Patricio E. Valenzuela

✉ patricio.e.valenzuela.pacheco@gmail.com
www.patriciovalenzuela.cl

Personal details

Full name	Patricio Esteban Valenzuela Pacheco
Date of birth	16th April, 1986
Place of birth	Santiago, Chile
Marital status	Married
Citizenship	Chilean and Swedish
Professional Degree	Ingeniero Civil Electrónico (B.Sc. in Electronic Engineering)

Education

2012–2017 **Ph.D. in Electrical Engineering**, *Department of Automatic Control, School of Electrical Engineering*, KTH Royal Institute of Technology, Stockholm, Sweden.

2012–2014 **Licentiate in Electrical Engineering**, *Department of Automatic Control, School of Electrical Engineering*, KTH Royal Institute of Technology, Stockholm, Sweden.

2009–2011 **M.Sc. in Electronic Engineering**, *Department of Electronic Engineering*, Universidad Técnica Federico Santa María (UTFSM), Valparaíso, Chile.

2006–2011 **Electronic Engineering Degree**, *Department of Electronic Engineering*, Universidad Técnica Federico Santa María (UTFSM), Valparaíso, Chile.

2002–2004 **Electronic Technician**, Instituto Don Bosco, Punta Arenas, Chile.

Professional experience

April 2023 – **Advanced Process Control Consultant**, *Innovation Group*, Honeywell Chile S.A., Santiago, Chile (working language: Spanish and English).
Duties: Advisor for the use and adaptation of Machine Learning methods in Advanced Process Control solutions for the mining industry.

July 2025 – **Strategy Manager**, *Research & Innovation Domain*, TRATON AB, Södertälje, Sweden (working language: English, Swedish and Spanish).
Duties: Responsible for management and development of the Research and Innovation portfolio within Research and Development (R&D) unit at TRATON Group.

December 2022 - June 2025 **Strategy Manager**, *Research & Innovation Office*, Scania CV AB, Södertälje, Sweden (working language: English and Swedish).
Duties: Responsible for management and development of the Research portfolio at Scania.

October 2021 - November 2022 **Technology Strategy Manager Research and Innovation**, *Group Product Management*, TRATON AB, Södertälje, Sweden (working language: English and Swedish).
Duties: Responsible for establishing and developing processes at Group level for Research and Innovation within automation, software and electrical and electronic systems.

February 2017 - September 2021 **Development Engineer**, *Autonomous Transport Solutions*, Scania CV AB, Södertälje, Sweden (working language: English and Swedish).
Duties: (2021) Responsible for testing and risk analysis of autonomous onboard platforms. (2017–2021) Technical team leader for research and development within environmental perception, feature based localization and digital maps for autonomous transport systems, actively assisting the team in the technical development.

December 2004 - August 2005 **Electronic Technician**, *Customer Service*, Sánchez y Sánchez S.A., Punta Arenas, Chile (working language: Spanish).
Duties: Responsible for repairing electronic devices.

January 2004 - June 2004 **Electronic Technician**, *Customer Service*, Finning Chile S.A., Punta Arenas, Chile (working language: Spanish).
Duties: Internship as partial requisite for the Electronic Technician title. The main task was the maintenance of heavy duty vehicles and industrial equipment.

Supervision experience

2025 **Jessica Habash, 'Review and update of the Research & Innovation portfolio management system'**, *Summer internship, Research & Innovation Domain*, TRATON AB, Södertälje, Sweden.

2024 **Cristóbal Huidobro, 'Estudio de estrategias colaborativas para la identificación de un sistema de dos agentes bajo acción integral'**, *Master thesis, Department of Electronic Engineering*, Universidad Técnica Federico Santa María (UTFSM), Valparaíso, Chile.

2023 **Sofia Norlin, and Ludvig Nordberg, 'Review and update of the Research & Innovation portfolio management system'**, *Summer internship, Research & Innovation Office*, Scania CV AB, Södertälje, Sweden.

2020 **Simon Warma, 'Reinforcement learning of repetitive tasks in heavy-duty autonomous vehicles'**, *Master thesis, Autonomous Transport Solutions*, Scania CV AB, Södertälje, Sweden.

2020 **Rebecca Stenberg, 'Occlusion modeling and estimation using 3D lidar point clouds'**, *Master thesis, Autonomous Transport Solutions*, Scania CV AB, Södertälje, Sweden.

