Felipe Atenas

Webpage Google Scholar ORCiD
Email: felipe.atenas@unimelb.edu.au

Academic Positions

Center for Mathematical Modeling, University of Chile Santiago, Chile
Postdoctoral fellow *Upcoming*

School of Mathematics and Statistics, University of Melbourne Melbourne VIC, Australia
Research Fellow in Optimisation *October 2023 – January 2026*

- Australian Research Council Discovery Program "Distributed Optimisation without Central Coordination"

Education

University of Campinas (Unicamp) Campinas SP, Brazil
Ph.D. in Applied Mathematics *March 2020 - September 2023*

- Thesis: Proximal decomposition methods for optimization problems with structure
- Supervisors: Dr. Claudia Sagastizábal (main), and Prof. Paulo J. S. Silva
- GPA 4/4

University of Chile Santiago, Chile
MSE with specialisation in Applied Mathematics *March 2018 - May 2019*

- Thesis title: A two-stage model for planning energy investment under uncertainty
- Supervisors: Dr. Claudia Sagastizábal (main), and Prof. Rafael Correa
- Classification: Highest Distinction (GPA 6.9/7.0)
- CONICYT/ANID Master's Scholarship
  Postgraduate scholarship awarded by the Ministry of Science, Innovation and Technology of Chile

University of Chile Santiago, Chile
Bsc in Engineering Mathematics – Professional degree: Mathematical Engineer *March 2013 - May 2019*

- GPA 7.0/7.0
- Scholarship: University of Chile Andrés Bello Scholarship
- Faculty of Physical and Mathematical Sciences Dean's Honours List: 2013-2018

Research Publications

Journals

In the field of mathematical optimisation, the order of the authors is alphabetical

11. **Atenas, F.**, Dao, M. N. & Tam, M. K. A distributed proximal splitting method with linesearch for locally Lipschitz gradients. Published online in Journal of Global Optimization (2025).

10. **Atenas, F.** Understanding the Douglas-Rachford splitting method through the lenses of Moreau-type envelopes. Computational Optimization and Applications 90, 881-910 (2025).

9. van Ackooij, W., **Atenas, F.** & Sagastizábal, C. Weak convexity and approximate subdifferentials. Journal of Optimization Theory and Applications 203, 1686-1709 (2024).

8. **Atenas, F.**, Sagastizábal, C., Silva, P. J. & Solodov, M. A unified analysis of descent sequences in weakly convex optimization, including convergence rates for bundle methods. SIAM Journal on Optimization 33.1, 89-115 (2023).

7. **Atenas, F.** & Sagastizábal, C. A bundle-like progressive hedging algorithm. Journal of Convex Analysis 30.2, 453-479 (2023).

Preprints

6. **Atenas, F., Dao, M. N. & Tam M. K.** Variable stepsize distributed forward-backward splitting methods as relocated fixed-point iterations. arXiv:2601.15531 (2026).

5. **Atenas, F.** Shadow splitting methods for nonconvex optimisation: epi-approximation, convergence and saddle point avoidance. arXiv:2512.20433 (2025).

4. **Atenas, F.**, Simi, F. A. & Tam, M. K. Linear convergence of relocated fixed-point iterations. arXiv:2512.12954 (2025) [submitted].

3. **Atenas, F.**, Bauschke, H. H., Dao, M. N. & Tam, M. K. Relocated fixed-point iterations with applications to variable stepsize resolvent splitting. arXiv:2507.07428 (2025) [accepted for publication in SIAM Journal on Optimization after minor revisions].

2. Alcantara, J.H. & **Atenas, F.** A relaxed version of Ryu's three-operator splitting method for structured nonconvex optimization (2025) [accepted for publication in MATRIX Annals].

Technical reports

1. Luke, C., de Freitas, D., **Atenas, F.**, Viola, L., Bello, T., Sagastizábal, C., Luna, J. P., Diniz, A., Sabóia, C. & Cerqueira, L. Impact of demand response programs in unit-commitment problems in energy optimization. *Mathematics in Industry Reports MIIR* (2021).

