

# Martine Ceberio

Professor of Computer Science

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## Education

2003 – **Ph.D. in Computer Science**, , *University of Nantes, France*

“Contributions to numerical under and over-constrained CSPs: Symbolic Tools and Flexible Constraints”. Advisors: Frédéric Benhamou and Laurent Granvilliers

1999 – **D.E.A. in Computer Science**, , *University of Nantes, France*. (D.E.A.: Diplôme d’Études Approfondies / Degree of Post-Graduate Advanced Studies)

1995 – **B.S. in Mathematics**, , *University of Poitiers, France*

## Employment

2019 – Present – **Professor of Computer Science**, *University of Texas at El Paso*

June 2018 – **Faculty in Residence**, *Google, Mountain View, CA*

September 2017 – **Visiting Professor**, *University of Perugia, Italy*

2012 – 2019 – **Associate Professor of Computer Science**, *University of Texas at El Paso*

2004 – 2012 – **Assistant Professor of Computer Science**, *University of Texas at El Paso*

2003 – 2004 – **Visiting Asst Professor of Computer Science**, *University of Texas at El Paso*

1999 – 2003 – **Student instructor and Research Assistant in Computer Science** *University of Nantes, France*

## Honors and Awards

1. **Provost Fellow for Diversity, Equity, and Inclusion:** since fall 2022
  2. **Endowed AT&T Information Technology Fellow:** since fall 2021
  3. Member of the **University of Texas System Academy of Distinguished Teachers**, since spring 2020.
  4. Recipient of the **2019 University of Texas Regents' Outstanding Teaching Award**.
  5. **Faculty Marshall of the College of Engineering** – Spring 2012 & 2019 Commencements
  6. **UTEP EDGE Faculty Fellow**, January 2018 – Present  
The UTEP EDGE program is grounded on recognizing that students enter UTEP with many talents, great strengths, and big dreams. The UTEP Edge develops these assets through a variety of high-impact experiences made possible by the expertise and dedication of our faculty, staff, alumni, and community partners.
  7. **Invited Speaker:**
    - **Invited Plenary Speaker** at the International Conference IFSA-EUSFLAT, the 19th World Congress of the International Fuzzy Systems Association, and The 12th Conference of the European Society for Fuzzy Logic and Technology, in Bratislava, September 19-24, 2021.
    - **Invited Speaker** at the MARS Initiative Seminar Series – Pacific Northwest National Lab (PNNL), July 2020. Hosted by Samrat Chatterjee.
    - **Invited Plenary Speaker** at the 2020 International Workshop on Engineering Applications (virtually held from Bogota, COlombia); at the 17th International Symposium on Scientific Computing, Computer Arithmetics and Verified Numerics, Sweden, September 2016.
  8. Faculty Co-author of Outstanding Paper Award. Joint Annual Conference of the North American Fuzzy Information processing Society NAFIPS'2015 and 5th World Conference on Soft Computing, August 2015
  9. **NSF CAREER** Recipient 2009
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## Publications since 2012

### □ Chapters in Scholarly Books and Monographs

- Ch1 Jonatan Contreras, Martine Ceberio, Olga Kosheleva, Vladik Kreinovich, and Nguyen Hoang Phuong, “Why Rectified Linear Neurons: Two Convexity-Related Explanations”, In: **“Biomedical and Other Applications of Soft Computing”**, Nguyen Hoang Phuong and Vladik Kreinovich (eds.), Springer, Cham, Switzerland, 2023, to appear.

