

EDUARDO ÁLVAREZ MIRANDA

Fecha de Nacimiento 17 de enero de 1986
RUT 15.013.097-2
Estado Civil Casado
Dirección Particular **Condominio Club de Polo de Curicó, Parcela N°23**, Longitudinal Sur km 183.5 Romeral/Curicó
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FORMACIÓN

PhD en Operations Research (Investigación de Operaciones)
Università di Bologna, Italia
Título de la Tesis: *Networks, Applications, Uncertainty and a Crusade for Optimality*
Tutores: Paolo Toth (Università di Bologna), Ivana Ljubic (Universität Wien, Austria)
Magíster en Gestión de Operaciones
Universidad de Talca, Chile
Ingeniería Civil Industrial
Universidad de Talca, Chile

ÁREAS DE INTERÉS DE DESARROLLO ACADÉMICO/POLÍTICAS PÚBLICAS

Educación Superior Modelos e Instrumentos de Financiamiento de las Instituciones de Educación Superior, Sistemas de Aseguramiento de la Calidad, Gobernanza y Gestión Universitaria, Gestión Académica
Ciencia y Tecnología Instrumentos y Modelos de Financiamiento de Iniciativas e Instituciones
Gestión Sanitaria Gestión de Listas de Espera, Hospitalización Domiciliaria, Digitalización y Modernización
Gestión Pública Digitalización y Modernización de Sistemas y Modelos de Desempeño de Personas
Medioambiente Modelos de Planificación de la Conservación y Priorización Espacial

ÁREAS DE INTERÉS ACADÉMICO/CIENTÍFICO

Metodología Programación Matemática Entera Mixta (Modelos, Algoritmos exactos y Algoritmos Heurísticos); Optimización bajo Incertidumbres (Modelos Estocásticos/Robustos); Modelos de Difusión; Modelos de Priorización; Modelos de Clasificación de Datos; Modelos de Optimización Multiobjetivo/Multicriterio
Aplicaciones Diseño de Distritos Electorales y Modelos de Elección; Planificación de la Conservación y Restauración; Logística de Última Milla; Priorización de Listas de Espera por Prestaciones Sanitarias; Gestión Forestal; Planificación de Sistemas de Energía (Eléctrica)

POSICIONES ACADÉMICAS

2013 – 2014	Conferenciante , Departamento de Ingeniería Industrial, Facultad de Ingeniería, U. de Talca
2014 – 2017	Profesor Asistente , Departamento de Ingeniería Industrial, Facultad de Ingeniería, U. de Talca
2017 – 2022	Profesor Asociado , Departamento de Ingeniería Industrial, Facultad de Ingeniería, U. de Talca
2022 –	Profesor Titular , Departamento de Ingeniería Industrial, Facultad de Ingeniería, U. de Talca

POSICIONES EN CARGOS DE GESTIÓN ACADÉMICA

Abril 2015 – Mayo 2016	Director del Departamento de Ingeniería Industrial, U. de Talca
Mayo 2017 – Julio 2018	Director del Departamento de Ingeniería Industrial, U. de Talca
Agosto 2018 – Abril 2022	Director de Investigación, U. de Talca
Mayo 2022 – Mayo 2026	Director General de Aseguramiento de la Calidad y Planificación, U. de Talca

Nota: Durante este periodo se lideró el 5to proceso de acreditación institucional el que concluyó el 11 de junio de 2026 con la decisión de CNA de acreditar la institución por 7 años.

POSICIONES EN INSTITUTOS DE INVESTIGACIÓN

2014 – 2015	Investigador Invitado , Instituto Sistemas Complejos de Ingeniería (ISCI), Iniciativa Milenio
2015 – 2017	Investigador Joven , Instituto Sistemas Complejos de Ingeniería (ISCI), Iniciativa Milenio
2017 –	Investigador Asociado , Instituto Sistemas Complejos de Ingeniería (ISCI), Iniciativa Milenio
2022 –	Investigador Asociado , Instituto de Ecología & Biodiversidad (IEB), Iniciativa Milenio

