engineering Institute of Canada (EIC).
- 2022: Fellow of the Asian-Pacific Artificial Intelligence Association (AAIA).
- 2019-2024 Listed among the top 2% highly cited scientists in the world as per the classification published in Elsevier by Stanford University researchers: <https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/7>.

- 2016: Finalist, Best Student Paper Award, American Control Conference (ACC) (as advisor).
- 2013: NSERC Discovery Accelerator Supplements Award (2013-2016).
- 2012: Research Chair in Aerial Robotics, Lakehead University (2012-2014). This award recognizes exceptional researchers at Lakehead University by providing a two-year research grant to support an individual's research program.
- 2008: Distinguished Researcher Award (Highest honour conferred by Lakehead University for research). This award is only given to a scholar once in their career for research and scholarly activity sustained at a high level over a period of at least one decade).
- 2005: Contribution to Teaching Award, Lakehead University.
- 2003: Contribution to Research Award, Lakehead University.
- 2003-2005: Merit Award for Excellence in Teaching, Lakehead University (received in 2003 and 2005). Awarded for exceptional performance in teaching over the two previous years.
- 2002-2024: Merit Award for Excellence in Research, Lakehead University (received every two years since 2002). Awarded for exceptional performance in research and scholarly activity over the two previous years.

Editorial Activities and Technical Committees

- 2011-present: Associate Editor, Automatica.
- 2013-present: International Member of the Editorial Board, Chinese Journal of Aeronautics.
 - 2014-2020: Associate Editor, IEEE Transactions on Control Systems Technology.
 - 2006-2014: Associate Editor, IEEE Transactions on Cybernetics.
 - 2005-2019: Associate Editor, Control Engineering Practice.
 - 2005-2017: Associate Editor, IEEE Control Systems Society (CSS) Conference Editorial Board.
 - 2015: Associate Editor, IEEE Robotics and Automation Society (RAS) Conference Editorial Board.
 - 2010: Guest Editor, Control Engineering Practice, Special Issue on Aerial Robotics.
- 2008-present: Member of the IFAC Technical Committee: Adaptive and Learning Systems.
- 2006-present: Member of the IEEE CSS Technical Committee on Intelligent Control (TCIC).

Publications

Books

- A. Abdessameud and A. Tayebi, Motion Coordination for VTOL Unmanned Aerial Vehicles: Attitude Synchronization and Formation Control, Springer, 2013.

Refereed Journal Articles

- M. Sawant, I. Polushin and A. Tayebi, "N-dimensional Convex Obstacle Avoidance using Hybrid Feedback Control", *IEEE Transactions on Automatic Control*, 2024, submitted.
- Y. Li, H. Lyu, J. Feng and A. Tayebi "On the Input-output Decoupling of Boolean Control Networks by State Feedback," *Asian Journal of Control*, accepted, 2024.
- I. Cheniouni, S. Berkane and A. Tayebi, "Safe and Quasi-Optimal Autonomous Navigation in Environments with Convex Obstacles," *IEEE Transactions on Automatic Control*, accepted, 2024.
- M. Boughellaba and A. Tayebi, "Distributed Attitude Estimation for Multi-agent Systems on $SO(3)$," *IEEE Transactions on Automatic Control*, accepted, 2024.
- M. Sawant, I. Polushin and A. Tayebi, "Hybrid Feedback for Global Autonomous Navigation in Environments with Arbitrary Non-Convex Obstacles," *IEEE Transactions on Automatic Control*, Vol. 69, No. 11, pp. 7508-7523, 2024.
- M. Wang and A. Tayebi, "Hybrid Feedback for Affine Nonlinear Systems with Application to Global Obstacle Avoidance," *IEEE Transactions on Automatic Control*, VOL. 69, NO. 8, pp. 5546-5553, 2024.
- M. Wang and A. Tayebi, "Nonlinear Attitude Estimation Using Intermittent and Multi-Rate Vector Measurements," *IEEE Transactions on Automatic Control*, VOL. 69, NO. 8, pp. 5231-5245, 2024.
- M. Boughellaba and A. Tayebi, "Bearing-based distributed pose estimation for multi-agent networks," *IEEE Control Systems Letters*, Vol. 7, pp. 2617-2622, 2023.
- M. Sawant, S. Berkane, I. Polushin and A. Tayebi, "Hybrid Feedback for Autonomous Navigation in Planar Environments With Convex Obstacles," *IEEE Transactions on Automatic Control*, Vol. 68, No. 12, pp. 7342-7357, 2023.
- M. Boughellaba and A. Tayebi, "Comments on "Pose localization of leader–follower networks with direction measurements"[Automatica 120 (2020) 109125]", *Automatica*, Volume 151, pages 110949, 2023.
- S. Berkane, I. Harizi, A. Tayebi, M. S. Silverman and S. Stranges, "Should We Delay the Second COVID-19 Vaccine Dose in Order to Optimize Rollout? A Mathematical Perspective," *International Journal of Public Health*, Vol. 66, 2022.
- I. Harizi, S. Berkane, and A. Tayebi, "Modeling the Effect of Population-Wide Vaccination on the Evolution of COVID-19 Epidemic in Canada," medRxiv 2021.02.05.21250572, 2021.

- M. Wang and A. Tayebi, "Hybrid feedback for global tracking on Matrix Lie groups $SO(3)$ and $SE(3)$," *IEEE Transactions on Automatic Control*, Vol. 67, No. 6, pp. 2930-2945, 2022 (Date of Publication: 16 July 2021).
- M. Wang, S. Berkane and A. Tayebi, "Nonlinear Observers Design for Vision-Aided Inertial Navigation Systems," *IEEE Transactions on Automatic Control*, Vol. 67, No. 4, pp. 1853-1868, 2022 (Date of Publication: 04 June 2021).
- S. Berkane, A. Tayebi and S. De Marco, "A Nonlinear Navigation Observer Using IMU and Generic Position Information," *Automatica*, Vol. 127, 2021.
- M. Wang and A. Tayebi, "Nonlinear State Estimation for Inertial Navigation Systems with Intermittent Measurements," *Automatica*, Vol. 122, 2020.
- M. Wang and A. Tayebi, "Hybrid Nonlinear Observers for Inertial Navigation Using Landmark Measurements," *IEEE Transactions on Automatic Control*, Vol. 65, No. 12, pp. 5173-5188, 2020.
- S. Berkane and A. Tayebi, "Attitude estimation with intermittent measurements," *Automatica*, Vol. 105, pp. 415-421, 2019.
- M. Wang and A. Tayebi, "Hybrid Pose and Velocity-bias Estimation on $SE(3)$ Using Inertial and Landmark Measurements," *IEEE Transactions on Automatic Control*, Vol. 64, No. 8, pp. 3399-3406, 2019.
- R. Benrezki, A. Tayebi and M. Tadjine, "Adaptive Trajectory Tracking Control for VTOL-UAVs with Unknown Inertia, Gyro-bias and Actuator LOE," *International Journal of Robust and Nonlinear Control*, Vol. 28, N. 17, pp. 5247-5261, 2018.
- S. Berkane, A. Abdessameud and A. Tayebi, "Hybrid Output Feedback For Attitude Tracking on $SO(3)$," *IEEE Transactions on Automatic Control*, Vol. 63, No. 11, pp. 3956-3963, 2018.
- A. Benallegue, Y. Chitour and A. Tayebi, "Adaptive Attitude Tracking Control of Rigid Body Systems with Unknown Inertia and Gyro-bias," *IEEE Transactions on Automatic Control*, Vol. 63, No. 11, pp. 3986-3993, 2018.
- A. Abdessameud and A. Tayebi, "Distributed Consensus Algorithms for High-Order Multi-Agent Systems On Directed Graphs," *IEEE Transactions on Automatic Control*, Vol. 63, No. 10, pp. 3464-3470, 2018.
- A. Abdessameud and A. Tayebi, "Distributed output regulation of heterogeneous linear multi-agent systems with communication constraints," *Automatica*, Vol. 91, pp. 152-158, 2018.

