

# THOMAS EDWARD BEAUDUIN

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## WORK EXPERIENCE

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- 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 3<sup>rd</sup> Horizon computational optics innovation in additive manufacturing with a focused team of 3 scientists, a 2<sup>nd</sup> Horizon foundational laser assembly technology and plant with \$5M in investments and a team of 15 engineers in Europe and Canada and a 1<sup>st</sup> Horizon Joint Development for a common platform design with Sony Corporation in Japan.
- Awarded the IEEE Young Innovator of the Year Award in Industrial Electronics, 2019.
- 2014 - 2017 **The University of Tokyo** **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 incl. 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 and Japan.

## EDUCATION

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- 2013 - 2014 **Catholic University of Leuven** **Leuven, Belgium**  
English  
Earned a Master of Science in Mechatronics Engineering, cum laude.
- 2012 - 2013 **Technical University of Munich** **Munich, Germany**  
German  
Selected for a joint university program abroad with an Erasmus Scholarship for a full academic year. Specialized in Robotics and Automotive Manufacturing, cum laude.
- 2009 - 2012 **Catholic University of Leuven** **Leuven, Belgium**  
Dutch  
Earned a Bachelor of Science in Mechanical Engineering, cum fructu.

## EXTRA-CURRICULAR

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- 2009 - 2012 **Rugby, captain of the University Team** **Leuven, Belgium**  
Following 6yrs as a fullback for a 1<sup>st</sup> 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 neighborhood 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 *IEEE 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 *IEEE 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.