PROYECTOS DE INVESTIGACIÓN/INNOVACIÓN COMO INVESTIGADOR RESPONSABLE

2014 – 2018	FONDECYT de Iniciación N°11140060 <i>Models and Algorithms for Robust and Stochastic Network Systems</i>
2015 – 2016	FONDEF IDeA N°ID15110082 <i>Desarrollo de modelos para la optimización de las zonas de reparto de correspondencia y paquetería</i>
2018 – 2022	FONDECYT Regular N°1180670 <i>Optimization Tools for Districting Decisions Under Uncertainty</i>
2018 – 2020	FONDEF IDeA N°ID18110216 <i>Desarrollo de tecnologías de Big Data para aumentar la retención y el éxito de estudiantes universitarios</i>
2022 – 2026	FONDECYT Regular N°1220830 <i>Enhanced MIP Tools for Conservation Planning: Models and Algorithms for Complex Spatio-Temporal Conservation Problems</i>
2026 – 2030	FONDECYT Regular N°1260465 <i>Resilient marine-terrestrial conservation: a MIP framework for supporting the Kunming-Montreal 30x30 conservation targets</i>

Nota: se consideran los principales proyectos con financiamiento externo competitivo.

PROYECTOS DE INVESTIGACIÓN/INNOVACIÓN COMO CO-INVESTIGADOR

2014 – 2015	FONDEF IDeA 2da Etapa N°ID14110026 <i>Sistema automatizado de monitoreo y gestión de edificaciones que evalúa económicamente la implementación de medidas y tecnologías para la eficiencia energética</i> Directora: Ma. Luisa del Campo, Facultad de Ingeniería, U. de Talca
2015 – 2018	FONDECYT Regular N°1150306 <i>Heterogeneous process selection assembly line balancing problems</i> Investigador Responsable: Jordi Pereira, Facultad de Ingeniería, U. Adolfo Ibáñez

- 2016 – 2017** **FONDEF Minería N° IT16IM10019** *Desarrollo de modelos de optimización para la planificación minera de mediano y corto plazo*
Director: Rafael Epstein, Facultad de Cs Físicas y Matemáticas, U. de Chile
- 2019 – 2021** **FONDECYT Regular N°1191624** *Assembly line balancing for industry 4.0*
Investigador Responsable: Jordi Pereira, Facultad de Ingeniería, U. Adolfo Ibáñez
- 2022 – 2024** **FONDECYT Regular N°1220893** *Artificial intelligence approaches to solve difficult forest planning problems*
Investigador Responsable: Andrés Weintraub, Facultad de Cs Físicas y Matemáticas, U. de Chile
- 2025 – 2027** **FONDECYT Regular N°1251454** *Wildfire Analytics: Prevention, Detection and Post-Restoration*
Investigador Responsable: Andrés Weintraub, Facultad de Cs Físicas y Matemáticas, U. de Chile

Nota: se consideran los principales proyectos con financiamiento externo competitivo.

PROYECTOS INTERNACIONALES

- 2014 – 2015** **Marie Curie RISE FP7-PEOPLE-2009-IRSES ForEAdapt** (*Knowledge exchange between Europe and America on forest growth models and optimisation for adaptive forestry*)
Rol: Investigador Asociado
Director: Jordi García-Gonzalo, Universidad de Lisboa, Portugal
- 2017 – 2020** **Marie Curie H2020 Work Programme H2020-MSCA-RISE-2017 SuFoRun** *Models and decision Support tools for integrated FOrest policy development under global change and associated Risk and Uncertainty*
Rol: Investigador Asociado
Director: Jordi García-Gonzalo, Centre de Ciència i Tecnologia Forestal de Catalunya, España
- 2020 – 2026** **Marie Curie H2020 Work Programme H2020-MSCA-RISE-2020 DecisionES** *Decision Support for the Supply of Ecosystem Services under Global Change*
Rol: Investigador Asociado
Director: Jordi García-Gonzalo, Centre de Ciència i Tecnologia Forestal de Catalunya, España