- S. Berkane and A. Tayebi, "On the Design of Attitude Complementary Filters on $SO(3)$," *IEEE Transactions on Automatic Control*, Vol. 63, No. 3, pp. 880–887, 2018.
- S. Berkane, A. Abdessameud and A. Tayebi, "Hybrid Attitude and Gyro-bias Observer design on $SO(3)$," *IEEE Transactions on Automatic Control*, Vol 62, No. 11, pp. 4044–4050, 2017.
- S. Berkane, A. Abdessameud and A. Tayebi, "Hybrid Global Exponential Stabilization on $SO(3)$," *Automatica*, Vol. 81, pp. 279–285, 2017.
- A. Abdessameud, A. Tayebi and I.G. Polushin, "Leader-Follower Synchronization of Euler-Lagrange Systems with Time-Varying Leader Trajectory and Constrained Discrete-time Communication," *IEEE Transactions on Automatic Control*, Vol. 62, No. 5, pp. 2539–2545, 2017.
- A. Abdessameud, I.G. Polushin and A. Tayebi, "Distributed Coordination of Dynamical Multi-agent Systems Under Directed Graphs and Constrained Communication Exchange," *IEEE Transactions on Automatic Control*, Vol. 62, No. 4, pp. 1668–1683, 2017.
- S. Berkane and A. Tayebi, "Construction of Synergistic Potential Functions on $SO(3)$ with Application to Velocity-Free Hybrid Attitude Stabilization," *IEEE Transactions on Automatic Control*, Vol. 62, No. 1, pp. 495–501, 2017.
- L. Benziane, A. Benallegue, Y. Chitour and A. Tayebi, "Velocity-free Attitude Stabilization with Inertial Vector Measurements," *International Journal of Robust and Nonlinear Control*, Vol. 26, pp. 2478–2493, 2016.
- A. Abdessameud, I.G. Polushin and A. Tayebi, "Synchronization of Nonlinear Systems with Communication Delays and Intermittent Information Exchange," *Automatica*, Vol. 59, pp. 1–8, 2015.
- A. Abdessameud, I. G. Polushin and A. Tayebi, "Motion Coordination of Thrust-Propelled Under-actuated Vehicles with Intermittent and Delayed Communications," *Systems & Control Letters*, Vol. 79, pp. 15–22, 2015.
- A. Abdessameud, I. G. Polushin and A. Tayebi, "Synchronization of Lagrangian systems with irregular communication delays," *IEEE Transactions on Automatic Control*, Vol. 59, No. 1, pp. 187–193, 2014.
- A. Tayebi, A. Roberts and A. Benallegue, "Inertial Vector Measurements Based Velocity-free Attitude Stabilization," *IEEE Transactions on Automatic Control*, Vol. 58, No. 11, pp. 2893–2898, 2013.

- A. Roberts and A. Tayebi, "A new position regulation strategy for VTOL UAVs using IMU and GPS measurements," *Automatica*, Vol. 49, No. 2, pp. 433-440, 2013.
- A. Abdessameud and A. Tayebi, "On consensus algorithms design for double integrator dynamics," *Automatica*, Vol. 49, No. 1, pp. 253-260, 2013.
- A. Abdessameud, A. Tayebi and I.G. Polushin, "Attitude synchronization of multiple rigid bodies with communication delays," *IEEE Transactions on Automatic Control*, Vol. 57, NO. 9, pp. 2405-2411, 2012.
- A. Abdessameud and A. Tayebi, "Formation Control of VTOL Unmanned Aerial Vehicles with Communication Delays," *Automatica*, Vol. 47, No. 11, pp. 2382-2394, 2011.
- A. Roberts and A. Tayebi, "Adaptive Position Tracking of VTOL UAVs," *IEEE Transaction on Robotics*, Vol. 27, No. 1, pp. 129-142, 2011.
- A. Abdessameud and A. Tayebi, "On Consensus Algorithms for Double-integrator Dynamics Without Velocity Measurements and with input constraints," *Systems & Control Letters*, Vol. 59, No. 12, pp. 812-821, 2010.
- T. Hamel, R. Mahony and A. Tayebi, "Introduction to the special issue on aerial robotics," Editorial, *Control Engineering Practice*, Vol. 18, pp. 677-678, 2010.
- A. Abdessameud and A. Tayebi, "Global position tracking of a VTOL UAV," *Automatica*, Vol. 46, No. 6, pp. 1053-1059, 2010.
- A. Abdessameud and A. Tayebi, "Attitude Synchronization of a Group of Spacecraft Without Velocity Measurement," *IEEE Transactions on Automatic Control*, Vol. 54, No. 11, pp. 2642-2648, 2009.
- Polushin I.G. , H. J. Marquez, A. Tayebi and P. X. Liu, "A multichannel IOS small gain theorem for systems with multiple time-varying communication delays," *IEEE Transactions on Automatic Control*, Vol. 54, No. 2, pp. 404-409, 2009.
- Ye Y., A. Tayebi and X. Liu "All-Pass Filtering in Iterative Learning Control," *Automatica*, Vol. 45, No. 1, pp. 257-264, 2009.
- A. Tayebi, S. Abdul, M.B. Zaremba and Y. Ye, "Robust iterative learning control design via μ -synthesis: Application to a robot manipulator," *IEEE/ASME Transactions on Mechatronics*, Vol. 13, No. 5, pp. 608-613, 2008.

- A. Tayebi, "Unit quaternion based output feedback for the attitude tracking problem," *IEEE Transactions on Automatic Control*, Vol. 53, No. 6, pp. 1516-1520, 2008.
- Chien C-J., and A. Tayebi "Further Results on Adaptive Iterative Learning Control of Robot Manipulators," *Automatica*, Vol. 44, No. 3, pp. 830-837, 2008.
- A. Tayebi and C-J. Chien, "A Unified Adaptive Iterative Learning Control Framework for Uncertain Nonlinear Systems," *IEEE Transactions on Automatic Control*, Vol. 52, No. 10, pp. 1907-1913, 2007.
- A. Tayebi, "Analysis of Two Particular Iterative Learning Control Schemes In Frequency and Time Domains," *Automatica*, Vol. 43, No. 9, pp. 1565-1572, 2007.
- A. Tayebi "Model Reference Adaptive Iterative Learning Control for Linear Systems," *International Journal of Adaptive Control and Signal Processing*, Vol. 20, No. 9, pp. 475-489, 2006.
- Polushin I.G., A. Tayebi and H.J. Marquez "Control Schemes for Stable Teleoperation with Communication Delay Based on IOS Small Gain Theorem," *Automatica*, Vol. 42, No. 6, pp. 905-915, 2006.
- Bouchoucha M., A. Tayebi and M. Tadjine "Real-time implementation of stiffness control for a 6-DOF robot manipulator," *The Mediterranean Journal of Measurement and Control*, Vol. 2, No. 4, pp. 179-185, 2006.
- A. Tayebi and S. Islam "Adaptive iterative learning control for robot manipulators: Experimental results," *Control Engineering Practice*, Vol. 14, No. 7, pp. 843-851, 2006.
- A. Tayebi and S. McGilvray "Attitude stabilization of a VTOL quadrotor aircraft," *IEEE Transactions on Control Systems Technology*, Vol. 14, No. 3, pp. 562-571, 2006.
- A. Tayebi and M.B. Zaremba, "Authors' Reply to 'Comments on Robust iterative Learning Control Design is Straightforward for Uncertain LTI Systems Satisfying the Robust Performance Condition'," *IEEE Transactions on Automatic Control*, Vol. 49, No. 12, pp. 2303- 2303, 2004.
- A. Tayebi "Adaptive iterative learning control for robot manipulators," *Automatica*, Vol.40, no.7, pp. 1195-1203, 2004.
- A. Tayebi and M.B. Zaremba, "Robust iterative Learning Control Design is Straightforward for Uncertain LTI Systems Satisfying the Robust Performance Condition," *IEEE Transactions on Automatic Control*, Vol. 48, No. 1, pp. 101-106, 2003.

- A. Tayebi and J.X. Xu, "Observer-based iterative learning control for a class of nonlinear systems," *IEEE Transactions on Circuits and Systems—I: Fundamental Theory and Applications*, Vol. 50, No. 3, pp. 452-455, 2003.
- A. Tayebi and M.B. Zaremba, "Iterative learning control for nonlinear systems described by a blended multiple model representation," *International Journal of Control*, Special issue on Switched, Piecewise and Polytopic Linear Systems, Vol. 75, No. 16/17, pp. 1376-1384, 2002.
- A. Tayebi, M. Tadjine and A. Rachid, "Invariant Manifold Approach for the Stabilization of Nonholonomic Chained Systems: Application to a Mobile Robot," *Nonlinear Dynamics*, Kluwer Academic Publishers, Vol. 24, No. 2, pp. 167-181, 2001.
- A. Tayebi and A. Rachid, "Adaptive Controller for the Stabilization of Nonholonomic Mobile Robots with Matched Uncertainties," *Advanced Robotics*, VSP - International Science Publishers, Vol. 14, No. 2, pp. 105-118, 2000.
- A. Tayebi and A. Rachid, "Backstepping-based control design for the stabilization of nonholonomic chained systems: Application to mobile robots," *International Journal of Computing Anticipatory Systems*, D. Dubois (Ed.), Vol. 2, pp. 157-168, 1998.