- Ch2 Robles, S.\*, Ceberio, M., Kreinovich, V., “Why Model Order Reduction”, In: **“Decision Making under Uncertainty and Constraints: A Why-Book”**, Martine Ceberio and Vladik Kreinovich (eds.), Springer, Cham, Switzerland, 2022, to appear.
- Ch3 Contreras, J.\*, Zapata, F., Kosheleva, O., Kreinovich, K., and Ceberio, M., ““Negative” Results – When the Measured Quantity Is Outside the Sensor’s Range – Can Help Data Processing”, In: **Integrating AI and Visualisation for Visual Knowledge Discovery**, Boris Kovalerchuk, Kawa Nazemi, Razvan Andonie, Nuno Datia, and Ebad Banissi (eds.), Springer, Cham, Switzerland, 2022, to appear.
- Ch4 Ayub, C.\*, Ceberio, M. C., Kreinovich, V. Y., (2020). How Quantum Computing Can Help With (Continuous) Optimization. In: **Decision Making under Constraints**. In Martine Ceberio and Vladik Kreinovich (Ed.), (pp. 7-14). Springer.
- Ch5 Ceberio, M. C., Kreinovich, V. Y., (2020). Quantum Computing as a Particular Case of Computing With Tensors. In: **Decision Making under Constraints**. In Martine Ceberio and Vladik Kreinovich (Ed.),. Springer.
- Ch6 Ceberio, M. C., Kosheleva, O. M., Kreinovich, V. Y., (2020). Italian Folk Multiplication Algorithm Is Indeed Better: It Is More Parallelizable. In: **Decision Making under Constraints**. In Martine Ceberio and Vladik Kreinovich (Ed.), (pp. 59-64). Springer.
- Ch7 Ceberio, M. C., Kosheleva, O. M., Kreinovich, V. Y., (2020). Reverse Mathematics Is Computable for Interval Computations. In: **Decision Making under Constraints**. In Martine Ceberio and Vladik Kreinovich (Ed.), (pp. 65-70). Springer.
- Ch8 Valera, L.\*, Ceberio, M. C., Kreinovich, V. Y., (2020). Why Burgers Equation: Symmetry-Based Approach. In: **Decision Making under Constraints**. In Martine Ceberio and Vladik Kreinovich (Ed.), (pp. 211-216). Springer.
- Ch9 Kosheleva, O. M., Ceberio, M. C., Kreinovich, V. Y., (2020). Attraction-Repulsion Forces Between Biological Cells: A Theoretical Explanation of Empirical Formulas. In: **Decision Making under Constraints**. In Martine Ceberio and Vladik Kreinovich (Ed.), (pp. 139-144). Springer.
- Ch10 Garcia Contreras, A.\*, Ceberio, M. C., Kreinovich, V. Y., (2020). Plans Are Worthless but Planning Is Everything: A Theoretical Explanation of Eisenhower’s Observation. In: **Decision Making under Constraints**. In Martine Ceberio and Vladik Kreinovich (Ed.), (pp. 93-98). Springer.
- Ch11 Garcia Contreras, A.\*, Ceberio, M. C., Kreinovich, V. Y., (2020). Why Convex Optimization Is Ubiquitous and Why Pessimism Is Widely Spread. In: **Decision Making under Constraints**. In Martine Ceberio and Vladik Kreinovich (Ed.), (pp. 99-104). Springer.
- Ch12 Baral, C., Ceberio, M. C., Kreinovich, V. Y., (2020). How Neural Networks (NN) Can (Hopefully) Learn Faster by Taking Into Account Known Constraints. In: **Decision Making under Constraints**. In Martine Ceberio and Vladik Kreinovich (Ed.), (pp. 15-20). Springer.
- Ch13 Kosheleva, O. M., Ceberio, M. C., Kreinovich, V. Y., (2020). When We Know the Number of Local Maxima, Then We Can Compute All of Them. In: **Decision Making under Constraints**. In Martine Ceberio and Vladik Kreinovich (Ed.). Springer.
- Ch14 Martine Ceberio, Olga Kosheleva, and Vladik Kreinovich, “Optimizing  $\text{pred}(25)$  Is NP-Hard”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making: Theory and Applications**, Springer Verlag, Berlin, Heidelberg, 2018, pp. 33-38.

- Ch15 Martine Ceberio, Olga Kosheleva, and Vladik Kreinovich, “Constraint Approach to Multi-Objective Optimization”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making: Theory and Applications**, Springer Verlag, Berlin, Heidelberg, 2018, pp. 21-26.
- Ch16 Martine Ceberio, Olga Kosheleva, and Vladik Kreinovich, “From Global to Local Constraints: A Constructive Version of Bloch’s Principle”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making: Theory and Applications**, Springer Verlag, Berlin, Heidelberg, 2018, pp. 27-32.
- Ch17 Martine Ceberio, Olga Kosheleva, and Vladik Kreinovich, “Range Estimation under Constraints is Computable Unless There Is a Discontinuity”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making: Theory and Applications**, Springer Verlag, Berlin, Heidelberg, 2018, pp. 39-44.
- Ch18 Juan Carlos Figueroa Garcia, Martine Ceberio, and Vladik Kreinovich, “Algebraic Product is the Only t-Norm for Which Optimization Under Fuzzy Constraints is Scale-Invariant”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making: Theory and Applications**, Springer Verlag, Berlin, Heidelberg, 2018, pp. 51-54.
- Ch19 Martine Ceberio, Olga Kosheleva, and Vladik Kreinovich, “Towards a Physically Meaningful Definition of Computable Discontinuous and Multi-Valued Functions (Constraints)”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making: Theory and Applications**, Springer Verlag, Berlin, Heidelberg, 2018, pp. 45-50.
- Ch20 Olga Kosheleva, Martine Ceberio, and Vladik Kreinovich, “Peak-End Rule: A Utility-Based Explanation”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making: Theory and Applications**, Springer Verlag, Berlin, Heidelberg, 2018, pp. 101-106.
- Ch21 Stefano Bistarelli, Martine Ceberio, Joel Henderson, Francisco Santini, Luciana Garbayo, “Abstract Argumentation Frameworks to Promote Fairness and Rationality in Multi-Experts Multi-Criteria Decision Making”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making: Theory and Applications**, Springer Verlag, Berlin, Heidelberg, pp. 7–20, 2017.
- Ch22 Martine Ceberio, Olga Kosheleva, and Vladik Kreinovich, “Simplicity Is Worse Than Theft: A Constraint-Based Explanation of a Seemingly Counter-Intuitive Russian Saying”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making**, Springer Verlag, Berlin, Heidelberg, 2014, pp. 9-14.
- Ch23 Martine Ceberio and Vladik Kreinovich, “Continuous If-Then Statements Are Computable”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making**, Springer Verlag, Berlin, Heidelberg, 2014, pp. 15-18.
- Ch24 Aline Jaimes, Craig Tweedie, Tanja Magoc, Vladik Kreinovich, and Martine Ceberio, “Selecting the Best Location for a Meteorological Tower: A Case Study of Multi-Objective Constraint Optimization”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making**, Springer Verlag, Berlin, Heidelberg, 2014, pp. 61-66.
- Ch25 Olga Kosheleva, Martine Ceberio, and Vladik Kreinovich, “Why Tensors?”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making**, Springer Verlag, Berlin, Heidelberg, 2014, pp. 75-78.