FORMACIÓN DE CAPITAL HUMANO Y DOCENCIA

- 4 Tesistas de Doctorado** Programa de Doctorado en Sistemas de Ingeniería (U. de Talca)
- 10+ Tesistas de Magíster** Programa de Magíster en Gestión de Operaciones (U. de Talca), Programa de Magíster en Administración (U. de Talca), Programa de Magíster en Estadística e Investigación Operativa (U. Politénica de Catalunya), Magíster en Cs. de la ingeniería Mención Eléctrica (U. de Chile), Magíster en Gestión de Operaciones (U. de Chile)
- 25+ Memoristas de Pregrado** Ingeniería Civil Industrial (U. de Talca), Ingeniería en Informática Empresarial (U. de Talca), Ingeniería Civil Industrial (U. de Chile), Ingeniería Civil Eléctrica (U. de Chile)
- 40+ cursos pre y postgrado** Investigación de Operaciones, Optimización, Métodos Numéricos, Cs de Datos, Proyecto de Licenciatura

PARTICIPACIÓN EN PANELES ASESORES Y DE EVALUACIÓN

- 2018 – 2019** Miembro Grupo de Estudio FONDECYT Ingeniería 2
- 2022 – 2023** Miembro del Panel Asesor FONDECYT Explorador
- 2018 –** Evaluador de Proyectos FONDECYT

PATENTE

Patente N.201000090, Registro INAPI - CHILE, Domiciliary Chamber based on the Combustion of Wood Chips (with C. Torres, A. Martinich, R. Sánchez)

PUBLICACIONES CIENTÍFICAS

2026

1. Hydrogen production supported on nuclear cogeneration: An energy planning view (with P. Vargas-Ferrer, C. Tenreiro, D. Olave-Rojas), 2026, *International Journal of Hydrogen Energy*, 235, 155074.
2. Competing for the most profitable tour: The orienteering interdiction game (with M. Sinnl, K. Tanınmış), 2026, *Computers & Industrial Engineering*, 214, 111900.
3. Rethinking governance for the Global Biodiversity Framework: Legal gaps and lessons from Chile (with M. Martínez-Harms and others), 2026, *Environmental Science & Policy*, 177, 104313.
4. Ecosystem risk management: A MIP approach to spatial prioritization of multiple management actions (with M. Moreno-Faguett, J. Salgado-Rojas, V. Hermoso, M. Martínez-Harms, B. Larraín), 2026, *Omega*, 103507.

2025

5. Optimising management against dynamic threats: A spatially explicit approach based on integer programming (with J. Salgado-Rojas, V. Hermoso), 2025, *Methods in Ecology and Evolution*, 16(8), 1868-1885.
6. **prioriactions**: Multi-action management planning in R (with J. Salgado-Rojas, V. Hermoso), 2025, *Methods in Ecology and Evolution*, 16(6), 1028-1039.
7. A mixed integer programming approach to address cumulative threats in multi action management plans for biodiversity recovery (with J. Salgado-Rojas, V. Hermoso), 2025, *Omega*, 133, 103282.
8. A multi-criteria districting approach with a lexicographic compactness metric: An application to the Chilean postal service (with R. Epstein, J. Pereira, M. Sinnl, R. Urrutia), 2025, *Computers and Operations Research*, 173, 106845.

2024

8. Conservation triage in action: Planning, governance and knowledge co-production for biodiversity protection (with M.J. Martínez-Harms, R.A. Estévez), 2024, *Journal of Applied Ecology*, 61(10), 2328-2334.
9. A branch, bound and remember algorithm for maximizing the production rate in the simple assembly line balancing problem (with J. Pereira, M. Vilà), 2024, *Computers and Operations Research*, 166, 106597.
10. Multiple-attribute group decision-making approach using power aggregation operators with CRITIC-WASPAS method under 2-dimensional linguistic intuitionistic fuzzy framework (with R. Verma), 2024, *Applied Soft Computing*, 157, 111466.

2023

11. Group decision-making method based on advanced aggregation operators with entropy and divergence measures under 2-tuple linguistic Pythagorean fuzzy environment (with R. Verma), 2023, *Expert Systems with Applications*, 231, 120584.
12. Analysis of the simple assembly line balancing problem complexity (with J. Pereira, M. Vilà), 2023, *Computers and Operations Research*, 159, 106323.
13. Integration of high levels of electrolytic hydrogen production: Impact on power systems planning (with P. Vargas-Ferrer, C. Tenreiro, F. Jalil-Vega), 2023, *Journal of Cleaner Production*, 409, 137110.
14. Variable-depth local search heuristic for assembly line balancing problems (with J. Pereira, C. Vargas, M. Vilà), 2023, *International Journal of Production Research*, 61(9), 3102-3120.