Refereed Conference Papers

- M. Wang and A. Tayebi, "Pose, Velocity and Landmark Position Estimation Using IMU and Bearing Measurements," American Control Conference, Denver, Colorado, 2025, Submitted.
- M. Sawant, I. Polushin and A. Tayebi, "Hybrid Feedback for Three-dimensional Convex Obstacle Avoidance," American Control Conference, Denver, Colorado, 2025, Submitted.
- I. Cheniouni, S. Berkane and A. Tayebi, "Hybrid Feedback Control for Global and Optimal Safe Navigation," *American Control Conference*, Toronto, Canada, pp. 1131-1136, 2024.
- M. Boughellaba and A. Tayebi, "Global attitude alignment for multi-agent systems on $SO(3)$ without angular velocity measurements," *American Control Conference*, Toronto, Canada, pp. 2039-2044, 2024.
- Y. Li, H. Lyu, J. Feng and A. Tayebi, "New Results on Input-output Decoupling of Boolean Control Networks," In proc. of the 62nd *IEEE Conference on Decision and Control (CDC)*, Singapore, pp. 8328-8333, 2023.
- M. Boughellaba and A. Tayebi, "Bearing-based distributed pose estimation for multi-agent networks," In proc. of the 62nd *IEEE Conference on Decision and Control (CDC)*, Singapore, 1394-1399, 2023.

- O. Sifour, S. Berkane and A. Tayebi, "Modeling of Four-Winged Micro Ornithopters Inspired by Dragonflies," In proc. of the *IFAC World Congress*, pp. 10752–10759, 2023.
- I. Cheniouni, A. Tayebi and S. Berkane, "Safe and Quasi-Optimal Autonomous Navigation in Sphere Worlds," In proc. of the *American Control Conference (ACC)*, San Diego, CA, USA, pp. 2678-2683, 2023.
- M. Boughellaba and A. Tayebi, "Distributed Hybrid Attitude Estimation for Multi-agent Systems on $SO(3)$," In proc. of the *American Control Conference (ACC)*, San Diego, CA, USA, pp. 1048-1053, 2023.
- M. Boughellaba and A. Tayebi, "Leader-follower bearing-based distributed pose estimation for multi-vehicle networks," In proc. of the *61th IEEE Conference on Decision and Control (CDC)*, Cancun, Mexico, December 6-9, pp. 6562-6567, 2022.
- M. Sawant, A. Tayebi and I. Polushin "Autonomous Navigation in Environments with Arbitrary Non-convex Obstacles," In proc. of the *61th IEEE Conference on Decision and Control (CDC)*, Cancun, Mexico, December 6-9, pp. 7208-7213, 2022.
- M. Wang and A. Tayebi. "Nonlinear attitude estimation using intermittent linear velocity and vector measurements," The 60th *IEEE Conference on Decision and Control*, Austin, Texas, USA. December 13-15, 2021, pp. 4707-4712.
- S. Berkane and A. Tayebi. "Nonlinear Estimation for Position-Aided Inertial Navigation Systems," The 60th *IEEE Conference on Decision and Control*, Austin, Texas, USA. December 13-15, 2021, pp. 6156-6160.
- M. Wang and A. Tayebi, "Observers Design for Inertial Navigation Systems: A Brief Tutorial," *IEEE Conference on Decision and Control (CDC)*, Jeju Island, Republic of Korea, pp. 1320-1327, 2020.
- M. Wang and A. Tayebi, "Nonlinear Observers for Stereo-Vision-Aided Inertial Navigation," *IEEE Conference on Decision and Control (CDC)*, Nice, France, pp. 2516-2521, 2019.
- M. Wang and A. Tayebi, "A New Hybrid Control Strategy for the Global Attitude Tracking Problem," *IEEE Conference on Decision and Control (CDC)*, Nice, France, pp. 7222-7227, 2019.
- S. Berkane and A. Tayebi, "Position, Velocity, Attitude and Gyro-Bias Estimation from IMU and Position Information," European Control Conference (ECC), Napoli, Italy, 2019, pp. 4028-4033.
- S. Berkane, A. Tayebi and A. Teel, "Hybrid Constrained Estimation For Linear Time-Varying Systems," In Proc. of the *57th IEEE Conference on Decision and Control (CDC)*, Miami Beach,

FL, USA, pp. 4643-4648, 2018.

- M. Wang and A. Tayebi, "Geometric Nonlinear Observer Design for SLAM on a Matrix Lie Group," In Proc. of the *57th IEEE Conference on Decision and Control (CDC)*, Miami Beach, FL, USA, pp. 1488-1493, 2018.
- M. Wang and A. Tayebi, "A Globally Exponentially Stable Nonlinear Hybrid Observer for 3D Inertial Navigation," In Proc. of the *57th IEEE Conference on Decision and Control (CDC)*, Miami Beach, FL, USA, pp. 1367-1372, 2018.
- S. Berkane and A. Tayebi, "Attitude and Gyro Bias Estimation Using GPS and IMU Measurements," In Proc. of the *56th IEEE Conference on Decision and Control (CDC)*, Melbourne, Australia, pp. 2402 – 2407, 2017.
- S. Berkane and A. Tayebi, "Attitude observer using synchronous intermittent vector measurements," In Proc. of the *56th IEEE Conference on Decision and Control (CDC)*, Melbourne, Australia, pp. 3027 – 3032, 2017.
- M. Wang and A. Tayebi, "Globally Asymptotically Stable Hybrid Observers Design on $SE(3)$," In Proc. of the *56th IEEE Conference on Decision and Control (CDC)*, Melbourne, Australia, pp. 3033–3038, 2017.
- A. Abdessameud and A. Tayebi, "Consensus of Heterogeneous Multiple Integrator Agents on Directed Graphs," In Proc. of the *56th IEEE Conference on Decision and Control (CDC)*, Melbourne, Australia, pp. 3437 – 3442, 2017.
- A. Abdessameud and A. Tayebi, "Cooperative Output Regulation of Linear Multi-agent Systems with Communication Constraints," In Proc. of the *55th IEEE Conference on Decision and Control (CDC)*, Las Vegas, USA, 2016, pp 4746-4751.
- S. Berkane, A. Abdessameud and A. Tayebi, "A Globally Exponentially Stable Hybrid Attitude and Gyro-bias Observer," In Proc. of the *55th IEEE Conference on Decision and Control (CDC)*, Las Vegas, USA, 2016, pp. 308-313.
- S. Berkane, A. Abdessameud and A. Tayebi, "Global Exponential Angular Velocity Observer for Rigid Body Systems," In Proc. of the *55th IEEE Conference on Decision and Control (CDC)*, Las Vegas, USA, 2016, pp. 4154-4159.
- S. Berkane, and A. Tayebi, "On Deterministic Attitude Observers on the Special Orthogonal Group $SO(3)$," In Proc. of the *55th IEEE Conference on Decision and Control (CDC)*, Las Vegas, USA, 2016, pp. 1165-1170.

