

# CARMELIZA LUNA NAVASCA

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## EDUCATION

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### University of California at Davis

PhD in Mathematics, 2002

Advisor: Arthur J. Krener

Thesis: Local Solutions of the Dynamic Programming Equations and the Hamilton-Jacobi-Bellman PDE

### University of California at Berkeley

BA in Mathematics, 1997

## EMPLOYMENT

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### Clarkson University, Department of Mathematics, Potsdam, NY

*Assistant Professor* 2008 - present

### RIT, Department of Mathematics, Rochester, NY

*Assistant Professor* 2007 - 2008

### Centre National de la Recherche Scientifique, Signal and Image Processing Laboratory (ETIS), Cergy-Pontoise, FRANCE

*Postdoctoral Fellow* 2006 - 2007

Mentor: Lieven De Lathauwer

### University of California at Los Angeles, Department of Mathematics, Los Angeles, CA

*NSF-VIGRE Assistant Professor* 2003 - 2006

Mentor: Stanley J. Osher

### University of Waterloo, Department of Applied Mathematics, Waterloo, Ontario, CANADA

*Postdoctoral Fellow* 2002 - 2003

Mentor: Kirsten A. Morris

### University of California at Davis, Department of Mathematics, Davis, CA

*Research and Teaching Assistant* 1997 - 2002

### NASA Ames Research Center, Mountain View, CA

*Summer Research Intern* 1992 - 1996

## ACADEMIC VISITS

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14-15 July 2008	Naval Postgraduate School, Monterey, California
9-10 June 2008	Sandia National Laboratory, Livermore, California
22-25 Oct 2008	IPAM, UCLA, Los Angeles, California
30 July - 10 Aug 2007	CeVis, Universität Bremen, Germany
14-17 Aug 2007	RICAM, Johannes Kepler Universität, Linz, Austria
4-15 June 2007	IMA, University of Minnesota, Minneapolis, Minnesota
28-31 Aug 2006	INRIA Rhône Alpes, Grenoble, France

## ACADEMIC HONORS

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2006 – 2007	CNRS Postdoctoral Fellowship, France
2003 – 2006	NSF-VIGRE Postdoctoral Fellowship, UCLA
2002	Alice Leung Mathematical Prize, UC Davis Math Department
2001	Best Poster Prize, Tapia Symposium 2001
2000 – 2001	Research Mentorship Fellowship, UC Davis
1999 & 2002	Graduate Assistance in Areas of National Need Fellowship, UC Davis Math Department
1992 – 1996	NASA Junior Fellowship, NASA Ames Research Center, Mountain View, California
1992	Robert Moretti Scholarship, UC Berkeley
1991 – 1992	NASA SHARP Apprenticeship, NASA Ames Research Center, Mountain View, California

## PUBLICATIONS

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- (with Lieven De Lathauwer) *Tensor block term decomposition with Hankel structure*, in preparation.
- (with Lieven De Lathauwer and Stefan Kindermann), *Regularization methods for tensor decomposition*, in preparation.
- (with Arthur J. Krener), *Patchy cost and feedback for the HJB PDE*, to appear in the Proceedings of the Mathematical Theory of Networks and Systems, Blacksburg, Virginia, July 2008.
- (with Lieven De Lathauwer and Stefan Kindermann), *Swamp reducing technique for tensor decomposition*, to appear in the Proceedings of the European Signal Processing Conference, Lausanne, Switzerland, Aug 2008.
- (with Lieven De Lathauwer), *Decomposition of higher-order tensor in block term using convex optimization*, submitted.
- (with Kirsten Morris), *Approximation of low rank solutions for linear quadratic feedback for partial differential equations*, to appear in Computational Optimization and Applications, 2008.
- *Local stable manifold for the bidirectional discrete-time dynamics*, submitted to SICON.
- (with Arthur J. Krener), *Patchy Solution of the Hamilton-Jacobi-Bellman PDE*, in Chiuso, Ferrante and Pinzoni, eds, Modeling, Estimation and Control, Lecture Notes in Control and Information Sciences, 364, Springer, Berlin, pp. 251-270, 2007.
- (with Ani Asatryan, Vatche Attarian, Yuan F. Huang, Kevin K. Leung, Abhijeet Joshi, Vlad Voroninski, Meghdi Aboulian, Krystle McBride), *Implementations of control laws of motion camouflage in a pursuit-evasion system*, Proceedings of the IFIP Conference on System Modeling and Optimization, Krakow, Poland 2007.
- (with Kirsten Morris), *Iterative solution of algebraic Riccati equations for damped system*, Proceedings of the IEEE Conference on Decision and Control, San Diego 2006.
- (with Stefan Kindermann), *Optimal control as a regularization method for ill-posed problems*, J. Inverse and Ill-posed Problems, 14 (7), pp. 685-703, 2006.
- (with Chiu-Yen Kao and Stanley J. Osher), *The Lax-Friedrichs sweeping method for optimal control problem in continuous and hybrid dynamics*, J. Nonlinear Analysis 63 (5-7), pp. 1561-1572, 2005.
- (with Kirsten Morris), *Iterative solution of algebraic Riccati equations using a modified Newton-Kleinman method*, Proceedings of Mathematical Theory of Networks and Systems, Brussels, Belgium 2004.
- (with Kirsten Morris), *Solution of algebraic Riccati equations arising in control of partial differential equations*, in P. Zolesio and J. Cagnol, eds, Control of Distributed Parameter System, Lecture Notes in Pure and Appl. Math., vol . 240, CRC Press, Boca Raton, 259-281, 2004.
- (with Alan King et al.), *Web hosting service level agreements*, IBM Research Report, RC22301, (2002), Also in Proceedings of the 5th Pacific Institute for Mathematical Sciences 2001 Industrial Problem Solving Workshop, University of Washington, Seattle, 2001.
- (with Arthur J. Krener), *Solution of Hamilton-Jacobi-Bellman equations*, Proceedings of the IEEE Conference on Decision and Control, Sydney, 570-574, 2000.