2022

15. A novel districting design approach for on-time last-mile delivery: An application on an express postal company (with M.G. Sandoval, J. Pereira, R.Z. Ríos-Mercado, J.A. Díaz), 2022, *Omega*, 113, 102687.
16. Assessing flexibility for integrating renewable energies into carbon neutral multi-regional systems: The case of the Chilean power system (with P. Vargas-Ferrer, C. Tenreiro, F. Jalil-Vega), 2022, *Energy for Sustainable Development*, 70, 442-455.
17. Spatial prioritisation of management for biodiversity conservation across the EU (with V. Hermoso, J. Salgado-Rojas, M. Lanzas), 2022, *Biological Conservation*, 272, 109638.

2021

18. Towards a complex investment evaluation framework for renewable energy systems: A 2-level heuristic approach (with D. Olave-Rojas), 2021, *Energy*, 228, 120530.
19. The Generalized Reserve Set Covering Problem with Connectivity and Buffer Requirements (with M. Goycoolea, I. Ljubić, M. Sinnl), 2021, *European Journal of Operational Research*, 289(3), 1013-1029.
20. Exact and heuristic algorithms for the weighted total domination problem (with M. Sinnl), 2021, *Computers and Operations Research*, 127.
21. Assembly line balancing with parallel workstations (with S. Chace, J. Pereira), 2021, *International Journal of Production Research*, 59(21), 6486-6506.
22. A districting application with a quality-of-service objective (with J. Pereira), 2021, *Mathematics*, 10(1), 13.
23. A Hybrid Genetic Algorithm for the Simple Assembly Line Balancing Problem with a Fixed Number of Workstations (with J. Pereira, H. Torrez-Meruvia, M. Vilà), 2021, *Mathematics*, 9(17), 2157.
24. The Impact of Candidates' Profile and Campaign Decisions in Electoral Results: A Data Analytics Approach (with C. Campos-Valdés, M. Morales Quiroga, J. Pereira, F. Liberona Durán), 2021, *Mathematics*, 9(8), 902.
25. Analysis of first-year university student dropout through machine learning models: A comparison between universities (with D. Opazo, S. Moreno, J. Pereira), 2021, *Mathematics*, 9(20), 2599.
26. Patients' Prioritization on Surgical Waiting Lists: A Decision Support System (with C.A. Astudillo, L. González-Martínez, J.G. Ledezma), 2021, *Mathematics*, 9(10), 1097.

2020

27. Optimising the storage assignment and order-picking for the compact drive-in storage system (with D. Revillot-Narváez, F. Pérez-Galarce), 2020, *International Journal of Production Research*, 58(22), 6949-6969.
28. On the data to know the prioritization and vulnerability of patients on surgical waiting lists (with F. Silva-Aravena, C.A. Astudillo, L. González-Martínez, J.G. Ledezma), 2020, *Data in Brief*, 29.
29. An integer programming method for the design of multi-criteria multi-action conservation plans (with J. Salgado-Rojas, V. Hermoso, J. Garcia-Gonzalo, A. Weintraub), 2020, *Omega*, 92.
30. Multicriteria saliency detection: a (exact) robust network design approach (with J. Díaz-Guerrero), 2020, *Annals of Operations Research*, 286(1-2), 649-668.
31. A mixed integer programming approach for multi-action planning for threat management (with J. Salgado-Rojas, V. Hermoso, J. Garcia-Gonzalo, A. Weintraub), 2020, *Ecological Modelling*, 418.
32. A branch-and-cut algorithm for the maximum covering cycle problem (with M. Sinnl), 2020, *Annals of Operations Research*, 284(2), 487-499.
33. Inventory management at a Chilean hospital pharmacy: Case study of a dynamic decision-aid tool (with F. Silva-Aravena, and I. Ceballos-Fuentealba), 2020, *Mathematics*, 8 (11), 1962.
34. A Multi-Criteria Pen for Drawing Fair Districts: When Democratic and Demographic Fairness Matter (with C. Campos-Valdés, M. Morales-Quiroga, M. Moreno-Faguett, J. Pereira), 2020, *Mathematics*, 8 (9), 1404.