- A. Abdessameud and A. Tayebi, "State Synchronization of Double-integrator Dynamics with Delayed Sampled-data Information Exchange," In Proc. of *the American Control Conference (ACC)*, Boston, MA, USA, 2016, pp. 5334-5339.
- S. Berkane, A. Abdessameud and A. Tayebi, "Global Hybrid Attitude Estimation on the Special Orthogonal Group $SO(3)$," In Proc. of *the American Control Conference (ACC)*, Boston, MA, USA, 2016, pp. 113-118. **Best Student Paper Award Finalist.**
- S. Berkane and A. Tayebi, "Velocity-Free Hybrid Attitude Stabilization Using Inertial Vector Measurements," In Proc. of *the American Control Conference (ACC)*, Boston, MA, USA, 2016, pp. 6048-6053.
- S. Berkane and A. Tayebi, "On the Design of Synergistic Potential Functions on $SO(3)$," In Proc. of the 54th *IEEE Conference on Decision and Control (CDC)*, Osaka, Japan, 2015, pp. 270-275.
- A. Abdessameud, A. Tayebi and I. Polushin, "On the Leader-Follower Synchronization of Euler-Lagrange Systems," In Proc. of the 54th *IEEE Conference on Decision and Control (CDC)*, Osaka, Japan, 2015, pp. 1054-1059.
- A. Abdessameud, I. Polushi and A. Tayebi, "Distributed Coordination of Linear Second-Order Multi-Agent Systems with Communication Constraints," In proc. of *IEEE Multi-Conference on Systems and Control (MSC)*, Sydney, Australia, 2015, pp. 472-477.
- S. Berkane and A. Tayebi, "Some Optimization Aspects on the Lie Group $SO(3)$," In Proc. of the 15th *IFAC symposium on Information Control Problems in Manufacturing*, Ottawa, Canada, 2015, pp. 1173-1177.
- Y. Ye, A. Tayebi and X. Liu, "Rapid-prototyping of iterative learning control using MATLAB/Simlink hybrid-programming," In proc. of the 28th Canadian Conference on Electrical and Computer Engineering (CCECE), 2015, pp. 1289-1293.
- A. Abdessameud, I. G. Polushin and A. Tayebi, "Containment Control for Networked Lagrangian Systems Under a Directed Graph and Communication Constraints," In Proc. of the 53rd *IEEE Conference on Decision and Control*, Los Angeles, California, USA, 2014, pp. 2938-2943.
- A. Abdessameud, I. Polushin and A. Tayebi, "Synchronization of Heterogeneous Euler-Lagrange Systems with Time Delays and Intermittent Information Exchange," In Proc. of the 19th *IFAC World Congress*, Cape Town, South Africa, 2014, pp. 1971-1976.
- A. Abdessameud, A. Tayebi and I. Polushin, "Motion Coordination of Thrust-Propelled Underactuated Vehicles in the Presence of Communication Delays," In Proc. of the 19th *IFAC World Congress*, Cape Town, South Africa, 2014, pp. 3170-3175.

- L. Benziene, A. Benallegue and A. Tayebi, "Attitude stabilization without angular velocity measurements," In Proc. of *IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, China 2014, pp. 3116-3121.
- A. Abdessameud, I.G. Polushin and A. Tayebi, "Adaptive synchronization of networked Lagrangian systems with irregular communication delays," In Proc. of the *51st IEEE Conference on Decision and Control*, Maui, Hawaii, 2012, pp. 8936-8941.
- A. Abdessameud, A. Tayebi and I.G. Polushin, "Consensus Algorithms Design for Constrained Heterogeneous Multi-Agent Systems," In Proc. of the *51st IEEE Conference on Decision and Control*, Maui, Hawaii, 2012, pp. 825-830.
- A. Abdessameud, A. Tayebi and I.G. Polushin, "Rigid body attitude synchronization with communication delays," in Proc. of the *American Control Conference*, Montreal, Canada, 2012, pp. 3736-3741.
- A. Abdessameud, I.G. Polushin and A. Tayebi, "Synchronization of multiple Euler-Lagrange systems with communication delays," In Proc. of the *American Control Conference*, Montreal, Canada, 2012, pp. pp. 3748 - 3753.
- A. Abdessameud and A. Tayebi, "A Unified Approach to the Velocity-Free Consensus Algorithms Design for Double Integrator Dynamics with Input Saturations", In proc. of the *50th IEEE Conference on Decision and Control and European Control Conference*, December 12-15, 2011, Orlando, FL, USA, pp. 4903-4908.
- A. Roberts and A. Tayebi, "Position Control of VTOL UAVs Using IMU and GPS Measurements", In proc. of the *50th IEEE Conference on Decision and Control and European Control Conference*, December 12-15, 2011, Orlando, FL, USA, pp. 8080-8087.
- A. Roberts and A. Tayebi, "On the Attitude Estimation of Accelerating Rigid-Bodies Using GPS and IMU Measurements", In proc. of the *50th IEEE Conference on Decision and Control and European Control Conference*, December 12-15, 2011, Orlando, FL, USA, pp. 8088-8093.
- A. Abdelkader and A. Tayebi, "Synchronization of Networked Lagrangian Systems with Input Constraints", In proc. of the *18th IFAC World Congress*, Milan, Italy, 2011, pp. 2382-2387.
- A. Roberts and A. Tayebi, "Position Control of VTOL UAVs Using Inertial Vector Measurements", In proc. of the *18th IFAC World Congress*, Milan, Italy, 2011, pp. 2614-2619.
- A. Tayebi, A. Roberts and A. Benallegue, "Inertial Measurements Based Dynamic Attitude Estimation and Velocity-Free Attitude Stabilization", In Proc. of *American Control Conference*, San Francisco, CA, USA, 2011, pp. 1027-1032.

- A. Abdessameud and A. Tayebi, "Formation Stabilization of VTOL UAVs Subject to Communication Delays," In proc. of the *49 IEEE Conference on Decision and Control*, Atlanta, GA, USA, pp. 4547 - 4552, 2010.
- A. Abdessameud and A. Tayebi, "Velocity-Free Consensus Algorithms for Double-Integrator Dynamics with Input Saturations Constraints," In proc. of the *49 IEEE Conference on Decision and Control*, Atlanta, GA, USA, pp. 4486 - 4491, 2010.
- A. Abdessameud and A. Tayebi, "Formation control of VTOL UAVs without linear-velocity measurements," In proc. of *American Control Conference (ACC)*, Baltimore, MD, USA, 2010, pp. 2107-2112.
- A. Roberts and A. Tayebi, "Adaptive position tracking of VTOL UAVs," In proc. of the *48 IEEE Conference on Decision and Control*, Shanghai, China, 2009, pp. 5233-5238.
- A. Abdessameud and A. Tayebi, "Formation control of VTOL-UAVs," In proc. of the *48 IEEE Conference on Decision and Control*, Shanghai, China, 2009, pp. 3454-3459.
- A. Abdessameud and A. Tayebi, "Attitude synchronization of a spacecraft formation without velocity measurement," In proc. of the *48 IEEE Conference on Decision and Control*, Shanghai, China, 2009, pp. 3719-3724.
- A. Tayebi, "Direct time injection in the loop: A new adaptive control point of view," In proc. of the *48 IEEE Conference on Decision and Control*, Shanghai, China, 2009, pp. 3477-3482.
- A. Abdessameud and A. Tayebi, "Attitude Synchronization of a Spacecraft Formation Without Velocity Measurement," In proc. of the *47 IEEE Conference on Decision and Control*, Cancun, Mexico, 2008, pp. 3719-3724.
- A. Abdessameud and A. Tayebi, "Decentralized attitude alignment control of spacecraft within a formation without angular velocity measurements," In proc. the *17th IFAC World Congress*, Seoul, Korea, July 6-11, 2008, pp. 1766-1771.
- M. Bouchoucha, M. Tadjine, A. Tayebi, P. Mullhaupt, "Step by step robust nonlinear PI for attitude stabilisation of a four-rotor mini-aircraft," In proc. of the *16th Mediterranean Conference on Control and Automation*, pp. 1276-1283, 2008.
- M. Bouchoucha, M. Tadjine, A. Tayebi and P. Mullhaupt, "Backstepping based nonlinear PI for attitude stabilisation of a quadrotor: From theory to experiment," In proc. of the *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2008, pp. 4183-4183.