- Ch26 Olga Kosheleva, Martine Ceberio, and Vladik Kreinovich, “Adding Constraints – A (Seemingly Counterintuitive but) Useful Heuristic in Solving Difficult Problems”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making**, Springer Verlag, Berlin, Heidelberg, 2014, pp. 79-84.
- Ch27 Vladik Kreinovich, Juan Ferret, and Martine Ceberio, “Constraint-Related Reinterpretation of Fundamental Physical Equations Can Serve as a Built-In Regularization” In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making**, Springer Verlag, Berlin, Heidelberg, 2014, pp. 91-96.
- Ch28 Paden Portillo\*, Martine Ceberio, and Vladik Kreinovich, “Towards an Efficient Bisection of Ellipsoids”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making**, Springer Verlag, Berlin, Heidelberg, 2014, pp. 137-142.
- Ch29 Uram Anibal Sosa Aguirre, Martine Ceberio, and Vladik Kreinovich, “Why Curvature in L-Curve: Combining Soft Constraints”, In: Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making**, Springer Verlag, Berlin, Heidelberg, 2014, pp. 175-180.
- Ch30 Christian Servin, Martine Ceberio, Aline Jaimes, Craig Tweedie, and Vladik Kreinovich, “How to Describe and Propagate Uncertainty When Processing Time Series: Metrological and Computational Challenges, with Potential Applications to Environmental Studies”, In: Shyi-Ming Chen and Witold Pedrycz (eds.), **Time Series Analysis, Modeling and Applications: A Computational Intelligence Perspective**, Springer Verlag, 2013, pp. 279-299.

□ **Refereed Journal Articles, published or accepted in Final Form**

- J1 Contreras, J.\*, Ceberio, M., Kosheleva, O., Kreinovich, K., “Why neural networks in the first place: a theoretical explanation”, **Journal of Intelligent and Fuzzy Systems**, 2022, to appear.
- J2 Contreras, J.\*, Ceberio, M., Kosheleva, O., Kreinovich, K., “Why Gradient Descent – Not the Best Optimization Technique – Works Best in Neural Networks: Qualitative Explanation”, **Journal of Combinatorics, Information, and System Sciences JCISS**, 2021, Vol. 45, to appear.
- J3 Garcia Contreras, A.\*, Ceberio, M. C., Kreinovich, V. Y., (2019). Scale Invariance Explains Quadratic Damping: Case of Insect Wings Flapping. **Journal of Uncertain Systems**, 13(3), 193-196.
- J4 Alvarez, R.\*, Sims, N.\*, Servin, C., Ceberio, M. C., Kreinovich, V. Y., (2020). “If Space-Time Is Discrete, It Could Be Possible to Solve NP-Complete Problems in Polynomial Time”. **International Journal of Unconventional Computing**, 15(3), 193-218.
- J5 Ceberio, M. C., Kreinovich, V. Y., (2018). “How to Store Tensors in Computer Memory: An Observation”. **Mathematical Structures and Modeling**, 46, 107-117.
- J6 Ceberio, M. C., Kreinovich, V. Y., (2018). “A Modification of Backpropagation Enables Neural Networks to Learn Preferences. **Journal of Uncertain Systems**”, 12(3), 180-189.
- J7 Jaulin, L., Ceberio, M. C., Kosheleva, O. M., Kreinovich, V. Y., (2018). “How to Efficiently Compute Ranges Over a Difference Between Boxes, With Applications to Underwater Localization”. **Journal of Uncertain Systems**, 12(3), 190-199.

- J8 Leobardo Valera, Angel Garcia, Jesus Padilla\*, and Martine Ceberio, “Towards Predicting the Behavior of Large Dynamic Systems, using Reduced-Order Modeling and Interval Computations”. **Journal of Granular Computing**, December 2017.
- J9 Martine Ceberio and Vladik Kreinovich, “Constraint Problems: Computability Is Equivalent to Continuity”, **International Journal of Intelligent Technologies and Applied Statistics (IJITAS)**, 2017, Vol.10, No.2, pp.21-40.
- J10 Martine Ceberio and Vladik Kreinovich, “A Modification of Backpropagation Enables Neural Networks to Learn Preferences”, **Journal of Uncertain Systems**, to appear.
- J11 Leobardo Valera and Martine Ceberio, “Model-Order Reduction Using Interval Constraint Solving Techniques”, **Journal of Uncertain Systems**, 2017, Vol. 11, No. 2, pp. 84–103.
- J12 Anthony Welte\*, Luc Jaulin, Martine Ceberio, and Vladik Kreinovich, “Avoiding Fake Boundaries in Set Interval Computing”, **Journal of Uncertain Systems**, 2017, Vol. 11, No. 2, pp. 137-148.
- J13 Anthony Welte\*, Luc Jaulin, Martine Ceberio, and Vladik Kreinovich, “Computability of the Avoidance Set and of the Set-Valued Identification Problem”, **Journal of Uncertain Systems**, 2017, Vol. 11, No. 2, pp. 129-136.
- J14 Vladik Kreinovich, Martine Ceberio, and Quentin Brefort\*, “In category of sets and relations, it is possible to describe functions in purely category terms”, **Eurasian Mathematical Journal**, 2015, Vol. 6, No. 2, pp. 90-94.
- J15 Quentin Brefort\*, Luc Jaulin, Martine Ceberio, and Vladik Kreinovich, “Towards Fast and Reliable Localization of an Underwater Object: An Interval Approach”, **Journal of Uncertain Systems**, 2015, Vol. 9, No. 2, pp. 95-102.
- J16 Karen Villaverde, Olga Kosheleva, Martine Ceberio, “Computations under Time Constraints: Algorithms Developed for Fuzzy Computations can Help”. **Journal of Uncertain Systems**, 26(2), 138-145, 2013.
- J17 Olga Kosheleva, Martine Ceberio, “How Accurately Should We Write on the Board? When Marking Comments on Student Papers?”. **Journal of Uncertain Systems**, 6(2), 89-91, 2013.
- J18 Xiaojing Wang, Martine Ceberio, Shamsnaz Virani, Angel Garcia, and Jeremy Cummins\*. “A Hybrid Algorithm to Extract Fuzzy Measures for Software Quality Assessment”. **Journal of Uncertain Systems**, 2013.
- J19 Vladik Kreinovich, Christelle Jacob\*, Didier Dubois, Janette Cardoso, Martine Ceberio (2012). “Failure Analysis of a Complex System Based on Partial Information about Subsystems, with Potential Applications to Aircraft Maintenance”. **Journal of Applied and Computational Mathematics**, 11(2), 165-179.
- J20 Aline Jaimes, Craig Tweedie, Vladik Kreinovich, and Martine Ceberio, “Scale-Invariant Approach to Multi-Criterion Optimization under Uncertainty, with Applications to Optimal Sensor Placement, in Particular, to Sensor Placement in Environmental Research”, **International Journal of Reliability and Safety**, 2012, Vol. 6, No. 1-3, pp. 188-203.