2020 **Rickard Häll, 'Object localization and classification with neural networks for lidar data'**, *Master thesis, Autonomous Transport Solutions*, Scania CV AB, Södertälje, Sweden.

2020 **Vishnu Pradheep Raveendran, 'Routing of autonomous vehicles with lane change possibilities'**, *Master thesis, Autonomous Transport Solutions*, Scania CV AB, Södertälje, Sweden.

2020 **Joanna Ekehult, 'Risk analysis of software execution in an autonomous driving system'**, *Master thesis, Autonomous Transport Solutions*, Scania CV AB, Södertälje, Sweden.

2019 **Bratislav Markovic, 'Data driven estimation of cabin dynamics in heavy-duty vehicles'**, *Master thesis, Autonomous Transport Solutions*, Scania CV AB, Södertälje, Sweden.

2019 **Subramanian Murali Ram, 'Evaluation of occupancy grid maps based on 3D lidar point clouds'**, *Summer internship, Autonomous Transport Solutions*, Scania CV AB, Södertälje, Sweden.

2019 **Ragunath Agunath, 'Evaluation of optimization solver libraries for feature based localization'**, *Summer internship, Autonomous Transport Solutions*, Scania CV AB, Södertälje, Sweden.

2019 **Fereidoon Zangeneh, 'Evaluation of object tracking techniques using 3D lidar point clouds'**, *Summer internship, Autonomous Transport Solutions*, Scania CV AB, Södertälje, Sweden.

2018 **Marc Sigonius, 'Speed and yaw rate estimation in autonomous vehicles using Doppler radar measurements'**, *Master thesis, Autonomous Transport Solutions*, Scania CV AB, Södertälje, Sweden.

2017 **Marc Sigonius, 'Implementation of sensor fusion algorithms for autonomous trucks'**, *Summer internship, Autonomous Transport Solutions*, Scania CV AB, Södertälje, Sweden.

2016 **Rodrigo González, 'Imposición de restricciones de causalidad y pasividad en análisis espectral'**, *Master thesis, Department of Electronic Engineering*, Universidad Técnica Federico Santa María (UTFSM), Valparaíso, Chile.

2016 **Johan Jansson, 'Decision tree classification of products using C5.0 and prediction of workload using time series analysis'**, *Master thesis, Department of Automatic Control, School of Electrical Engineering*, KTH Royal Institute of Technology, Stockholm, Sweden.

2015 **Johan Bjurgert, 'System identification by adaptive boosting'**, *Master thesis, Department of Automatic Control, School of Electrical Engineering*, KTH Royal Institute of Technology, Stockholm, Sweden.

2014 **Emil Lundkvist, 'Decision tree clasification and forecasting of pricing time series data'**, *Master thesis, Department of Automatic Control, School of Electrical Engineering*, KTH Royal Institute of Technology, Stockholm, Sweden.

Teaching experience

2nd Semester 2021 - 1st Semester 2023 **Course lecturer**, *Department of Electrical Engineering*, Universidad de la Frontera, Temuco, Chile.
Position Description: Course lecturer for the undergraduate course IIE578 'Automatic Control Seminar'.

2nd Semester 2012 - 2nd Semester 2016 **Teaching Assistant**, *Department of Automatic Control, School of Electrical Engineering*, KTH Royal Institute of Technology, Stockholm, Sweden.
Position Description: University Tutor for the undergraduate courses EL1000 'Automatic Control, general course', EL2421 'Automatic Control, project course', and for the master course EL2820 'Modelling of dynamical systems'.

2nd Semester 2010 **Teaching Assistant**, *Department of Electronic Engineering*, Universidad Técnica Federico Santa María (UTFSM), Valparaíso, Chile.
Position Description: University Tutor for the undergraduate course ELO-270 'Automatic Control I'.

2nd Semester 2009 **Teaching Assistant**, *Department of Electronic Engineering*, Universidad Técnica Federico Santa María (UTFSM), Valparaíso, Chile.
Position Description: University Tutor for the undergraduate course ELO-103 'Electrical Network Theory II'.

1st Semester 2007 - 1st Semester 2008

Teaching Assistant, *Department of Physics*, Universidad Técnica Federico Santa María (UTFSM), Valparaíso, Chile.