- A. Tayebi A., "A velocity-free attitude tracking controller for rigid spacecraft," In proc. the *46 IEEE Conference on Decision and Control*, New Orleans, LA, USA, 2007, 6430-6434.
- A. Tayebi, S. McGilvray, A. Roberts and M. Moallem, "Attitude estimation and stabilization of a rigid body using low-cost sensors," In proc. the *46 IEEE Conference on Decision and Control*, New Orleans, LA, USA, 2007, 6454-6429.
- I.G. Polushin, H. Marquez, A. Tayebi and P.X. Liu, "A Multichannel IOS Small Gain Theorem for Systems with Multiple Time-Varying Communication Delays" In proc. the *46 IEEE Conference on Decision and Control*, New Orleans, LA, USA, 2007, pp. 3853-3858.
- Y. Ye, A. Tayebi and X. Liu, "A Unit-Gain D-type Iterative Learning Control Scheme: Application to a 6-DOF Robot Manipulator," In proc. of *IEEE Multi-conference on Systems and Control, ISIC Invited paper*, Singapore, October 1-3, 2007, pp. 243-248.
- C-J. Chien and A. Tayebi, "A One-Parameter Structure for Adaptive Iterative Learning Control of Robot Manipulators," In proc. of *IEEE Multi-conference on Systems and Control, ISIC Invited paper*, Singapore, October 1-3, 2007, pp. 327-332.
- X. Yang and A. Tayebi, "Vision based trajectory tracking controller for a B21R mobile robot," In proc. of *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Beijing, China, pp. 3313-3318, 2006.
- Tayebi A. , "Unit quaternion observer based attitude stabilization of a rigid spacecraft without velocity measurement," In proc. of the *45th IEEE Conference on Decision and Control*, San Diego, California, USA, 2006, pp. 1557-1561.
- A. Tayebi and C-J. Chien, "An Adaptive Iterative Learning Control Framework for a Class of Uncertain Nonlinear Systems," In proc. of the *45th IEEE Conference on Decision and Control*, San Diego, California, USA, 2006, pp. 5054-5059.
- A. Tayebi I.G. Polushin and C-J. Chien, "Cascaded Iterative Learning Control for a Class of Uncertain Time-Varying Nonlinear Systems," In proc. of the *45th IEEE Conference on Decision and Control*, San Diego, California, USA, 2006, pp. 5030-5035.
- A. Tayebi, "On ILC design for MIMO-LTI Systems," In proc. of *American Control Conference*, Minneapolis, Minnesota USA, June 14-16, 2006, pp. 940-945.
- A. Tayebi, S. Abdul and M.B. Zaremba, "Robust Iterative Learning Control Design Via mu-Synthesis," In proc. of *IEEE Conference on Control Applications*, Toronto, Ontario, Canada, 2005, pp. 416-421.

- Polushin I.G., A. Tayebi and H. J. Marquez, "Adaptive schemes for stable teleoperation with communication delay based on IOS small gain theorem," In proc. of *American Control Conference*, Portland, Oregon, USA, 2005, pp. 4143 - 4148.
- Polushin I.G., A. Tayebi, "Anticipative Iterative Learning Control of Robot Manipulators," In proc. of *the 16th IFAC World Congress*, Prague, Czech Republic, 2005.
- Polushin I.G., A. Tayebi and H. J. Marquez, "Stabilization scheme for force reflecting teleoperation with time-varying communication delay based on IOS small gain theorem," In proc. of *the 16th IFAC World Congress*, Prague, Czech Republic, 2005.
- A. Tayebi, "Transient Performance Improvement In Model Reference Adaptive Control Via Iterative Learning," In Proc. of the *43rd IEEE Conference on Decision and Control*, Dec. 2004, Atlantis, Paradise Island, Bahamas, pp. 644-649.
- A. Tayebi and S. McGilvray, "Attitude stabilization of a four-rotor aerial robot," In proc. of the *43rd IEEE Conference on Decision and Control*, Dec. 2004, Atlantis, Paradise Island, Bahamas, pp. 1216-1221.
- A. Tayebi and S. Islam "Experimental evaluation of an adaptive iterative learning control scheme on a 5-DOF robot manipulator," Invited paper, *IEEE Conference on Control Applications*, Taipei, Taiwan, pp. 1007-1011, 2004.
- Polushin I.G. and A. Tayebi, "An Iterative Learning Control Scheme for Robot Manipulators without Velocity Measurements," *IFAC Workshop on Adaptation and Learning in Control and Signal Processing ALCOSP'04*, Yokohama, Japan, pp. 675-679, 2004.
- Polushin I.G. A. Tayebi, H.J. Marquez, "Control Schemes for Stabilization of Force-Reflecting Teleoperators with Communication Delay", *IEEE Canadian Conference on Electrical and Computer Engineering CCECE'04*, Niagara Falls, ON, May 3-5, 2004, pp. 2163-2166.
- A. Tayebi "Adaptive iterative learning control for robot manipulators," In proc. of *American Control Conference*, Denver, Colorado, USA, pp. 4518-4523, 2003.
- A. Tayebi and M.B. Zaremba, "Robust ILC Design is Straightforward for Uncertain LTI Systems Satisfying the Robust Performance Condition," In Proceedings of *IFAC World Congress*, Barcelona, 2002.
- A. Tayebi and M.B. Zaremba, "Internal Model-Based Robust Iterative Learning Control for Uncertain LTI Systems," In proc. of the *39th IEEE Conference on Decision and Control*, Sydney, Australia, pp. 3439-3444, 2000.

- A. Tayebi and M.B. Zaremba , “Exponential Convergence of an Iterative Learning Controller for Time-Varying Nonlinear Systems,” in proc. of the *38th IEEE Conference on Decision and Control*, pp.1593-1598, 1999.
- A. Tayebi, M. Tadjine and A. Rachid, “Quasi-continuous Output Feedback Control for Nonholonomic Systems in Chained Form,” Proc. of *4th European Control Conference (ECC)*, pp. 54-60, 1997.
- A. Tayebi, M. Tadjine and A. Rachid, “Invariant manifold approach for the stabilization of nonholonomic systems in chained form: Application to a car-like mobile robot,” in proc. of the *36th IEEE Conference on Decision and Control (CDC)*, pp. 4038-4043, 1997.
- A. Tayebi and A. Rachid, “Backstepping-based discontinuous adaptive controller for the stabilization of nonholonomic mobile robots with matched uncertainties,” in proc. of the *36th IEEE Conference on Decision and Control (CDC)*, pp. 3664-3669, 1997.
- A. Tayebi, M. Tadjine and A. Rachid, “Discontinuous control design for the stabilization of nonholonomic systems in chained form using the backstepping approach: Application to mobile robots,” In proc. of *36th IEEE CDC*, pp.3089-3090, 1997.
- A. Tayebi and A. Rachid, “A unified discontinuous state feedback controller for path following and point-stabilization of a unicycle-like mobile robot,” In proceedings of the *IEEE Conference on Control Applications*, pp. 31-35, 1997.
- A. Tayebi, M. Tadjine and A. Rachid, “Stabilization of nonholonomic systems in chained form: Application to a car-like mobile robot,” In proc. of the *IEEE Conference on Control Applications*, pp. 195-200, 1997.
- A. Tayebi and A. Rachid, “A Time-Varying Based Robust Control for the Parking Problem of a Wheeled Mobile Robot,” Proc. of *IEEE International Conference On Robotics and Automation (IBRA)*, pp. 3099-3104, 1996.
- A. Tayebi and A. Rachid, “Discontinuous Control for Exponential Stabilization of Wheeled Mobile Robots,” Proc. of the *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp.60-65, 1996.
- A. Tayebi and A. Rachid, “Path Following Control Law for an Industrial Mobile Robot,” Proceedings of the *IEEE International Conference on Control Applications (CCA)*, pp. 703-707, 1996.
- A. Tayebi, M. Tadjine and A. Rachid, “Path Following and Point Stabilization Control Laws for a Wheeled Mobile Robot,” Proc. of the *IEE Control Conference*, pp. 878-883, 1996.

- Tadjine M., A. Tayebi and A. Rachid, "On Robust LQG/LTR Control Design," Proc. of the *35th IEEE Conference On Decision and Control*, pp. 4772-4773, 1996.
- R. Beguenane, M.E.H. Benbouzid, M. Tadjine and A. Tayebi, "Speed and rotor time constant estimation via MRAS strategy for induction motor drives," In proc. of the IEEE International Electric Machines and Drives Conference (IEMDC), 1997, pp. TB3/5.1-TB3/5.3.
- A. Benchaib, M. Tadjine, A. Rachid and A. Tayebi, "Adaptive sliding mode observer for state estimation of an induction motor on DSP-based system," In proc. of the IEEE International Electric Machines and Drives Conference (IEMDC), 1997, pp. MC2/3.1-MC2/3.3.

Book Chapters

- A. Tayebi, M. Tadjine and A. Rachid "A simple Control Law for the Path Following Problem of a Wheeled Mobile Robot, " *Robotics and Manufacturing, Recent Trends in Research and Applications*, ASME Press New York, M.Jamshidi et al. Eds, Vol.6,

Some Recent Invited Talks

- 2024: "Research and Teaching in Engineering: A symbiotic relationship," Distinguished Instructor Award Lecture, Lakehead University.
- 2022: "Feedback Control: A historical perspective," Lakehead University.
- 2022: "Flying Cars are Closer than we Think," Ontario Centre of Innovation.
- 2020: "Observers Design for Inertial Navigation Systems: A Brief Tutorial," *IEEE Conference on Decision and Control (CDC)*.
- 2019: "State Observers Design for Autonomous Navigation Systems", IEEE CSS Montreal Chapter, Montreal, Canada.
- 2019: "Tips for NSERC Discovery grants applicants", Workshop, Lakehead University.
- 2018: "How to write a successful Discovery Grant application", Workshop, Lakehead University.
- 2017: "Attitude Estimation and Control", Plenary lecture, International Conference on Systems and Control, Batna, Algeria, May 2017.
- 2017: "NSERC Discovery Grant Application: Strategies and Tips", Workshop, Lakehead University.
- 2017: "Attitude estimation and control: Overview and new results", King Abdullah University of Science and Technology (KAUST), KSA.