2019

35. A simulation and optimisation methodology for choosing energy efficiency measures in non-residential buildings (with I. Ceballos-Fuentealba, C. Torres-Fuchslocher, M.L. del Campo-Hitschfeld, J. Díaz-Guerrero), 2019, *Applied Energy*, 256.
36. Mixed-integer programming approaches for the tree t^* -spanner problem (with M. Sinnl), 2019, *Optimization Letters*, 13(7), 1693-1709.
37. On the complexity of assembly line balancing problems (with J. Pereira), 2019, *Computers and Operations Research*, 108, 182-186.
38. An exact solution framework for the multiple gradual cover location problem (with M. Sinnl), 2019, *Computers and Operations Research*, 108, 82-96.
39. A note on computational aspects of the Steiner traveling salesman problem (with M. Sinnl), 2019, *International Transactions in Operational Research*, 26(4), 1396-1401.
40. A multicriteria stochastic optimization framework for sustainable forest decision making under uncertainty (with J. Garcia-Gonzalo, C. Pais, A. Weintraub), 2019, *Forest Policy and Economics*, 103, 112-122.

2018

41. An exact solution framework for the minimum cost dominating tree problem (with M. Luipersbeck, M. Sinnl), 2018, *Optimization Letters*, 12(7), 1669-1681.
42. A multicriteria optimization model for sustainable forest management under climate change uncertainty: An application in Portugal (with J. Garcia-Gonzalo, F. Ulloa-Fierro, A. Weintraub, S. Barreiro), 2018, *European Journal of Operational Research*, 269(1), 79-98.
43. An exact approach for the robust assembly line balancing problem (with J. Pereira), 2018, *Omega*, 78, 85-98.
44. Gotta (efficiently) catch them all: Pokémon GO meets Orienteering Problems (with M. Luipersbeck, M. Sinnl), 2018, *European Journal of Operational Research*, 265(2), 779-794.
45. In-depth data on the network structure and hourly activity of the central chilean power grid (with H. Kim, D. Olave-Rojas, S.-W. Son), 2018, *Scientific Data*, 5(1), 1-10.

2017

46. A Relax-and-Cut framework for large-scale maximum weight connected subgraph problems (with M. Sinnl), 2017, *Computers and Operations Research*, 87, 63-82.
47. A bi-objective network design approach for discovering functional modules linking Golgi apparatus fragmentation and neuronal death (with H. Farhan, M. Luipersbeck, M. Sinnl), 2017, *Annals of Operations Research*, 258(1), 5-30.
48. Optimization of the harvest planning in the olive oil production: A case study in Chile (with C. Herrera-Cáceres, F. Pérez-Galarce, A. Candia-Véjar), 2017, *Computers and Electronics in Agriculture*, 141, 147-159.
49. Lagrangian and branch-and-cut approaches for upgrading spanning tree problems (with M. Sinnl), 2017, *Computers and Operations Research*, 83, 13-27.
50. Solving minimum-cost shared arborescence problems (with I. Ljubić, M. Luipersbeck, M. Sinnl), 2017, *European Journal of Operational Research*, 258(3), 887-901.
51. Designing and constructing networks under uncertainty in the construction stage: Definition and exact algorithmic approach (with J. Pereira), 2017, *Computers and Operations Research*, 81, 178-191.
52. An optimization framework for investment evaluation of complex renewable energy systems (with D. Olave-Rojas, A. Rodríguez, C. Tenreiro), 2017, *Energies*, 10(7), 1062.

2016

53. Optimal upgrading schemes for effective shortest paths in networks (with M. Luipersbeck, M. Sinnl), 2016, *Lecture Notes in Computer Science*, 9676, 406-420.
54. Robust unit commitment including frequency stability constraints (with F. Pérez-Illanes, C. Rahmann, C. Campos-Valdés), 2016, *Energies*, 9(11), 957.

2015

- 55. The recoverable robust two-level network design problem (with I. Ljubić, S. Raghavan, P. Toth), 2015, *INFORMS Journal on Computing*, 27(1), 1-19.
- 56. The recoverable robust facility location problem (with E. Fernández, I. Ljubić), 2015, *Transportation Research Part B: Methodological*, 79, 93-120.
- 57. Two-stage robust UC including a novel scenario-based uncertainty model for wind power applications (with C. Campos-Valdés, C. Rahmann), 2015, *Energy Conversion and Management*, 101, 94-105.
- 58. Alteration of Golgi structure by stress: A link to neurodegeneration? (with M. Sinnl, H. Farhan), 2015, *Frontiers in Neuroscience*, 9.