□ **Refereed Conference Proceedings (peer reviewed)**

- C1 Angel Garcia Contreras, Martine Ceberio, “Comparison of Higher-Order Approximations to Solve Dynamical Systems using Interval Constraint Solving”, Proceedings of

- the **International Workshop on Engineering Applications (WEA'2022)**, Bogota, Colombia, October 2022.
- C2 Martine Ceberio, Olga Kosheleva, and Vladik Kreinovich, "How to Describe Relative Approximation Error? A New Justification for Gustafson's Logarithmic Expression", Proceedings of the **15th International Workshop on Constraint Programming and Decision Making CoProD'2022**, Halifax, Nova Scotia, Canada, May 30, 2022.
- C3 Salvador Robles, Martine Ceberio, and Vladik Kreinovich, "Computing the Range of a Function-of-Few-Linear-Combinations Under Linear Constraints: A Feasible Algorithm", Proceedings of the **15th International Workshop on Constraint Programming and Decision Making CoProD'2022**, Halifax, Nova Scotia, Canada, May 30, 2022.
- C4 Leobardo Valera, Martine Ceberio, and Vladik Kreinovich, "How to Select a Representative Sample for a Family of Functions?", Proceedings of the **15th International Workshop on Constraint Programming and Decision Making CoProD'2022**, Halifax, Nova Scotia, Canada, May 30, 2022.
- C5 Garcia Contreras\*, A. F. and Ceberio, M., (2020). "Solving Dynamical Systems using Windows of Sliding Sub-problems". In the proceedings of **Applied Computer Sciences in Engineering: 8th Workshop on Engineering Applications, WEA 2021**, MedellAn, Colombia, October 6–8, 2021. Pp 13–24.
- C6 A. Garcia Contreras\*, G. Throneberry\*, L. Valera\*, O. Olumoye\*, M. Ceberio, and A. Abdelkefi, "Interval-based solving techniques for large-scale dynamical systems". **ASME 2020 International Design Engineering Technical Conference**.
- C7 Omeiza Olumoye\*, Glen Throneberry\*, Angel Garcia\*, Leobardo Valera\*, Abdessattar Abdelkefi, and Martine Ceberio, (2019). Solving Large Dynamical Systems by Constraint Sampling. Proceedings of the **Workshop on Engineering Applications**, Bogota, Colombia, October 2019.
- C8 Valera, L.\*, Ceberio, M. C., Kreinovich, V. Y., (2019). Derivation of Louisville-Bratu-Gelfand Equation from Shift- or Scale-Invariance. (pp. 813-819). Proceedings of the **World Congress of the International Fuzzy Systems Association and the Annual Conference of the North American Fuzzy Information Processing Society IFSA/NAFIPS'2019**, Lafayette, Louisiana, June 18-22, 2019.
- C9 Galindo, O.\*, Ayub, C.\*, Ceberio, M. C., Kreinovich, V. Y., (2019). Faster Quantum Alternative to Softmax Selection in Deep Learning and Deep Reinforcement Learning. (pp. 814-817). Proceedings of the **2019 IEEE Symposium Series on Computational Intelligence SSCI'2019**, Xiamen, China, December 6-9, 2019.
- C10 Kreinovich, V. Y., Ceberio, M. C., Alvarez, R.\*, (2019). How to Use Quantum Computing to Check Which Inputs Are Relevant: A Proof That Deutsch-Jozsa Algorithm Is, In Effect, the Only Possibility. (pp. 828-832). Proceedings of the **2019 IEEE Symposium Series on Computational Intelligence SSCI'2019**, Xiamen, China, December 6-9, 2019.
- C11 Ceberio, M. C., Kosheleva, O. M., Kreinovich, V. Y., Longpre, L., (2019). Between Dog and Wolf: A Continuous Transition from Fuzzy to Probabilistic Estimates. (pp. 906-910). Proceedings of the **IEEE International Conference on Fuzzy Systems FUZZ-IEEE'2019**, New Orleans, Louisiana, June 23-26, 2019.