Awards

2023 PPGMA Best PhD Thesis: honourable mention May 2024
Second place (out of 22) in the 2023 Best PhD Thesis award of the Graduate Program of Applied Mathematics of the University of Campinas, Brazil

2020 Marcos Orrego Puelma Award October 2020
2019 class valedictorian (best graduate who delivers a farewell speech at graduation) of the Engineering School at the University of Chile, awarded by the Institute of Engineers of Chile

2013 University of Chile Andrés Bello excellence scholarship March 2013
Undergraduate scholarship awarded to the top 10 best admitted students in 2013 among all undergraduate programs (9,783 students) at University of Chile. Duration: 6 years

Funds/Grants

BEPE FAPESP PhD Scholarship (Brazil) September 2022 - February 2023

- Awarded by *São Paulo Research Foundation* (FAPESP)
- Research internship at the Rutgers Business School, New Jersey, USA
- Project: Contemporary variants of splitting methods for large-scale optimization
- Members: Dist. Prof. Jonathan Eckstein (Rutgers), Dr. Claudia Sagastizábal (Unicamp), Prof. Paulo J. S. Silva (Unicamp), and **Felipe Atenas** (Unicamp)

FAPESP PhD Scholarship (Brazil) March 2020 - September 2023

- Awarded by *São Paulo Research Foundation* (FAPESP)
- Project: Stochastic variational analysis applied to the energy industry

- Members: Dr. Claudia Sagastizábal (Unicamp), Prof. Paulo J. S. Silva (Unicamp), and **Felipe Atenas** (Unicamp)

PGMO IROE grant (France) September 2018 - November 2020

- Awarded by the *Gaspard Monge Program for Optimization, Operations Research and their Interactions with Data Science* (PGMO)
- Project: Models for planning energy investment under uncertainty
- Members: Prof. Welington de Oliveira (Mines PSL), Dr. Wim van Ackooij (Électricité de France EDF R&D), Dr. Claudia Sagastizábal (Unicamp), Prof. Rafael Correa (UChile), and **Felipe Atenas** (UChile)

Talks

Invited talks

4. First-order splitting methods for decentralised optimisation
   – *ANZIAM SigmaOpt Workshop*, Coffs Harbour, Australia — February 2025
3. Variational analysis for weakly convex optimisation: theory and algorithms
   – *Workshop on Continuous and Dynamic Optimization*, University of O'Higgins, Rancagua, Chile — December 2024
2. Proximal splitting methods through the lenses of Moreau-type envelopes
   – *Optimization Workshop: Theory, Algorithms, and Applications*, University of Los Andes, Bogotá, Colombia — December 2024
1. Weakly convex Douglas-Rachford splitting via descent of proximal merit functions
   – *Mathematical Optimization meets Energy Industry*, Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil — June 2023

Conference, workshop and seminar presentations

14. Relocated fixed-point iteration and distributed splitting methods
   – *Annual Meeting of the Australian Mathematical Society 2025*, La Trobe University, Melbourne, Australia — December 2025
   – *WOMBAT 2025*, University of Queensland, Brisbane, Australia — November 2025
   – *Optimisation Days 2025*, University of New South Wales, Sydney, Australia — November 2025
   – *Continuous Optimisation Seminar UNICAMP-USP*, online, Brazil — August 2025
   – *Unimelb Optimisation Seminar*, Melbourne, Australia — August 2025
   – *EUROPT 2025*, University of Southampton, UK — July 2025
13. First-order splitting methods for decentralised optimisation
   – *ICCOPT 2025*, University of Southern California, US — July 2025
   – *CTAC 2024*, Monash University, Melbourne, Australia — November 2024
   – *Optimization Seminar*, Johns Hopkins University, Baltimore MD, US — July 2024
   – *EUROPT 2024*, Lund University, Sweden — June 2024