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**PRESENTATIONS**

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**Invited Seminars and Colloquia**

- Applied Math Colloquium, Naval Postgraduate School, Monterey, California, July 2008 (forthcoming)
- Mathematics, Informatics, and Decision Sciences Department, Sandia National Lab, Livermore, California, June 2008 (forthcoming)
- Math Colloquium, San José State University, California, March 2008.
- Math Colloquium, Clarkson University, Potsdam, New York, February 2008.
- Math Colloquium, Georgetown University, Washington DC, January 2008.
- Center of Complex Systems and Visualization, Department of Mathematics and Computer Science, Universität Bremen, Germany, August 2007.
- Math Colloquium, Rochester Institute of Technology, New York, June 2007.
- Applied Math Colloquium, University of Waterloo, Canada, June 2007.
- Institute of Industrial Technology and Management, Control Systems and Engineering, Rijksuniversiteit Groningen, The Netherlands, June 2007.
- Signal and Image Processing Lab (ETIS), CNRS, Ecole National Supérieure de l'Electronique et de ses Applications, Cergy-Pontoise, France, September 2006.
- Applied Math Colloquium, University of Maryland Baltimore County, February 2006.
- Math Colloquium, Western Washington University, Bellingham, January 2006.
- Center for Systems, Dynamics, and Control, School of Engineering and Applied Sciences, University of California, Los Angeles, November 2003.
- Applied Math Colloquium, University of Southern California, Los Angeles, November 2003.
- Applied Math Colloquium, University of California, Los Angeles, October 2003.
- Computational and Applied Math Colloquium, Rice University, Houston, February 2003.
- Applied Math Colloquium, University of Waterloo, Ontario, Canada, March 2002.
- Center for Control Engineering and Computation, University of California, Santa Barbara, November 2001.

**Conferences, Workshops, etc.**

- 16th European Signal Processing Conference, Lausanne, Switzerland, Aug 2008. (forthcoming)
- Mathematical Theory of Networks and Systems, Blacksburg, Virginia, July 2008. (invited, forthcoming)
- Applied and Computational Harmonic Analysis, 5th World Congress of Nonlinear Analysts, Orlando, Florida, July 2008 (invited)
- 3rd Biennial Regional Meeting on Nonlinear Control and its Applications Meeting, Waterloo, Ontario, Canada, May 2008. (invited)
- International Conference of Modeling, Estimation and Control, *in honor of Giorgio Picci's 65th Birthday*, Venice, Italy, October 2007.
- 23rd IFIP Conference on System Modeling and Optimization, Krakow, Poland, July 2007. (contributed)
- 7th SIAM Conference on Control and Its Applications, San Francisco, California, June 2007. (invited)
- 45th IEEE Conference on Decision and Control, San Diego, California, December 2006. (invited)
- 22nd IFIP Conference on System Modeling and Optimization, Turin, Italy, July 2005. (contributed)
- 6th SIAM Conference on Control and Its Applications, New Orleans, Louisiana, July 2005. (contributed)
- 4th Annual Systems and Control Symposium, School of Engineering and Applied Sciences, University of California, Los Angeles, May 2005. (invited)
- 10th Southern California Nonlinear Control Workshop, University of California, San Diego, May 2005. (invited)
- Graduate Student Outreach Seminar, University of California, Los Angeles, May 2005.
- Coupled Problems, Processes, and Phenomena: Modelling, Control, and Analysis, 4th World Congress of Nonlinear Analysts, Orlando, Florida, June 2004 (contributed)
- 21st IFIP Conference on System Modelling and Optimization, INRIA, Sophia Antipolis, France, July 2003. (invited)
- GO++ Winter School on Numerical Methods for HJ/HJB Problems, INRIA, Rocquencourt, France, December 2002. (contributed)