Position Description: University Tutor for the undergraduate courses FIS-100 'Introduction to Physics', FIS-110 'General Physics I', and FIS-120 'General Physics II'.

Patents, trade secrets and defensive publications

[D1] **Patricio E. Valenzuela and Mansoureh Jesmani**, *Method and control arrangement for road shape estimation*, Invention published by the Swedish Patent and Registration Office, 23 pages, 2020.

General overview

1 patent granted, 2 patents in evaluation at the Swedish Patent and Registration Office, 1 Trade secret y 2 Defensive publications.

Journal publications

[J8] **Patricio E. Valenzuela, Afrooz Ebadat, Niklas Everitt and Alessandra Parisio**, *Closed-loop identification for model predictive control of HVAC systems: from input design to controller synthesis*, IEEE Transactions on Control Systems Technology, Volume 28, Issue 5, September 2020, pp. 1681−1695.

[J7] **Patricio E. Valenzuela, Thomas B. Schön and Cristian R. Rojas**, *On model order priors for Bayesian identification of SISO linear systems*, International Journal of Control, Volume 92, Issue 7, 2019, pp. 1645−1661.

[J6] **Patricio E. Valenzuela, Cristian R. Rojas and Håkan Hjalmarsson**, *Analysis of averages over distributions of Markov processes*, Automatica, Volume 98, December 2018, pp. 354−357.

[J5] **Johan Bjurgert, Patricio E. Valenzuela and Cristian R. Rojas**, *On adaptive boosting for system identification*, IEEE Transactions on Neural Networks and Learning Systems, Volume 29, Issue 9, September 2018, pp. 4510−4514.

[J4] **Rodrigo A. González, Patricio E. Valenzuela, Cristian R. Rojas and Ricardo A. Rojas**, *Optimal enforcement of causality in non-parametric transfer function estimation*, IEEE Control Systems Letters, Volume 1, Issue 2, October 2017, pp. 268−273.

[J3] **Afrooz Ebadat, Patricio E. Valenzuela, Cristian R. Rojas and Bo Wahlberg**, *Model predictive control oriented experiment design for system identification: a graph theoretical approach*, Journal of Process Control, Volume 52, April 2017, pp. 75−84.

[J2] **Patricio E. Valenzuela, Johan Dahlin, Cristian R. Rojas and Thomas B. Schön**, *On robust input design for nonlinear dynamical models*, Automatica, Volume 77, March 2017, pp. 268−278.

[J1] **Patricio E. Valenzuela, Cristian R. Rojas and Håkan Hjalmarsson**, *A graph theoretical approach to input design for identification of nonlinear dynamical models*, Automatica, Volume 51, January 2015, pp. 233−242.

Conference publications

[C14] **Cristóbal Huidobro, Francisco J. Vargas, Andrés A. Peters, and Patricio E. Valenzuela**, *Cooperative identification of multi-agent systems in presence of integral action: insights from a two-agent framework*, in the 22nd World Congress of the International Federation of Automatic Control, July 9-14 2023, Yokohama, Japan.

[C13] **Rodrigo A. González, Patricio E. Valenzuela, Cristian R. Rojas and Ricardo A. Rojas**, *Optimal enforcement of causality in non-parametric transfer function estimation*, in the 56th Conference on Decision and Control, December 12-15 2017, Melbourne, Australia.

[C12] **Matías I. Müller, Patricio E. Valenzuela, Alexandre Proutiere and Cristian R. Rojas**, *A stochastic multi-armed bandit approach to nonparametric $\mathcal{H}_\infty$ estimation*, in the 56th Conference on Decision and Control, December 12-15 2017, Melbourne, Australia.

[C11] **Demia Della Penda, Riccardo Sven Risuleo, Patricio E. Valenzuela and Mikael Johansson**, *Optimal power control for D2D communication under Rician fading: a risk theoretical approach*, in the 2017 IEEE Global Communications Conference, December 4-8 2017, Singapore.

[C10] **Matías I. Müller, Patricio E. Valenzuela and Cristian R. Rojas**, *Risk-coherent $\mathcal{H}_2$-optimal disturbance rejection under model uncertainty*, in the 20th World Congress of the International Federation of Automatic Control, July 9-14 2017, Toulouse, France.

[C9] **Patricio E. Valenzuela, Johan Dahlin, Cristian R. Rojas and Thomas B. Schön**, *Particle-based Gaussian process optimization for input design in nonlinear dynamical models*, in the 55th Conference on Decision and Control, December 12-14 2016, Las Vegas, United States.