Recent International Collaborations

- Nov. 2022-: Collaboration with Prof. June Feng, Shandong University, China.

- August 2018: Visiting Research Professor, Collaboration with Prof. Tarek Hamel, CNRS-I3S laboratory, Université de Nice Sophia Antipolis, France.
- April 2017: Visiting Research Professor at KAUST, Saudi Arabia.
- 2017-2018: Research collaboration with Prof. A. Benallegue, CNRS-AIST Joint Robotics Laboratory(JRL), Tsukuba. Japan.
- 2016-2017: Research collaboration with Professor Yacine Chitour, SUPELEC, Paris.

Research Grants

- \$131,708: Advanced Autonomous Vehicles Research Laboratory, NSERC Research Tools and Instruments, 2023.
- \$60,000: Vision-Aided Inertial Navigation Systems for UAVs in GPS-denied Environments, NSERC Alliance Grant with Quanser Inc., 2021-2022.
- \$283,800: Advanced Autonomous Navigation Systems for UAVs. NSERC Discovery Grant, 2020-2025.
- \$120,000: NSERC Discovery Accelerator Supplements, 2013-2016.
- \$315,000: Autonomous navigation systems design for VTOL-UAVs. NSERC Discovery Grant, 2013-2020.
- \$50,000: Lakehead University Research Chair, 2012-2014.
- \$110,000: Control of vertical and landing unmanned aerial vehicles. NSERC Discovery Grant, 2011-2016.
- \$25,696 Experimental design of a mono-ducted-fan VTOL aircraft. NSERC Research Tools and Instruments, 2007.
- \$2,855 Lakehead University Contribution to the NSERC-RTI Grant, 2007.
- \$125,000, Robust and adaptive control design for nonlinear systems with applications to robot manipulators and aerial robots. NSERC Discovery Grant, 2006-2011.
- \$35,000 Robust and adaptive iterative learning control: Application to robot manipulators. Emerging Opportunities Fund from the Institute for Robotics and Intelligent Systems (IRIS), Networks of Centres of Excellence (NCE), 2003.
- \$551,351 Automatic Control Laboratory: Application to robotic systems. CFI/OIT New Opportunity Fund, 2002.
- \$107,025 Iterative Learning Control for Uncertain Systems. NSERC Research Grant, 2001-2006.
- \$5,000 Internal-model based robust iterative learning control for uncertain linear systems: Application to robot manipulators. LU-NSERC Research Development Fund, 2000.
- \$8,000 Iterative learning control design for uncertain systems. Start-up grant, Lakehead University, 1999.

Conference Activities

- General co-Chair, IEEE International Conference on Signal, Control and Communication, Hammamet, Tunisia, 2019.
- Publicity Chair for the inaugural IEEE Multi-Conference on Systems & Control, Singapore, 1-3 October 2007.
- Associate Editor for IEEE CDC and ACC (2005-2017).
- Associate Editor for IEEE ICRA (2015).
- International program committee member for many (more than 25) international conferences.
- Session chair/co-chair for most of the attended IEEE CDC/ACC conferences (more than 30 times).

Teaching and Curriculum Development

Teaching at Lakehead University (1999-Present)

Undergraduate Courses Developed and Taught

- EELE-2438 Control Systems I.
- EELE-3334 Control Systems II.
- EELE-0138 Control Systems III.
- ENGI-0557 Introduction to Robotics.
- ENGI-3017 Electronics.
- ENGI-1552/ENGI-3016 Principles of Engineering Mechanics.

Graduate Courses Developed and Taught

- EELE-5732 Nonlinear Control Systems
- EELE-5111 Control Engineering Concepts
- ENGI-5733 Robotics
- ENGI-5611A Introduction to Mechatronics
- ENGI-5611B State Estimation and Control Design for Unmanned Aerial Vehicles
- ENGI-5611C Robot Dynamics and Control

- ENGI-5611D Vision-based Control for Flying Vehicles

Teaching at University of Picardie, France (1997-1998) _____

- Linear Control Systems.

Teaching at University of Paris XI, France (1994-1997) _____

- Digital electronics.

Academic Program Development and Evaluation _____

- 2022 Cyclical program review of the ECE PhD program at Lakehead University.
- 2022 Evaluation of the new undergraduate program in Automation and Control Systems Engineering at the University of Doha for Science and Technology (UDST), for ABET accreditation.
- 2013 Co-development of the ECE PhD program at Lakehead University.

Students Awards (under my supervision) _____

- 2024: Mouaad Boughellaba, Outstanding PhD thesis award, Lakehead University.
- 2022: Mayur Sawant, Graduate Student Award for Excellence in Research, Western University.
- 2019: Miaomiao Wang, Graduate Student Award for Excellence in Research, Western University.
- 2018: Soulaïmane Berkane, Governor General's Gold Medal nominee, Western University.
- 2017: Soulaïmane Berkane, Canada's Distinguished Dissertation Award nominee, Western University.
- 2018: Soulaïmane Berkane, Graduate Student Award for Excellence in Research, Western University.
- 2016: Soulaïmane Berkane, Best Student Paper Award Finalist, American Control Conference (ACC), Boston, MA, USA.
- 2005: Marc Kennedy, Alex Nequest and Andrew Roberts, "Stabilization of an inverted pendulum on a mobile robot," Winner of the IEEE Life Member Award, IEEE Canada Student Paper Competition (1st place in Western Canada).
- 2005: Marc Kennedy, Alex Nequest and Andrew Roberts, "Stabilization of an inverted pendulum on a mobile robot," Winner of the IEEE-TELUS Innovation Award (1st place in Canada).
- 2004: Jeffrey Cowan, Chris Erickson and Andrej Zlatanovic, "Computer Based State Feedback Control of a Double Inverted Pendulum," IEEE Life Member Award, IEEE Canada Student Paper Competition (1st place in Central Canada).

2002: Stephen McGilvray, "Self-Erecting Inverted Pendulum: Swing-Up and Stabilization," IEEE Life Member Award for the 2002 IEEE Canada Student Paper Competition (1st place in Central Canada).

Post-doctoral Fellows Supervision

- Mayur Sawant, Aug 2024-
Research topic: Autonomous robot navigation.
- Miaomiao Wang, Feb. 2020 - Feb. 2024
Research topic: Nonlinear observers design for inertial navigation systems.
- Soulaïmane Berkane, Jan. 2018-Aug. 2018
Research topic: Autonomous navigation systems.
- Abdelkader Abdessameud, Jan. 2011-June 2012 / Sep. 2013 - Sep. 2016)
Research topic: Motion coordination of multi-agent systems.
- Qinglei Hu, Sep. 2013-January 2014
Research topic: Observers design on Lie groups.
- Yongqiang Ye, Jan. 2006- Jan. 2007
Research topic: Iterative learning control.
- Ilia Polushin, May 2003-Nov. 2004
Research topic: Adaptive iterative learning control and tele-robotics.

Graduate Students Supervision

- Yunshang Qu, Sep 2024- (M.Sc.) Thesis title: Experimental validation of SLAM algorithms for a quadrotor UAV.
- Melika Afshari, Sep. 2024- (Ph.D)
Thesis title: Learning based autonomous navigation.
- Amel Abi, Jan. 2024- (Ph.D)
Thesis title: Reinforcement learning aided visual inertial odometry.
- Mayur Sawant, Jan. 2020-2024(Ph.D)
Thesis title: Hybrid Feedback Control for Autonomous Robot Navigation with Obstacle Avoidance.
- Ishak Cheniouni, Jan. 2020-2024 (Ph.D)
Thesis title: Optimal and Global Autonomous Navigation in Environments with Convex Obstacles.
- Mouaad Boughellaba, Sep. 2019-2024(Ph.D)
Thesis title: Distributed Cooperative State Estimation and Control for Multi-Agent Autonomous Systems.