- C12 Ceberio, M. C., Kosheleva, O. M., Kreinovich, V. Y., (2019). Can We Improve the Standard Algorithm of Interval Computation by Taking Almost Monotonicity into Account?2. (pp. 767-778). Proceedings of the **World Congress of the International Fuzzy Systems Association and the Annual Conference of the North American Fuzzy Information Processing Society IFSA/NAFIPS'2019**, Lafayette, Louisiana, June 18-22, 2019.
- C13 Ceberio, M. C., Kosheleva, O. M., Longpre, L., Kreinovich, V. Y., (2019). In its usual formulation, fuzzy computation is, in general, NP-hard, but a more realistic formulation can make it feasible. (pp. 412-417). Proceedings of the **IEEE International Conference on Fuzzy Systems FUZZ-IEEE'2019**, New Orleans, Louisiana, June 23-26, 2019.
- C14 G. Throneberry\*, L. Valera\*, D. Furth\*, A. Garcia Contreras\*, M. Ceberio, and A. Abdelkefi, "Interval-based uncertainty quantification techniques for dynamical systems". **ASME 2019 International Design Engineering Technical Conference**.
- C15 Leobardo Valera\*, Angel Garcia\*, Jesus Padilla\*, Martine Ceberio, and Luis Bravo, "Handling Uncertainty in the Finite Element Method Using Interval Constraint Solving Techniques". In the proceedings of the **European Safety and Reliability Conference (ESREL 2019)**, Germany, September 2019.
- C16 Ceberio, M. C., Kosheleva, O. M., Kreinovich, V. Y., (2019). "Can We Improve the Standard Algorithm of Interval Computation by Taking Almost Monotonicity into Account?" Proceedings of the **World Congress of the International Fuzzy Systems Association and the Annual Conference of the North American Fuzzy Information Processing Society IFSA/NAFIPS'2019**, Lafayette, Louisiana, June 18-22, 2019.
- C17 Omeiza Olumoye, Glen Throneberry, Angel Garcia, Leobardo Valera, Abdessattar Abdelkefi, Martine Ceberio. "Solving Large Dynamical Systems by Constraint Sampling". In the proceedings of the **6th International Workshop on Engineering Applications (WEA 2019)**, Colombia, October 16-18, 2019.
- C18 Leobardo Valera, Angel Garcia, Jesus Padilla\*, Martine Ceberio, and Luis Bravo, "Handling Uncertainty in the Finite Element Method Using Interval Constraint Solving Techniques". Proceedings of the **European Safety and Reliability Conference (ESREL 2019)**, Germany, September 2019.
- C19 Martine Ceberio, Olga Kosheleva, Vladik Kreinovich, "Can We Improve the Standard Algorithm of Interval Computation by Taking Almost Monotonicity into Account?" Proceedings of the **World Congress of the International Fuzzy Systems Association and the Annual Conference of the North American Fuzzy Information Processing Society IFSA/NAFIPS'2019**, Lafayette, Louisiana, June 18-22, 2019.
- C20 Horacio Florez, Martine Ceberio, Luis Bravo, Angel Garcia, and Leobardo Valera, "Uncertainty Quantification in Dynamic Systems with Applications to Combustion-related Problems: Analysis, Approaches, and Challenges". **AIAA Propulsion and Energy Forum and Exposition**, Cincinnati, July 2018.
- C21 Leobardo Valera, Angel Garcia, Jesus Padilla\*, Martine Ceberio, and Luis Bravo, "Handling Uncertainty in the Finite Element Method Using Interval Constraint Solving Techniques". Proceedings of the **European Safety and Reliability Conference (ESREL 2018)**, Norway, June 2018.
- C22 Leobardo Valera, Angel Garcia, Afshin Gholamy, and Martine Ceberio, "Towards Predictions of Large Dynamic Systems' Behavior using Reduced-Order Modeling and Interval



- Computations”, Published in the proceedings of the **IEEE International Conference on Systems, Man, and Cybernetics (IEEE SMC 2017)**.
- C23 Leobardo Valera, Angel Garcia, and Martine Ceberio, “On-the-Fly Parameter Identification for Dynamic Systems Control, Using Interval Computations and Reduced-Order Modeling”. To be published in the proceedings of the **North American Fuzzy Information Processing Society Annual Conference 2017 (NAFIPS 2017)**.
- C24 Anthony Welte\*, Luc Jaulin, Martine Ceberio, and Vladik Kreinovich, “Robust Data Processing in the Presence of Uncertainty and Outliers: Case of Localization Problems”, In the Proceedings of the **IEEE Series of Symposia in Computational Intelligence SSCI’2016**, Athens, Greece, December 6-9, 2016.
- C25 Leobardo Valera, Martine Ceberio, “Using Interval Constraint Solving Techniques to Better Understand and Predict Future Behaviors of Dynamic Problems”. In the proceedings of the **North American Fuzzy Information Processing Society Annual Conference**, NAFIPS’2016.
- C26 Angel F. Garcia Contreras, Martine ceberio, “Comparison of Strategies for Solving Global Optimization Problems Using Speculation and Interval Computations”. In the proceedings of the **North American Fuzzy Information Processing Society Annual Conference**, NAFIPS’2016.
- C27 Horacio Florez and Martine Ceberio (2016). “A Novel Mesh Generation Algorithm for Field-Level Coupled Flow and Geomechanics Simulations”. In the Proceedings of **ARMA 16-305, 50th US Rock Mechanics / Geomechanics** Symposium held in Houston, TX.
- C28 Stefano Bistarelli, Martine Ceberio, Joel Henderson, Francesco Santini, “Using Argumentation Frameworks to promote Fairness and Rationality in Multi-Experts Multi-Criteria Decision Making”, in the Proceedings of the **2015 Italian Conference in Theoretical Computer Science**, 2015.
- C29 Esquinca, A., Villa, E. Y., Hampton, E. M., Ceberio, M. C., Wandermurem, L. S.\*, (2015). “Latinas’ resilience and persistence in computer science and engineering: Preliminary findings of a qualitative study examining identity and agency.” Proceedings of the 2015 **Frontiers in Education**.
- C30 Martine Ceberio, Vladik Kreinovich, Hung T. Nguyen, Songsak Sriboonchitta, and Rujira Ouncharoen, “What is the Right Context for an Engineering Problem: Finding Such a Context is NP-Hard”, Proceedings of the **IEEE Symposium Series on Computational Intelligence**, Cape Town, South Africa, December 7-10, 2015, pp. 1615-1620.
- C31 Salem Benferhat, Karim Tabia, Sylvain Lagrue, Vladik Kreinovich, and Martine Ceberio, “On the Normalization of Interval-Based Possibility Distributions”, Proceedings of the **Twenty-Eighth International Florida Artificial Intelligence Research Society Conference FLAIRS’28**, Hollywood, Florida, May 18-20, 2015, pp. 20-25.
- C32 Quentin Brefort\*, Luc Jaulin, Martine Ceberio, and Vladik Kreinovich, “If We Take Into Account that Constraints Are Soft, Then Processing Constraints Becomes Algorithmically Solvable”, Proceedings of the **IEEE Symposium on Computational Intelligence for Engineering Solutions CIES’2014**, Orlando, Florida, December 9-12, 2014, pp. 1-10.
- C33 Martine Ceberio, Leobardo Valera, Olga Kosheleva, and Rodrigo Romero. “Model Reduction: Why It Is Possible and How It Can Potentially Help to Control Swarms of