12. Proximal splitting methods through the lenses of Moreau-type envelopes
    - *MATRIX Workshop on Splitting Algorithms - Advances, Challenges, and Opportunities*, University of Melbourne, Australia — February 2025
    - *Maths & Stats colloquium*, University of Melbourne, Australia — August 2024
    - *WOMBAT/WICO 2023*, University of Sydney, Australia — December 2023
11. Variational analysis for weakly convex optimisation: theory and algorithms
    - *WOMBAT 2024*, University of Sydney, Australia — December 2024
    - *Optimisation Seminar*, University of Melbourne, Australia — November 2023
10. Proximal splitting methods avoid strict saddle points of weakly convex problems
    - *ISMP 2024*, Montréal, Canada — July 2024
9. Why optimisation methods find the solutions we want?
    - *Early Career Research Summit 2024*, University of Melbourne, Australia — February 2024
8. A dual embedded forward-backward scenario decomposition method for convex stochastic programming
    - *ICSP 2023*, University of California, Davis CA, US — July 2023
7. Weakly convex Douglas-Rachford splitting via descent of proximal merit functions
    - *SIAM OP23*, Seattle WA, US — June 2023
    - *Optimization and Equilibrium Seminar*, CMM, University of Chile, Chile — April 2023
6. A unifying framework for descent methods in weakly convex optimisation
    - *Optim & ML Seminar*, Rutgers Business School, New Brunswick NJ, US — September 2022
5. A bundle-like approach to induce descent in the progressive hedging algorithm
    - *ICCOPT 2022*, Lehigh University, Bethlehem PA, US — July 2022
    - *Robustness and Resilience in Stochastic Optimization and Statistical Learning: Mathematical Foundations workshop*, Erice, Italy — May 2022
4. Descent sequences for nonconvex functions: global convergence and local rates of convergence
    - *Continuous Optimization Seminar UNICAMP-USP*, online, Brazil — October 2021
3. Planning energy investment under uncertainty: primal and dual views
    - *PGMO days 2020*, online, France — December 2020
2. Linear convergence of descent methods for nonsmooth functions with the Kurdyka-Łojasiewicz property
    - *XV IMECC Postgraduate Scientific Meeting*, online, Brazil — November 2020
1. Planning energy investment under uncertainty
    - *Continuous Optimization Seminar UNICAMP-USP*, online, Brazil — May 2020
    - *ICCOPT 2019*, TU Berlin, Germany — August 2019
    - *ICSP 2019*, NTNU, Trondheim, Norway — July 2019
    - *XII Brazilian Workshop on Continuous Optimization*, Foz do Iguaçu, Brazil — July 2018

Research Visits

Center for Mathematical Modeling (CMM), University of Chile May 2025

- Project: "Splitting Algorithms for Stochastic Variational Inequalities"
- Visit: Assoc. Prof. Pedro Pérez-Aros

Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil January 2025

- Project: "Decomposition Methods for Optimisation Problems under Uncertainty"
- Visit: Dr. Claudia Sagastizábal and Prof. Mikhail Solodov

Rutgers University, New Brusnwick NJ, USA September - February 2023

- Project: "Contemporary Variants of Splitting Methods for Large-scale Optimization"
- Visit: Prof. Jonathan Ecsktein

Centre de Mathématiques Appliquées, Sophia Antipolis, France July 2019

- Project: "The Interplay between ADMM and Progressive Hedging"
- Visit: Assoc. Prof. Welington de Oliveira

Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil March - May 2018

- Project: "Progressive Hedging for Planning Energy Investment under Uncertainty"
- Visit: Dr. Claudia Sagastizábal

Supervision

4. Fuwen Xiao, MSc Mathematics and Statistics (Unimelb) February 2025 - present
   - Jointly with Assoc. Prof. Matthew Tam
   - Project: "Splitting Techniques for Nonconvex Clustering"
3. Shaoting Zhang, MSc Mathematics and Statistics (Unimelb) August 2024 - November 2025
   - Jointly with Assoc. Prof. Matthew Tam
   - Thesis: "Dynamic Energy Management Modeling for Enterprise Microgrids"
2. Luke Quinn, MSc Mathematics and Statistics (Unimelb) February 2024 - May 2024
   - Co-supervision with Assoc. Prof. Matthew Tam
   - Thesis: "A Comparison of Decentralised First-Order Algorithms in Distributed Optimisation"
1. Oscar Zhu, Unimelb Mathematics and Statistics Vacation Scholarships Program January 2024
   - Jointly with Assoc. Prof. Matthew Tam
   - Poster: "Supercharging Charging: A Decentralised Coordination Model of Plug-in Electric Vehicle Charging with Vehicle-to-Grid Capabilities"

Teaching Experience

Lecturing

School of Mathematics and Statistics, University of Melbourne

MAST20018 Discrete Maths and Operations Research	Semester 2, 2025
MAST30022 Decision Making	Semester 2, 2024

Faculty of Physical and Mathematical Sciences, University of Chile

MA3002 Topics in Convex Analysis	Semester 2, 2019

School of Engineering, University of O'Higgins (Chile)