- Symposium on New Trends in Nonlinear Dynamics and Control and Their Application, *in celebration of Arthur J. Krener's 60th Birthday*, Monterey, California, October 2002.
- Richard Tapia Symposium, Houston, Texas, October 2001. (invited)
- 5th PIMS Industrial Problem Solving Workshop, University of Washington, Seattle, June 2001.
- 2001 SIAM Annual Meeting, San Diego, California, July 2001. (contributed)

## TECHNICAL and LANGUAGE SKILLS

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- Computer Languages: C/C++, Fortran, Matlab, Maple, Mathematica
- Platforms: Mac OS, Linux, Windows
- Languages: English, French, Spanish, Tagalog

## PROFESSIONAL SERVICES

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- Co-organizer: Minisymposia on "Optimization in Biomedical Applications," SIAM Conference on Optimization, Boston, May 10 - 13 2008.
- Co-organizer: Minisymposium on "Partial Differential Equations in Control Theory," SIAM Conference on Control and Its Application, San Francisco, June 29 - July 1st 2007.
- Referee Work: Proceedings of the European Signal Processing Conference, Proceedings of the American Control Conference, Proceedings IEEE Conference of Control and Decision, Proceedings of European Control Conference, IEEE Transactions on Control Systems Technology.

## TEACHING ACTIVITIES

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- Finite Element Method (Graduate level). Clarkson University (Fall 2008)
- Mathematical Control Theory (Graduate level). UCLA (Spring 2005)
- Advanced Numerical Analysis (Graduate level). UCLA (Fall 2004)
- Optimization. UCLA (Spring 2006)
- Applied Numerical Methods. UCLA (Fall 2003, Winter 2004, Winter 2005)
- Mathematical Modeling. UCLA (Spring 2004, Winter 2006)
- Differential Equations. UCLA (Fall 2005) and UC Davis (Spring 1999)
- Vector Calculus. RIT (Winter 2008)
- Matrices and Boundary Value Problems. RIT (Spring 2008)
- Calculus. RIT (Fall 2007), University of Waterloo (Fall 2002), and UC Davis (Summer 1999)

## STUDENT RESEARCH SUPERVISING

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- Hanne Tiesler, Diploma in Mathematics (Dipl.Math.), Universität Bremen, Germany, 2007  
PhD Thesis: Parameter identification in radio-frequency ablation of liver tumors  
Current Position: Graduate student in Mathematics, Universität Bremen, Germany.

- Abdoulaye Bagayoko, M.S. in Electrical Engineering, Université de Cergy-Pontoise and Ecole Nationale Supérieure de l'Electronique et de ses Applications, France, 2007  
Master's Thesis: Tensor decomposition in the presence of non-Gaussian noise  
Current Position: Engineer at France Telecom
- Meghdi Aboulian, B.S. in Mathematics, UCLA, 2007  
Topic: Mathematical modeling of motion camouflage (NSF-REU Project)  
Current Position: Graduate student in Mathematics Department, University of Southern California
- Ani Asatryan, B.S. in Mathematics, UCLA, 2007  
Topic: Analysis of pursuit-evasion system (NSF-REU Project)
- Vatche Attarian  
Topic: Numerical methods for solving pursuit-evasion system (NSF-REU Project)  
Current Position: Undergraduate student in Mathematics and Engineering, Harvey Mudd College, expected 2009
- Krystle McBride, B.S. in Mathematics, Harvey Mudd College, 2007  
Topic: Dynamic coordinated control laws in multiple agent models (NSF-REU Project)
- Hai Nguyen, B.S. in Mathematics, UCLA, 2005  
Topic: Level set methods  
Current Position: Graduate student in Statistics Department, UCLA
- Celeste Velasquez, B.S. in Mathematics, UCLA, 2005  
Topic: Modeling artificial fishes  
Current Position: Engineer at Boeing Company