Unmanned Arial Vehicles”. In the Proceedings of the **North American Fuzzy Information Processing Society Annual Conference**, NAFIPS’2015.

- C34 Brefort, Q.\*, Jaulin, L., Ceberio, M. C., Kreinovich, V. Y., (2014). “If We Take Into Account that Constraints Are Soft, Then Processing Constraints Becomes Algorithmically Solvable”. (pp. 1-10). Proceedings of the **IEEE Symposium on Computational Intelligence for Engineering Solutions**, Orlando, Florida SSCI’2014, December 9-12, 2014.
- C35 Miguel Argaez, Miguel Hernandez, Leticia Velazquez, Martine Ceberio, Reinaldo Sanchez-Arias, “Reduced-Order Modeling Using Orthogonal Wavelets”, in the proceedings of **IFORS Barcelona 2014**.
- C36 Paula A. Gonzalez-Parra, Martine Ceberio, Sunmi Lee, Carlos Castillo-Chavez. “Optimal Control for a Discrete Time Influenza Model”. In the proceedings of the **Second Colombian Congress of Computational Biology and Bioinformatics (CCB-COL 2013)**.
- C37 X. Wang, M. Ceberio, A. Garcia. “Towards Fuzzy Method for Estimating Prediction Accuracy for Discrete Inputs, with Application to Predicting At-Risk Students”. Proceedings of the **Annual Conference of North American Fuzzy Information Processing Society (NAFIPS’2013)**, Alberta, Canada, June 2013.
- C38 X. Wang, M. Ceberio, S. Virani, C. Del Hoyo\*, and L. Gutierrez\*. “Fuzzy measure extraction for software quality assessment as a multi-criteria decision-making problem”. Proceedings of the **2012 International Conference on Software Engineering Research and Practice**, Las Vegas, NV, July 2012.
- C39 X. Wang, A. F. Garcia Contreras, M. Ceberio, C. Del Hoyo\*, L. C. Gutierrez\*, and S. Virani. “Interval-based algorithms to extract fuzzy measures for software quality assessment”. Proceedings of the **Annual Conference of North American Fuzzy Information Processing Society (NAFIPS’2012)**, Berkeley, CA, August 2012.
- C40 Xiaojing Wang, Angel Garcia Contreras, Martine Ceberio, Christian Del Hoyo\*, Luis Gutierrez\*, “A Speculative Algorithm to Extract Fuzzy Measures from Sample Data”, Proceedings of the **2012 annual international conference of Fuzz-IEEE (Fuzz-IEEE’12)**.

□ **Refereed Workshop Proceedings (peer reviewed)**

- W1 Alfredo Vaccaro, Martine Ceberio, Vladik Kreinovich, “What Is the Economically Optimal Way to Guarantee Interval Bounds in Control?” Proceedings of the **8th International Workshop on Reliable Engineering Computing REC’2018**, Liverpool, UK, July 16-18, 2018.
- W2 Joldes, M., Lauter, C., Ceberio, M. C., Kreinovich, V. Y., Kosheleva, O. M., “Why Taylor models and modified Taylor models are empirically successful: a symmetry-based explanation.” Proceedings of the **8th International Workshop on Reliable Engineering Computing REC’2018**, Liverpool, UK, July 16-18, 2018.
- W3 Leobardo Valera, Martine Ceberio, “Model-Order Reduction Using Interval Constraint Solving Techniques.” Proceedings of the **7th International Workshop on Reliable Engineering Computing (REC2016)**. June 15-17, 2016, Ruhr University Bochum, Germany.

