

# Parsiad Azimzadeh

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Canadian Citizen  
Fluent in English, proficient in Farsi

## Current position

PHD, University of Waterloo (expected: 2017)  
*Thesis title:* Viscosity Solutions and Numerical Analysis of Impulse Control Problems  
*Supervisor:* [George Labahn](#)

## Education

- 2013 MMATH, University of Waterloo  
*Thesis title:* [Hedging Costs for Variable Annuities](#)  
*Supervisor:* [Peter Forsyth](#)
- 2011 BSc, Simon Fraser University (Major Computing Science; Minor Mathematics)

## Selected Publications and preprints

- [1] P. Azimzadeh, E. Bayraktar, and G. Labahn. “Convergence of approximation schemes for weakly nonlocal second order equations”. In: *arXiv preprint arXiv:1705.02922* (2017). URL: <https://arxiv.org/abs/1705.02922>.
- [2] P. Azimzadeh. “A fast and stable test to check if a weakly diagonally dominant matrix is an M-matrix”. In: *arXiv preprint arXiv:1701.06951* (2017). URL: <http://arxiv.org/abs/1701.06951>.
- [3] P. Azimzadeh. “A rigorous approach to the value of zero-sum stochastic differential games with impulses”. In: *arXiv preprint arXiv:1609.09092* (2016). To appear in *Appl. Math. and Optim.* (under revised title). URL: <http://arxiv.org/abs/1609.09092>.
- [4] P. Azimzadeh and P. A. Forsyth. “Weakly chained matrices, policy iteration, and impulse control”. In: *SIAM J. Numer. Anal.* 54.3 (2016), pp. 1341–1364. ISSN: 0036-1429. URL: <http://dx.doi.org/10.1137/15M1043431>.
- [5] P. Azimzadeh and T. Carpenter. “Fast Engset computation”. In: *Oper. Res. Lett.* 44.3 (2016), pp. 313–318. ISSN: 0167-6377. URL: <http://dx.doi.org/10.1016/j.orl.2016.02.011>.
- [6] P. Azimzadeh and P. A. Forsyth. “The existence of optimal bang-bang controls for GMxB contracts”. In: *SIAM J. Financial Math.* 6.1 (2015), pp. 117–139. ISSN: 1945-497X. URL: <http://dx.doi.org/10.1137/140953885>.

- [7] P. Azimzadeh, P. A. Forsyth, and K. R. Vetzal. “Hedging costs for variable annuities under regime-switching”. In: *Hidden Markov models in finance*. Vol. 209. Internat. Ser. Oper. Res. Management Sci. Springer, New York, 2014, pp. 133–166. URL: [http://dx.doi.org/10.1007/978-1-4899-7442-6\\_6](http://dx.doi.org/10.1007/978-1-4899-7442-6_6).
- [8] Parsiad Azimzadeh. “Hedging costs for variable annuities”. MA thesis. University of Waterloo, 2013. URL: <https://uwspace.uwaterloo.ca/handle/10012/7829>.
- [9] T. Carpenter, S. Singla, P. Azimzadeh, and S. Keshav. “The impact of electricity pricing schemes on storage adoption in Ontario”. In: *Proceedings of the 3rd International Conference on Future Energy Systems: Where Energy, Computing and Communication Meet*. ACM, 2012, p. 18. URL: <http://dx.doi.org/10.1145/2208828.2208846>.
- [10] M. J. Best, S. Mottishaw, C. Mustard, M. Roth, P. Azimzadeh, A. Fedorova, and A. Brownsword. “Schedule data, not code”. In: *Proceedings of the 3rd USENIX Workshop on Hot Topics on Parallelism (HotPar’11)*. 2011. URL: [https://www.usenix.org/events/hotpar11/tech/final\\_files/Best.pdf](https://www.usenix.org/events/hotpar11/tech/final_files/Best.pdf).

## Code

2015-Now

Maintainer of [GNU Octave financial package](#) (language: GNU Octave)

A package for Monte Carlo simulation, options pricing routines, financial manipulation, plotting functions, and additional date manipulation tools.

My most ambitious contribution to the package was a robust Monte Carlo simulation framework. The package has enjoyed approximately 5,000 downloads in 2016.

### Other

Other code projects can be found on [GitHub](#).