2014

- 59. Single-commodity robust network design problem: Complexity, instances and heuristic solutions (with V. Cacchiani, A. Lodi, T. Parriani, D.R. Schmidt), 2014, *European Journal of Operational Research*, 238(3), 711-723.
- 60. On exact solutions for the Minmax Regret Spanning Tree problem (with F. Pérez-Galarce, A. Candia-Véjar, P. Toth), 2014, *Computers and Operations Research*, 47, 114-122.
- 61. Risk models for the Prize Collecting Steiner Tree problems with interval data (with A. Candia-Véjar, X.-J. Chen, X.-D. Hu, B. Li), 2014, *Acta Mathematicae Applicatae Sinica*, 30(1), 1-26.
- 62. Vulnerability assessment of spatial networks: Models and solutions (with A. Candia-Véjar, E. Carrizosa, F. Pérez-Galarce), 2014, *Lecture Notes in Computer Science*, 8596, 433-444.

2013

- 63. Exact approaches for solving robust prize-collecting Steiner tree problems (with I. Ljubić, P. Toth), 2013, *European Journal of Operational Research*, 229(3), 599-612.
- 64. A note on the Bertsimas & Sim algorithm for robust combinatorial optimization problems (with I. Ljubić, P. Toth), 2013, *4OR*, 11(4), 349-360.
- 65. The rooted maximum node-weight connected subgraph problem (with I. Ljubić, P. Mutzel), 2013, *Lecture Notes in Computer Science*, 7874, 300-315.
- 66. The maximum weight connected subgraph problem (with I. Ljubić, P. Mutzel), 2013, *Facets of Combinatorial Optimization: Festschrift for Martin Grötschel*, 245-270.

2012

- 67. Models and algorithms for robust network design with several traffic scenarios (with V. Cacchiani, T. Dorneth, M. Jünger, F. Liers, A. Lodi, T. Parriani, D.R. Schmidt), 2012, *Lecture Notes in Computer Science*, 7422, 261-272.

2011

- 68. Deterministic risk control for cost-effective network connections (with X. Chen, J. Hu, X. Hu, A. Candia-Véjar), 2011, *Theoretical Computer Science*, 412(3), 257-264.
- 69. Minmax regret combinatorial optimization problems: An Algorithmic Perspective (with A. Candia-Véjar, N. Maculan), 2011, *RAIRO - Operations Research*, 45(2), 101-129.
- 70. Exact solutions for the robust prize-collecting steiner tree problem (with I. Ljubić, P. Toth), 2011, *International Congress on Ultra Modern Telecommunications and Control Systems and Workshops*.

2010

- 71. Efficient algorithms for the prize collecting Steiner Tree problems with interval data (with A. Candia, X. Chen, X. Hu, B. Li), 2010, *Lecture Notes in Computer Science*, 6124, 13-24.

OTRAS ACTIVIDADES Y ANTECEDENTES

Conferencias

Participación como expositor en más de 20 reuniones científicas de carácter internacional

Referato

Referee habitual de los más importantes journals de Investigación de Operaciones y áreas afines a la planificación de sistemas de potencia (e.g., *INFORMS Journal of Computing*, *Mathematical Programming Series B*, *Annals of Operations Research*, *European Journal of Operational Research*, *4OR*, *International Transactions in Operational Research*, *Computational Optimization and Applications*, *Networks*, *International Journal of Electrical Power and Energy Systems*, *Omega*, *Transportation Research: Part B*, *Computers & OR*, *Optimization Letters*, *RAIRO - Operations Research*, *IEEE Transactions on Power Systems*, *IEEE Transactions on Sustainable Energy*, etc.)

Reconocimientos

PhD Fellow of the Institute of Advanced Studies, Università di Bologna, 2012 – 2014

Dominio idiomas

Inglés (hablado, escrito), **Italiano** (hablado, escrito)

14 DE JUNIO, 2026