W4 Luis Gutierrez\*, Martine Ceberio, Vladik Kreinovich, Rebekah L. Gruver, Marianna Pena, Matthew J. Rister, Abraham Saldana, John Vasquez, Janelle Ybarra, and Salem Benferhat, “From Interval-Valued Probabilities to Interval-Valued Possibilities: Case Studies of Interval Computation under Constraints”, Proceedings of the **6th International Workshop on Reliable Engineering Computing REC’2014**, Chicago, Illinois, May 25-28, 2014.

□ **Conference / Workshop Abstracts (peer-reviewed)**

- A1 Kreinovich, V. Y., Ceberio, M. C., Kosheleva, O. M., (2020). White- and Black-Box Computing and Measurements under Limited Resources: Cloud, High Performance, and Quantum Computing, and Two Case Studies – Robotic Boat and Hierarchical Covid Testing. (pp. 19-20). Abstracts of the **Second International Conference on Artificial Intelligence and Computational Intelligence AICI’2021**, Hanoi, Vietnam, January 15-16, 2021.
- A2 Ayub, C.\*, Ceberio, M. C., Kreinovich, V. Y., (2019). How Quantum Computing Can Help With (Continuous) Optimization.. Abstracts of the **NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Science**, Las Cruces, New Mexico, April 6, 2019.
- A3 Leobardo Valera, Martine Ceberio, and Vladik Kreinovich, “Derivation of Louisville-Bratu-Gelfand Equation from Shift- or Scale-Invariance”, Proceedings of the **12th International Workshop on Constraint Programming and Decision Making CoProd’2019**, Part of the World Congress of the International Fuzzy Systems Association and the Annual Conference of the North American Fuzzy Information Processing Society IFSA/NAFIPS’2019, Lafayette, Louisiana, June 17, 2019, pp. 813-819.
- A4 Martine Ceberio, Olga Kosheleva, and Vladik Kreinovich, “Can We Improve the Standard Algorithm of Interval Computation by Taking Almost Monotonicity into Account?”, Proceedings of the **12th International Workshop on Constraint Programming and Decision Making CoProd’2019**, Part of the World Congress of the International Fuzzy Systems Association and the Annual Conference of the North American Fuzzy Information Processing Society IFSA/NAFIPS’2019, Lafayette, Louisiana, June 17, 2019, pp. 767-778.
- A5 Julio Urenda, Martine Ceberio, “Covering Arrays as Algebraic Varieties”. Proceedings of FQ14, the **14th International Conference on Finite Fields and their Applications**, Vancouver, 2019.
- A6 G. Throneberry, L. Valera, D. Furth, A. Garcia Contreras, M. Ceberio, and A. Abdelkefi, “Interval-based uncertainty quantification techniques for dynamical systems”. Proceedings of **ASME 2019 International Design Engineering Technical Conferences**.
- A7 Martine Ceberio, Olga Kosheleva, Vladik Kreinovich. “Italian Folk Multiplication Algorithm Is Indeed Better: It Is More Parallelizable”. Proceedings of the **11th International Workshop on Constraint Programming and Decision Making CoProd’2018**, Tokyo, Japan, September 10, 2018.
- A8 Martine Ceberio, Olga Kosheleva, Vladik Kreinovich. “Reverse Mathematics Is Computable for Interval Computations”. Proceedings of the **11th International Workshop on Constraint Programming and Decision Making CoProd’2018**, Tokyo, Japan, September 10, 2018.

- A9 Martine Ceberio, Angel Garcia Contreras, Leobardo Valera. “Predicting the Behavior of Dynamic Systems using Reduced-Order Modeling and Interval Computations.” Proceedings of the **2018 Optimization Days**. Montreal, Canada. May 2018.
- A10 Angel F. Garcia Contreras, Martine Ceberio, and Vladik Kreinovich, “Plans Are Worthless but Planning Is Everything: A Theoretical Explanation of Eisenhower’s Observation”, in the Proceedings of the **10th International Workshop on Constraint Programming and Decision Making CoProd’2017**, El Paso, Texas, November 3, 2017, to appear.
- A11 Angel F. Garcia Contreras, Martine Ceberio, and Vladik Kreinovich, “Why Convex Optimization Is Ubiquitous and Why Pessimism Is Widely Spread”, Proceedings of the **10th International Workshop on Constraint Programming and Decision Making CoProd’2017**, El Paso, Texas, November 3, 2017, to appear.
- A12 Olga Kosheleva, Martine Ceberio, and Vladik Kreinovich, “Attraction-Repulsion Forces Between Biological Cells: A Theoretical Explanation of Empirical Formulas”, Proceedings of the **10th International Workshop on Constraint Programming and Decision Making CoProd’2017**, El Paso, Texas, November 3, 2017, to appear.
- A13 Leobardo Valera, Martine Ceberio, “Introduction to Pairwise Testing. Definition and Examples”. **47th Southeastern International Conference on Combinatorics, Graph Theory Computing** (2016).
- A14 Leobardo Valera, Martine Ceberio, “Interval Constraint Solving Techniques and Model-Order Reduction to Enhance the Solution of Dynamic Systems”. **2016 INFORMS Annual Meeting**.
- A15 Chitta Baral, Martine Ceberio, and Vladik Kreinovich, “How Neural Networks (NN) Can (Hopefully) Learn Faster by Taking Into Account Known Constraints”, Proceedings of the Ninth International **Workshop on Constraints Programming and Decision Making CoProd’2016**, Uppsala, Sweden, September 25, 2016.
- A16 Olga Kosheleva, Martine Ceberio, and Vladik Kreinovich, “When We Know the Number of Local Maxima, Then We Can Compute All of Them”, Proceedings of the **Ninth International Workshop on Constraints Programming and Decision Making CoProd’2016**, Uppsala, Sweden, September 25, 2016.
- A17 Martine Ceberio, Vladik Kreinovich, (2016). Preface to the special issue on uncertainty. (vol. 10). Journal of Uncertain Systems.
- A18 Ceberio, M. C., Kreinovich, V. Y., Nguyen, H. T., Sriboonchitta, S., Ouncharoen, R., (2015). “What is the Right Context for an Engineering Problem: Finding Such a Context is NP-Hard”. (pp. 136). Abstracts of the **IEEE Symposium Series on Computational Intelligence**, Cape Town, South Africa, December 7-10, 2015.
- A19 Martine Ceberio, Olga Kosheleva, and Vladik Kreinovich, “Optimizing  $\text{pred}(25)$  Is NP-Hard”, Proceedings of the **Eighth International Workshop on Constraints Programming and Decision Making CoProd’2015**, El Paso, Texas, November 6, 2015.
- A20 Martine Ceberio, Olga Kosheleva, and Vladik Kreinovich, “Constraint Approach to Multi-Objective Optimization”, Proceedings of the **Eighth International Workshop on Constraints Programming and Decision Making CoProd’2015**, El Paso, Texas, November 6, 2015.
- A21 Leobardo Valera, Martine Ceberio, “Using Interval Constraint Solving Techniques in Dynamic Systems Behavior Prediction”. 8th International **Workshop on Constraint Programming and Decision Making**, El Paso, Nov. 2015.