IN1000 Precalculus	Semester 2, 2019
IN1009 Linear Algebra	Semester 2, 2019

School of Education, University of O'Higgins (Chile)

MA3105 Calculus III	Semester 2, 2019

Minicourses

Faculty of Physical and Mathematical Sciences, University of Chile

An introduction to proximal splitting methods for structured optimisation problems Website of the minicourse	December 2019

Teaching Assistantship

Faculty of Medicine, University of Chile

CB10005 Biomathemtics	Semester 1, 2019

Faculty of Mathematics, Pontifical Catholic University of Chile

MPG3436 Convex Analysis (graduate level)	Semester 2, 2018

Faculty of Physical and Mathematical Sciences, University of Chile

MA3701 Optimisation	Semester 1, 2019
MA3801 General Topology	Semester 1, 2019
MA2001 Multivariable Calculus	Summer 2018
MA3701 Optimisation	Summer 2018
MA3002 Topics in Convex Analysis	Semester 2, 2018
MA2002 Advanced Calculus	Semester 2, 2018
MA3002 Topics in Convex Analysis	Semester 2, 2017
MA4802 Partial Differential Equations	Semester 2, 2017
MA1002 Single Variable Calculus	Semester 1, 2017
MA2001 Multivariable Calculus	Semester 1, 2017
MA2002 Advanced Calculus	Semester 2, 2016
MA3002 Topics in Convex Analysis	Semester 2, 2016
MA4001 Complex Analysis	Semester 1, 2016
MA2001 Multivariable Calculus	Semester 1, 2016
MA1002 Single Variable Calculus	Summer 2015
MA1101 Introduction to Algebra	Semester 2, 2015
MA3002 Topics in Convex Analysis	Semester 2, 2015
MA1101 Introduction to Algebra	Semester 1, 2015

Summer Program for High School Students (EdV), University of Chile

FM1001 Foundations of Linear Algebra	Summer 2018
FM404 Theory of Differential Calculus	Summer 2016
FM300 Real Functions and Trigonometry (flipped classroom)	Summer 2015
FM592 Functions of a Real Variable (flipped classroom)	Winter 2015
SIPEE-565-1 Introduction to Mathematical Theory (flipped classroom)	Summer 2014
FM592 Functions of a Real Variable (flipped classroom)	Winter 2014

Academic Service

Journals Refereed

1. SIAM Journal on Optimization
2. Journal of Optimization Theory and Applications
3. Computational Optimization and Applications
4. Set-Valued and Variational Analysis
5. Optimization
6. Operations Research - INFORMS
7. Pacific Journal of Optimization
8. Advances in Computational Mathematics
9. EURO Journal on Computational Optimization
10. Open Journal of Mathematical Optimization

Workshop Organisation

1. ANZIAM SigmaOpt workshop 2026, Australian National University (ANU), Canberra (Upcoming)

Abstract Reviewer

1. OPTIMA-CON 2024, *Optimisation in Industry Conference*

Professional Service

SigmaOpt executive ordinary member February 2025 – present
ANZIAM Optimisation special interest group

Science Early Career Academic Network (SECAN) February 2025 – January 2026
Faculty of Science, University of Melbourne

- Faculty of Science Diversity & Inclusion Committee

Early Career Academics Committee (chair) November 2024 – January 2026
School of Mathematics and Statistics, University of Melbourne

Mathematics and Statistics Research Competition September & November 2024
School of Mathematics and Statistics, University of Melbourne

- Shortlisted projects for the intermediate level, years 7 to 9 (middle school)
- Judge at intermediate level Finals Presentation night

University of Melbourne open day August 2024

- Representative of the Operations Research group and OPTIMA during open day: informed parents and prospective undergraduate and graduate students about the programs of the School of Mathematics and Statistics, careers in academia and industry, and OPTIMA projects

Professional Development Activities

The Melbourne Academy October - November 2024
University of Melbourne

- Four-session program for professional career development of Early Career Academics of the University of Melbourne. The sessions cover topics on education, research and leadership in academia

Graduate Researcher Supervision Workshop September 2024
University of Melbourne

- Training workshop designed for new supervisors of Graduate Researchers at the University of Melbourne. Mandatory to become a registered Graduate Researcher supervisor

Skills

Languages: Spanish (native), English (fluent), Portuguese (fluent)

Computational: Python, MATLAB

Victoria Working with Children Check (WWCC): valid until 07-06-2029