- Biwen Tang, 2023 (M.Sc.)
Thesis title: Attitude Control of a Quadrotor UAV: Experimental Implementation.
- Miaomiao Wang, 2020 (Ph.D.)
Thesis title: Geometric state observers for autonomous navigation systems.
- Riadh Benrezki, 2019 (Ph.D.)
Thesis title: Contribution to the control of VTOL UAVs
- Shivek Lekhi, 2019 (M.Sc.)
Thesis title: Quadrotor indoor navigation using UWB snesors.
- Geordi McGrath, 2019 (M.Sc.)
Thesis title: Visual servoing of a quadrotor UAV.
- Zeke Sedor, 2018 (M.Sc.)
Thesis title: UWB-based position localization and control of a quadrotor UAV.
- Soulaïmane Berkane, 2017 (Ph.D.)
Thesis title: Hybrid attitude control and estimation on $SO(3)$.
- Aldhafeeri Bandar, 2016 (M.Sc. co-supervised with Dr. Iliia Polushin, UWO)
Thesis title: Application of Simultaneous Localization and Mapping Algorithms for Haptic Teleoperation of Aerial Vehicles.
- Miaomiao Wang, 2015 (M.Sc.)
Thesis title: Experimental investigation of velocity-free attitude stabilization schemes.
- Kurtis Schram, 2014 (M.Sc.)
Thesis title: Quadrotor control using optical flow.
- Siddhand Nayak, 2013 (M.Sc.)
Thesis title: Real-time implementation of some attitude estimation algorithms on a Quadrotor UAV.
- Nojan Madinehi, 2013 (M.Sc.)
Thesis title: Rigid body attitude estimation: An overview and comparative study.
- Andrew Roberts, 2011 (Ph.D.)
Thesis title: Attitude estimation and control of VTOL UAVs.
- Fereshteh Ghashghaee, 2011 (M.Sc.)
Thesis title: Attitude estimation and stabilization of a quadrotor aircraft.
- Alain Richard, Sep. 2008-Aug. 2010 (M.Sc.)
Thesis title: Bilateral teleoperation for robot manipulators.

- Abdelkader Abdessameud, 2010 (Ph.D.)
Thesis title: On the motion coordination of multiple VTOL-UAVs.
- Jahanzeb Tariq Khan, 2009 (M.Sc.)
Thesis title: Visual servoing of VTOL aircraft
- Omid Ehtemam Haghighi, 2009 (M.Sc.)
Thesis title: Autonomous navigation algorithms for indoor mobile robots.
- Saleh Ahmed, 2008 (M.Sc.).
Thesis title: Design of a 6 DOF haptic interface for robotic teleoperation.
- Andrew Roberts, 2007 (M.Sc.).
Thesis title: Control of a ducted fan VTOL aircraft.
- Sun Shuwen, 2006 (M.Sc.).
Thesis title: Observer-based Chaos Synchronization for Secure Communications.
- Mohammed Ghaly, 2006 (M.Sc.).
Thesis title: Congestion and admission control in WDM optical networks.
- Xiusong Yang, 2005 (M.Sc.).
Thesis title: Vision-based trajectory tracking algorithm with obstacle avoidance for a wheeled mobile robot.
- Stephen McGilvray, 2004 (M.Sc.).
Thesis title: Attitude stabilization of a quadrotor aircraft.
- Shafiqul Islam, 2004 (M.Sc.).
Thesis title: Experimental evaluation of some classical and adaptive iterative learning control schemes on a 5-DOF robot manipulator.
- Sajan Abdul, 2003 (M.Sc.).
Thesis title: Iterative Learning Control for Robot Manipulators.

Course-based Master's students supervision

- Priyanka Mashetty (2017)
- Kaur Supreet (2016)
- Elliot Tonyphilips (2015)

MITACS Undergraduate Research Internship

- Ivanna Dovbysh, Control of Quadrotor UAVs using an indoor motion capture system (optitrack), May-July 2024.

- Pramat Jois, Control of Quadrotor UAVs using an indoor motion capture system (optitrack), May-July 2024.
- Purushotham Mani, Stabilization of an inverted pendulum on a flying quadrotor, May-July 2023.
- Sambit Prabhu Vision-aided inertial navigation, May-July 2023.
- Rishabh Sharma, Vision-aided inertial navigation, May-July 2023.

———— Undergraduate Students Supervision (Capstone Projects) —

- Brendan Bird, Michael Rozic, Tyler Lafleche, Balnoor Grewal, Stabilization of a dual-axis reaction wheel inverted pendulum (2023/2024).
- Roman Ferrazzo, Mathieu Guenette, Andre St-Aubin, Balancing a ball on a wheel via visual feedback (2022/2023).
- Brett Lindberg, Mark Sackney, Navneel Deo, Attitude estimation and control: practical implementation on a quadrotor UAV using Pixhawk (2021/2022).
- S. Gorla, Z. Bacon, D. Carrero, A. Rodrigues, Self-Balancing Inverted Pendulum via reaction wheels (2020/2021).
- B. Felix, R. Roy-Holm, T. Beck, B. Stewart, Balancing a pendulum with reaction wheels (2019/2020).
- N. Marcinkovski, W. Owens, C. MacPhail, A. Smith, Cubli: self-balancing cube (2019/2020).
- J. Fortier, Z. Neal, K. Maita, T. Manesh, Stabilization of a pool-table on a moving platform (2017/2018).
- A. Pomber, K. Plitt, C. Munro, M. Hommersen, Self-balancing Hoverboard (2016/2017).
- T. McGill, N. Tinkula, N. Renouf, J. Bakieh, Two-wheeled inverted pendulum (2015/2016).
- R. Hertel, N. Kim, S. Kung, Control of a twin-rotor helicopter (2015/2016).
- J Brito, S. Cartier and N. Villada-Alfonso, Mobile two wheel inverted pendulum (2014/2015).
- B. Multani, P. Bora and V. Sidhu, Control of an inverted pendulum using reaction wheel (2014/2015).
- K. Hall, T. Lefebvre, A. Petryna, Autonomous robotic spider, (2012/2013).
- M. de la Cruz, I. Koussan, M. Quayle, Self-balancing bike, (2012/2013).
- J. Murray, S. Nichols, J. Smith, S. Vermeire, Sound detection and face detection for a conference camera, (2011/2012).

- J. Green, G. Smith, Inverted pendulum actuated by propellers, (2011/2012).
- A. Smith, D. Skogberg, E. Zailer, Stabilization of a ball on a wheel,(2011/2012).
- B. Patel, R. Naish, W. Kam, Light level control, (2010/2011).
- R. Alturk, B. Mohammed, S. Ochebiri, RC car control, (2010/2011).
- C. Chai, J. Check, J. Froehlich-Hetzel, Speed controlled Macro-cyclotron accelerator, (2009/2010).
- B. Crespo, M. Maillette, S. Rea Visual-feedback stabilization of a ball on a moving platform, (2009/2010).
- M. Blizman, R. Childs and D. Itoua, Autonomous parallel parking vehicle, (2007/2008).
- M. Robertson and J. Kierstead, Single floor mass damper, (2007/2008).
- Z. araji, J. Bailey and M. Abrach, Buck-boost converter, (2007/2008).
- A. Butikofer and T. Hollett, Autonomous parallel parking system, (2006/2007).
- M. Bigg, M. Collins, G. Whiffen, Adaptive cruise control, (2006/2007).
- D. Figliomeni, J. Lancaster, A. McGrath, Autonomous land yacht, (2006/2007).
- M. Deagazio, R. Longo, A. Young, Yaw control for a remote controlled vehicle, (2006/2007).
- N. Sayed Eskandari, Wind mill design, (2006/2007).
- I. Blackford, T. Blais and L. Wang, Windmill System, (2005/2006).
- B. Togonu-Bickersteth, and H. Bugajski, Unmanned air-vehicle design, (2005/2006).
- F. Hanna and S. Carpenay, Telephone automated home system, (2005/2006).
- M. Kennedy, A. Nequest and A. Roberts, Stabilization of an inverted pendulum on a mobile robot (2004/2005).
- D. Cousineau, M. Tomaszewski and B. Zhang, Hovering a Ping-Pong ball in a tube (2004/2005).
- D. Glasier and J. Pronovost, Autonomous mobile robot (2004/2005).
- S. Barclay, A. Benel and J. Couto, Automobile collision avoidance system (2004/2005).
- J. Cowan, C. Erickson and A. Zlatanovic, Computer-based state feedback control of a double inverted pendulum (2003/2004).
- T. Tran and S. McClinchey, Robotic motor drive (2003/2004).

