Thomas Edward Beauduin

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Work Experience

2017 - 2020 **MTT Innovation Inc.** **Vancouver, Canada**

Internal & External Venturing | 2019 - present
Joined the Executive Committee of the newly appointed CTO in the parent company, Barco NV, as advisor on R&D portfolio management and new acquisitions. Charged with coaching R&D globally to change corporate culture from a siloed product-driven structure to technology-driven internal ventures.

Sr. Research Engineer, project lead | 2017 - 2019
Created and led 3 key projects, including: a Horizon-3 computational optics innovation in additive manufacturing with a focused team of 3 scientists, a Horizon-2 foundational laser assembly technology and plant with $5M in investments and a team of 15 engineers in Europe and Canada and a Horizon-1 Joint Development for a common platform design with a large consumer electronics company.

Awarded the IEEE Young Innovator of the Year Award in Industrial Electronics, 2019.

2014 - 2017 **The University of Tokyo, 東京大学** **Tokyo, Japan**

Research Associate, Department of Electrical Engineering
Conducted research on optimal control theory in an all-Japanese lab. Published new control algorithms based on high-order statistical modeling and demonstrated them in industry with a small team of researchers and partners including Nikon, Mori-Seiki and Toyota for their upcoming electrical vehicle.

Awarded the Mori-Seiki Corporation President's Research Fellowship, 2015 - 2017.

2009 - 2020 **Vandewiele Group** **Kortrijk, Belgium**

Board Member | 2015 - present
Joined the board of the family business to guide manufacturing investments and technology acquisitions.
Engineering Intern | 2009 - 2015
Yearly summer internship, first at key textile customers in Belgium, Turkey and Russia, then at machinery R&D divisions in Belgium and Sweden and finally at production sites in China.

Education

2012 - 2014 **Catholic University of Leuven** **Leuven, Belgium**
English Earned a Master of Science in Mechatronics Engineering, cum laude.

Technical University of Munich | 2012 - 2013 **Munich, Germany**
Selected for a joint university program abroad with an Erasmus Scholarship for a full academic year. Specialized in Robotics and Automotive Manufacturing. German program, cum laude.

2009 - 2012 **Catholic University of Leuven** **Leuven, Belgium**
Dutch Earned a Bachelor of Science in Mechanical Engineering, cum fructu.

Extra-Curricular

2009 - 2012 **Rugby, captain of the University Team** **Leuven, Belgium**
Following 6yrs as a fullback for a 1st division team in Brussels, I was asked to lead the university team. Organized bi-weekly trainings, brought in international players and changed team tactics and culture. Led the team to the provincial final the first year and the national final the two following years.

2009 - 2012 **Scouting, Federation of Catholic Scouts** **Brussels, Belgium**
Responsible for the junior section of a scouts group in a disadvantaged neighboorhood of Brussels.

Languages Fluent in Dutch, English and French. Good knowledge of German and basic understanding of Japanese.

Personal Avid interest in History, Paintings and Architecture.

Electric Vehicles
in collaboration with Toyota Motor Corporation, Advanced Engineering Division

[1] S. Yamada, **T. Beauduin**, H. Fujimoto, T. Kanou and E. Katsuyama "Active model-based suppression of secondary ride for electric vehicles with in-wheel motors," in *IEEE Transactions on Vehicular Technology*, xx (x), 2020. Impact Factor: 6.41 | Status: In Print.

[2] **T. Beauduin**, S. Yamada, H. Fujimoto, T. Kanou and E. Katsuyama, "Control-oriented modelling and experimental modal analysis of electric vehicles with geared In-Wheel motors," in *IEEE International Conference on Advanced Intelligent Mechatronics* (AIM), 2017. Impact Factor: 1.02 | Status: Published.

[3] S. Yamada, **T. Beauduin**, H. Fujimoto, T. Kanou and E. Katsuyama, "Model-based longitudinal vibration suppression control for electric vehicles with geared in-wheel motors," in *IEEE International Conference on Advanced Intelligent Mechatronics* (AIM), 2017. Impact Factor: 1.02 | Status: Published.

Precision Machining
in collaboration with Mori-Seiki Corporation, Servo Development Group

[4] **T. Beauduin**, H. Fujimoto, Y. Terada and N. Kumagai, "Distributed Friction Modeling and Compensation for Precision Machining," in *International Journal of Machine Tools and Manufacture*, xx (x), 2020. Impact Factor: 6.03 | Status: Submitted.

[5] **T. Beauduin**, H. Fujimoto and Y. Terada, "Distributed and Parameter-Varying Friction Compensation for Ball-Screw Feed Drive Systems," in *IEEJ International Workshop on Sensing, Actuation, Motion Control, and Optimization* (SAMCON), 2017. Impact Factor: 0.56 | Status: Published.

[6] **T. Beauduin** and H. Fujimoto, "Adaptive vibration suppression perfect tracking control for linear time-varying systems with application to ball-screw feed drives," in *IEEE 14th International Workshop on Advanced Motion Control* (AMC), 2016. Impact Factor: 0.67 | Status: Published.

[7] **T. Beauduin**, H. Fujimoto and Y. Terada, "Control-Oriented Modeling and Parametric Identification of Coupled Dynamics in Ball-Screw-Driven Systems," in *IEEJ International Workshop on Sensing, Actuation, Motion Control, and Optimization* (SAMCON), 2016. Impact Factor: 0.56 | Status: Published.

Semiconductor Machinery
in collaboration with Nikon Corporation, FDP Lithography Business Unit

[8] W. Ohnishi, **T. Beauduin**, and H. Fujimoto, "High-precision tracking control for non-minimum phase system: General framework of finite time preactuation with multirate feedforward," in *IEEE/ASME Transactions on Mechatronics*, 24 (2), 2020. Impact Factor: 5.71 | Status: Submitted.

[9] W. Ohnishi, **T. Beauduin**, and H. Fujimoto, "Preactuated Multirate Feedforward Control for Independent Stable Inversion of Unstable Intrinsic and Discretization Zeros," in *IEEE/ASME Transactions on Mechatronics*, 24 (2), 2019. Impact Factor: 4.99 | Status: Published.

[10] W. Ohnishi, **T. Beauduin**, and H. Fujimoto, "Optimal State Trajectory Regeneration for Nonminimum Phase Systems: No Preactuation Approach," in *IEEE Annual Conference of Industrial Electronics*, (IECON), 2018. Impact Factor: 1.12 | Status: Published.

[11] **T. Beauduin** and H. Fujimoto, "Identification of System Dynamics with Time Delay: a Two-Stage Frequency Domain Approach," in *The 20th World Congress of the International Federation of Automatic Control* (IFAC), 2017. Impact Factor: 0.96 | Status: Published.

[12] W. Ohnishi, **T. Beauduin**, and H. Fujimoto, "Preactuated multirate feedforward for a high-precision stage with continuous time unstable zeros," in *The 20th World Congress of the International Federation of Automatic Control* (IFAC), 2017. Impact Factor: 0.96 | Status: Published.