## Experience

2010-2011

NSERC undergraduate research at Simon Fraser University

Multi-threaded and transactional memory research under the supervision of Professor [Alexandra Fedorova](#).

2008

Accenture

Web developer (summer semester)

## Awards

2015-2017

David R. Cheriton Graduate Scholarship

20,000 CAD

2014

Meloche Monnex Graduate Scholarship in Quantitative Finance and Insurance

5,000 CAD

2014

OGS (declined)

15,000 CAD

2013-2015

David R. Cheriton Graduate Scholarship

20,000 CAD

2012

OGS

15,000 CAD

2012

University of Waterloo President’s Scholarship

10,000 CAD

2012

QEII-GSST

5,000 CAD

2011

NSERC USRA

4,500 CAD

## Teaching

2011-Now

Teaching assistant, University of Waterloo for the following courses:\*

[CS 245 Logic and Computation](#)

CS 335 Computational Methods in Business and Finance

CS 370 Numerical Computation

CS 476 Numeric Computation for Financial Modeling

\*for each course, a list of semesters during which teaching assistantships took place can be provided upon request

## Skill highlights

Numerical Methods (Linear Algebra, PDEs, Monte Carlo Simulations, etc.)

Mathematical Analysis (Real Analysis, Probability, Viscosity Solutions of PDEs, etc.)

Multi-threaded Programming

Algorithms and Data Structures

Web Development and Databases

## Technology

*Operating systems:* POSIX (Linux, BSD, OS X, etc.) and Windows NT

*Languages:* C++11, MATLAB/GNU Octave, Java, Python, SQL, etc.

*Revisioning:* Git, Mercurial, SVN, etc.

## Selected Talks

- [1] Parsiad Azimzadeh. *Convergence of approximation schemes for weakly nonlocal second order equations*. SONAD and AMMCS-CAIMS Congress. 2017. URL: [http://parsiad.ca/talks/convergence\\_of\\_approximation\\_schemes\\_for\\_weakly\\_nonlocal\\_second\\_order\\_equations.pdf](http://parsiad.ca/talks/convergence_of_approximation_schemes_for_weakly_nonlocal_second_order_equations.pdf).
- [2] Parsiad Azimzadeh. *Why viscosity solutions have nothing to do with viscosity*. University of Waterloo Math Faculty Number Nosh. 2016. URL: [http://parsiad.ca/talks/why\\_viscosity\\_solutions\\_have\\_nothing\\_to\\_do\\_with\\_viscosity.pdf](http://parsiad.ca/talks/why_viscosity_solutions_have_nothing_to_do_with_viscosity.pdf).
- [3] Parsiad Azimzadeh. *Weakly chained matrices, policy iteration, and impulse control*. SONAD. 2016. URL: [http://parsiad.ca/talks/weakly\\_chained\\_matrices\\_policy\\_iteration\\_and\\_impulse\\_control.pdf](http://parsiad.ca/talks/weakly_chained_matrices_policy_iteration_and_impulse_control.pdf).
- [4] Parsiad Azimzadeh. *Numerical combined stochastic and impulse control*. AMMCS-CAIMS Congress. 2015. URL: [http://parsiad.ca/talks/numerical\\_combined\\_stochastic\\_and\\_optimal\\_control.pdf](http://parsiad.ca/talks/numerical_combined_stochastic_and_optimal_control.pdf).

## Selected Posters

- [1] Parsiad Azimzadeh. *The value of a zero-sum stochastic differential game involving impulse control*. SIAM Conference on Financial Mathematics and Engineering. 2016. URL: [http://parsiad.ca/posters/the\\_value\\_of\\_a\\_zero\\_sum\\_stochastic\\_differential\\_game\\_involving\\_impulse\\_control.pdf](http://parsiad.ca/posters/the_value_of_a_zero_sum_stochastic_differential_game_involving_impulse_control.pdf).
- [2] Parsiad Azimzadeh. *Weakly chained matrices, policy iteration, and impulse control*. Cherriton Research Symposium. 2016. URL: [http://parsiad.ca/posters/weakly\\_chained\\_matrices\\_policy\\_iteration\\_and\\_impulse\\_control.pdf](http://parsiad.ca/posters/weakly_chained_matrices_policy_iteration_and_impulse_control.pdf).

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<http://parsiad.ca/CV>