- S. Al-Saad, P. Bell and D. Dixon, Electromagnetic levitation system (2002/2003).
- D. Galbraith and J. Harvey, Gantry crane control system (2002/2003).
- B. Blyth, S. McGilvray and C. Woodfield, Self-erecting inverted pendulum (2001/2002).
- N. Bodnarchuk and M. Satkunarajah, Laser guided autonomous robot (2001/2002).
- S. Abbott, R. Hehar and J. Gomboc, Magnetic levitation system (2001/2002).
- J. C. Mc Cuaig and Yiu K. Chan, Stability analysis and Control of Power Plants, (2000/2001).
- C. Raimondo, K. Nguyen and C. Ghuman, Wireless Bi-directional Car Alarm System, (2000/2001).
- K. McLeod, Laser Spot Tracker, (2000/2001).
- D. Galick and D. Schelle, Digital Control of an Inverted Pendulum, (2000/2001).

Undergraduate Students Supervision (diploma projects)

- R. Rajotte and S. Rajotte, High frequency oscillator, (2012/2013)
- L. Crispino, P.-E. Gagne, Head set noise attenuation system, (2009/2010)
- Munga Mshana and Fiifi Markin, Proximity sensor, (2007/2008)
- D. Figliomeni and P. Oppedisano, Temperature control system (2004/2005)
- N. Moinuddin Mohammed, Automated assembly of pie blocks (2003/2004)
- D. Golapkar and A. Stenabaugh, Pulse width modulation DC motor control with computer interface (2002/2003)
- J. Low and M. Tietz, Programming a data acquisition card PCL-812PG (2001/2002)
- J. Kruzliak and A. Adey, Digital combination lock, (2000/2001)
- P. Nakogee and S. Chung, Vision-based robotic system (2000/2001)
- M. Mehagan and B. Lucyk, Balanced line converter, (1999/2000)
- E. Running and V. Vanhooren, Audio controlled electronic switch "The Clapper", (1999/2000)

Graduate Students Examination

- Sun Xiaodong, Apr. 2000, (Internal Examiner).
Thesis title: System identification and control of a single-link flexible manipulator.

- Shengli Feng, Apr. 2001, (Internal Examiner).
Thesis title: Optimal trajectory control of series resonant converter.
- Ramaro Sidha, Apr. 2003, (Internal Examiner).
Thesis title: Control of Buck and Boost converters.
- Zhou Wang, Sep. 2005, (Internal Examiner).
Thesis title: Time-domain steady-state analysis of circuits with multiple adaptive grids.
- Fuhai Gu, June 2006, (Internal Examiner).
Thesis title: Design and control of a 6 DOF biped robot.
- Wenguang Li, Aug. 2007, (Internal Examiner).
Thesis title: Design, analysis and passive balance control of a 7-DOF biped robot.
- Nicholas Guenard, Oct. 2007, University of Nice, France, (External Examiner).
Thesis title: Visual servoing of a quadrotor aircraft.
- Mohammad Kabir, May 2010, (Internal Examiner).
Thesis title: Nonlinear transient analysis based on power waves and state variables.
- Andrew Cudowski, May 2010, (Internal Examiner).
Thesis title: Design, simulation and control of a 12-DOF biped robot.
- Dezhi Li, August 2010, (Internal Examiner).
Thesis title: Intelligent sliding mode control in flexible structures.
- Hui Xu, October 2010, (Internal Examiner).
Thesis title: Nonlinear transient analysis based on wave digital filters.
- Muhammad Hafeez, December 2010, (Internal Examiner).
Thesis title: Neuro-fuzzy controller based DTC scheme for an induction motor.
- Martin Barczyk, Jan. 2012, ECE, University of Alberta, (External Examiner).
Thesis title: Nonlinear State Estimation and Modeling of a Helicopter UAV
- Xiaosong Lu, May 2012, Dept. of Systems and Computer Engineering, Carleton University, (External Examiner).
Thesis title: Multi-agent reinforcement learning in games.
- Daniel Kremer, August 2013, Control Engineering, (Internal Examiner).
Thesis title: A nonlinear energy sink with energy harvester.
- Shamendu Roy Rohit, May 2014, Control Engineering, (Internal Examiner).
Thesis title: Robust H_∞ model reference tracking control of singular systems.
- Xiao Cui, January 2017, (Internal Examiner).
Thesis title: Intelligent backstepping quadrotor position control using neural networks.

- Shazli Osman, January 2018, (Internal Examiner).
Thesis title: New signal processing technologies for gearbox bearing fault monitoring.
- Ning Che, April 2018, (Internal Examiner).
Thesis title: Attitude and position control of flapping-wing micro aerial vehicles.
- Jean-Marie Kai, November 2018, (External Examiner), PhD., University of Nice, France Thesis title: Controle Automatique de Vehicules Aeriens a Voilure Fixe.
- Ashton Roza, January 2019, (External Examiner), PhD., ECE, University of Toronto.
Thesis title: Distributed Coordination Theory for Ground and Aerial Robot Teams.
- Zhiqi (Lorena) Tang, March 2021, (External Examiner), PhD., Université Côte d'Azur, Nice-Sophia Antipolis, France.
Thesis title: Vision-based Control of Unmanned Aerial Vehicles.
- Amirhossein Asgharnia Gourabjiri, May 2023, (External Examiner), PhD., Carleton University, Canada.
Thesis title: Learning of Deception in Adversarial Games with Hierarchical Multiobjective Reinforcement Learning.
- Tomas Lopes De Oliveira, December 2024, (External Examiner), PhD., Université Côte d'Azur, Nice-Sophia Antipolis, France. Thesis title: Commande automatique de véhicules convertibles à poussée vectorielle.

Professional Service Activities

- Member of the NSERC ECE Selection Committee (1610) for the Research Tools and Instruments (RTI) Grant Program, 2015 and 2023.
- Member of the Canada Research Chair (CRC) renewal committee (Lakehead University), 2023.
- Reviewer for the Cyclical Program Review of the PhD Biotechnology program (Lakehead University).
- Member (elected) of the Promotion-Tenure-Renewal (PTR) committee, Lakehead University, 2015-2016, 2022-2023
- Member of the LU Research Chair selection committee 2023.
- Member of IEEE TCST Outstanding Paper Award committee, 2020-2022.
- Member of the NSERC ECE Evaluation Group EG1510 for the Discovery Grant Program (2016-2019).
- LU-internal reviewer for CFI and NSER-RTI applications (2015/2021)
- Member of the selection committee for the LU-TBRI Research Chair Hiring, 2015.

- Member, NSERC Scholarships Committee, LU, 2010-2020.
- Member (elected) FGS Membership Committee, Faculty of Engineering, LU, 2011-2014.
- Member (elected) FGS Membership Committee, Faculty of Science & Environmental Studies, LU, October 2009-2014.
- Chair of the Committee for the establishment of the ECE Ph.D. Program, LU, (2009-2013).
- Member of the Senate Research Committee (2009-2012)
- Member of the Senate Undergraduate Studies Committee (2002-2006)
- Member of the Senate Computing Committee (2000-2002)
- Chair of the Engineering Research and Graduate Studies Committee (Jan. 2008-2010).
- Member of the Faculty of Graduate Studies Council (Jan 2008-2011)
- Member of the Faculty of Graduate Studies-Membership Committee (2006-2009)
- Chair of the Electrical Engineering Curriculum Committee (2002-2004)
- Member of the Electrical Engineering Curriculum Committee (2002-2014)
- Member of the Engineering Research and Graduate Studies Committee (2000-2021).
- Member of the Electrical Engineering Hiring Committee (2000-2015).
- Chair of the Electrical Engineering Hiring Committee (2004-2015).
- Counselor for the IEEE Student Chapter at Lakehead University (2001-2008).
- Regular reviewer for NSERC grants since 2001.
- Regular reviewer for International journals and conferences.
- Associate Editor for several International journals.
- Chair of Ontario Graduate Scholarship (OGS) panel 2004, 2005.
- Judge at the Northwestern Ontario Regional Science Fair (2000-2005).
- Supporting ShadValley program by providing demonstration sessions in the Automatic Control Laboratory (since Summer 2003).
- Promoting studies at Lakehead University by providing demonstrations to high school students in the Robotics and Automatic Control Laboratory.