[C8] **Patricio E. Valenzuela, Cristian R. Rojas and Håkan Hjalmarsson**, *Uncertainty in system identification: learning from the theory of risk*, in the 17th IFAC Symposium on System Identification, October 19-21 2015, Beijing, China.

[C7] **Cristian R. Rojas, Patricio E. Valenzuela and Ricardo A. Rojas**, *A critical view on benchmarks based on randomly generated systems*, in the 17th IFAC Symposium on System Identification, October 19-21 2015, Beijing, China.

[C6] **Afrooz Ebadat, Patricio E. Valenzuela, Cristian R. Rojas, Håkan Hjalmarsson and Bo Wahlberg**, *Applications oriented input design for closed-loop system identification: a graph theory approach*, in the 53rd Conference on Decision and Control, December 15-17 2014, Los Angeles, United States.

[C5] **Patricio E. Valenzuela, Johan Dahlin, Cristian R. Rojas and Thomas B. Schön**, *A graph/particle-based method for experiment design in nonlinear systems*, in the 19th World Congress of the International Federation of Automatic Control, August 24-29 2014, Cape Town, South Africa.

[C4] **Boris I. Godoy, Patricio E. Valenzuela, Cristian R. Rojas, Juan C. Agüero and Brett Ninness**, *A novel input design approach for systems with quantized output data*, in the 13th European Control Conference, June 24-27 2014, Strasbourg, France.

[C3] **Patricio E. Valenzuela, Cristian R. Rojas and Håkan Hjalmarsson**, *Optimal input design for non-linear dynamic systems: a graph theory approach*, in the 52nd Conference on Decision and Control, December 10-13 2013, Florence, Italy.

[C2] **Patricio E. Valenzuela, Mario E. Salgado and Eduardo I. Silva**, *Optimal Tracking Performance for Unstable Tall Plant Models*, in the 20th Mediterranean Conference on Control and Automation, July 3-6 2012, Barcelona, Spain.

[C1] **Patricio E. Valenzuela, Mario E. Salgado and Eduardo I. Silva**, *Performance Bounds for SIMO and Squared-up Plant Models*, in the 19th Mediterranean Conference on Control and Automation, June 20-23 2011, Corfu, Greece.

Books

[B1] **Patricio E. Valenzuela and Mario E. Salgado**, *Electrical Network Theory, volume II*, Workbook, 2009.

Other reports

[R2] **Patricio E. Valenzuela, Boris I. Godoy and Cristian R. Rojas**, *On robust input design for identification of FIR systems with quantized measurements.*

[R1] **Patricio E. Valenzuela, Afrooz Ebadat, Mariette Annergren, Cristian R. Rojas, Håkan Hjalmarsson and Bo Wahlberg**, *A risk coherent framework for application oriented input design.*

Courses and webinar presentations

[L6] **Patricio E. Valenzuela**, *Automatic Control Seminar*, Course given during the first semester 2023. I acted as course Lecturer, Universidad de la Frontera, Chile, 2023.

[L5] **Patricio E. Valenzuela**, *In field experience – A perspective into Automatic Control, Estimation and System Identification*, Lecture given at Honeywell Chile S.A., Chile, 2022.

[L4] **Patricio E. Valenzuela**, *Automatic Control Seminar*, Course given during the second semester 2022. I acted as course Lecturer, Universidad de la Frontera, Chile, 2022.

[L3] **Patricio E. Valenzuela**, *Automatic Control Seminar*, Course given during the first semester 2022. I acted as course Lecturer, Universidad de la Frontera, Chile, 2022.

[L2] **Patricio E. Valenzuela**, *Automatic Control Seminar*, Course given during the second semester 2021. I acted as course Lecturer, Universidad de la Frontera, Chile, 2021.

[L1] **Patricio E. Valenzuela**, *Automation and sustainability: development and challenges*, Lecture given to the Ph.D. programme in Engineering, Macrofaculty of Engineering, Universidad de la Frontera, Universidad del Bío-Bío, Universidad de Talca, Chile, 2021.

[W3] **Patricio E. Valenzuela**, *Static environment estimation*, Tercer Seminario Multidisciplinar en Ciencias e Ingeniería, Universidad Tecnológica Metropolitana, Chile, 2021.

[W2] **Patricio E. Valenzuela**, *Perception and the streets of Södertälje*, iQPilot webinar, Scania CV AB, 2020 (available at `https://iq-mobility.creo.se/200630/iq-pilot_mobility`).

[W1] **Patricio E. Valenzuela**, *Static environment estimation*, iQPilot webinar, Scania CV AB, 2020 (available at `https://www.youtube.com/watch?v=cyknLNHj3Aw`).

Theses

Ph.D. thesis

Title	*On risk-coherent input design and Bayesian methods for nonlinear system identification*
Supervisors	Prof. Cristian R. Rojas and Prof. Håkan Hjalmarsson.
Institution	KTH Royal Institute of Technology, Stockholm, Sweden.

Licentiate thesis

Title *Optimal input design for nonlinear dynamical systems: a graph-theory approach*

Supervisors Prof. Cristian R. Rojas and Prof. Håkan Hjalmarsson.

Institution KTH Royal Institute of Technology, Stockholm, Sweden.

Master thesis

Title *Performance bounds on control of multivariable systems with additional and imperfect channels*

Supervisors Prof. Mario E. Salgado and Prof. Eduardo I. Silva.

Institution Universidad Técnica Federico Santa María (UTFSM), Valparaíso, Chile.

Reviewer experience

Journal Automatica, IEEE Transactions on Neural Networks and Learning Systems, IEEE Transactions on Automation Science and Engineering, Scientific Reports (Nature), Mathematical Reviews (American Mathematical Society), International Journal of Control, Journal of the Franklin Institute, Advances in Continuous and Discrete Models: Theory and Applications.

Conference IEEE Conference on Decision and Control, IEEE European Control Conference, American Control Conference, IFAC World Congress, IFAC Symposium on System Identification.

Honors and awards

2015 **Recipient of the Knut and Alice Wallenbergs Foundation Scholarship**, *Scholarship to support the trip to attend the 17th IFAC Symposium on System Identification*, KTH Royal Institute of Technology, Sweden.

2013 **Recipient of the 'Esfuerzo es progreso' Award**, *Award given to the top student of Electronic Engineering graduated in 2011-2012*, Universidad Técnica Federico Santa María (UTFSM), Chile.

2012 **Recipient of the 'Marcos Orrego Puelma' Award**, *Award given to the top Engineering student graduated in 2011*, Institute of Engineers of Chile.

2012 **Recipient of the Electrical Engineering Program of Excellence Award**, *Award given to the top students entering the Ph.D. program at the School of Electrical Engineering to support the doctoral studies*, KTH Royal Institute of Technology, Sweden.

2011 **Recipient of the Distinción Académica 'Federico Santa María' Award**, *Award given to the top student of Electronic Engineering graduated in 2011*, Universidad Técnica Federico Santa María (UTFSM), Chile.

2010-2011 **Recipient of the CONICYT Scholarship**, *Scholarship to support my postgraduate studies*, Universidad Técnica Federico Santa María (UTFSM), Chile.

2007-2010 **Recipient of the Academic Merit Scholarship**, *Scholarship given to the top student of each generation to support undergraduate studies*, Universidad Técnica Federico Santa María (UTFSM), Chile.

2007-2011 **Member of the Honor List**, *Award given to the top students in the UTFSM. Between 2008 and 2010 I was ranked as the top student at the university*, Universidad Técnica Federico Santa María (UTFSM), Chile.

2007-2011 **Recipient of the Academic Excellence Award**, *Award given to the top students within the Department of Electronic Engineering*, Universidad Técnica Federico Santa María (UTFSM), Chile.

2004 **Recipient of the Arturo Irarrázaval Correa Award**, *Award given to the top student graduated in 2004 from the technical study programs*, Instituto Don Bosco, Chile.

Attended conferences and workshops

2014 and 2016 Attended the Swedish national conference on Automatic Control (Reglermöte).

2012-2015 Attended the annual workshop of the European research network on system identification (ERNSI).

2007 and 2008 Attended the summer course on digital integrated circuit design at the Department of Electrical Engineering, Universidad de Chile.

Computer skills

Extensive experience: C++, C and Matlab.

Solid knowledge: Python, Maple, Verilog and Assembler.

Languages

Spanish	*Native*
English	*Fluent*
Swedish	*Fluent*
German	*Beginner*