- A22 Martine Ceberio, Miguel Argaez, Luis Gutierrez\*, Leobardo Valera. “Using Interval Constraint Solving Techniques to Solve Dynamical Systems”. **CORS/INFORMS 2015 Meeting**, Montreal, June 2015.
- A23 Miguel Argaez, Martine Ceberio, Leobardo Valera. “A Model Order Reduction for Solving Large-Scale Square Nonlinear Systems of Equations”. **CORS/INFORMS 2015 Meeting**, Montreal, June 2015.
- A24 Leobardo Valera, Martine Ceberio. “Using Regularization to Improve the Rate of Convergence in a Model-Order Reduction (MOR) Problem”. **22th International Symposium on Mathematical Programming**. Pittsburg, Pennsylvania, ISMP’2015, July 2015.
- A25 Martine Ceberio, Vladik Kreinovich, (2014). Preface to “Constraint Programming and Decision Making” in Constraint Programming and Decision Making. (pp. v-x). Berlin, Heidelberg: Springer Verlag.
- A26 Martine Ceberio, Vladik Kreinovich, (2014). Preface to the special issue on uncertainty. (3rd ed., vol. 8, pp. 163). Journal of Uncertain Systems.
- A27 Martine Ceberio, Olga Kosheleva, and Vladik Kreinovich, “From Global to Local Constraints: A Constructive Version of Bloch’s Principle”, Proceedings of the of the **Seventh International Workshop on Constraints Programming and Decision Making, CoProd’2014**, Wuerzburg, Germany, September 21, 2014.
- A28 Martine Ceberio, Olga Kosheleva, and Vladik Kreinovich, “Range Estimation under Constraints is Computable Unless There Is a Discontinuity”, Proceedings of the of the **Seventh International Workshop on Constraints Programming and Decision Making, CoProd’2014**, Wuerzburg, Germany, September 21, 2014.
- A29 Juan Carlos Figueroa Garcia, Martine Ceberio, and Vladik Kreinovich, “Algebraic Product is the Only t-Norm for Which Optimization Under Fuzzy Constraints is Scale-Invariant”, Proceedings of the **Sixth International Workshop on Constraints Programming and Decision Making CoProd’2013**, El Paso, Texas, November 1, 2013, pp. 8-11.
- A30 Martine Ceberio, Olga Kosheleva, and Vladik Kreinovich, “Towards a Physically Meaningful Definition of Computable Discontinuous and Multi-Valued Functions (Constraints)”, Proceedings of the **Sixth International Workshop on Constraints Programming and Decision Making CoProd’2013**, El Paso, Texas, November 1, 2013, pp. 22-26.
- A31 Olga Kosheleva, Martine Ceberio, and Vladik Kreinovich, “Peak-End Rule: A Utility-Based Explanation”, Proceedings of the **Sixth International Workshop on Constraints Programming and Decision Making CoProd’2013**, El Paso, Texas, November 1, 2013, pp. 12-16.
- A32 Paula Gonzalez-Parra, Martine Ceberio, and Carlos Castillo Chavez. “Interior-Point Methods for a Multi-Group Discrete-Time Influenza Model”. Presented at the **Mathematical Congress of the Americas 2013**, August 2013.
- A33 Joel Henderson, Stefano Bistarelli, Martine Ceberio (2013). “Multi-Experts Multi-Criteria Decision Making”, In the Proceedings of **Numerical Computations: Theory and Algorithms International Conference**, Italy, June 2013.
- A34 Martine Ceberio, Vladik Kreinovich, (2012). “Preface to the special issue”. (vol. 6, pp. 83). **Journal of Uncertain Systems**.

- A35 Ali Jalal-Kamali, Martine Ceberio, Vladik Kreinovich, (2012). “Constraint Optimization: From Efficient Computation of What Can Be Achieved to Efficient Computation of a Way to Achieve the Corresponding Optimum”. Proceedings of the **Fifth International Workshop on Constraint Programming and Decision Making CoProD’12**, Novosibirsk, Russia, September 23, 2012.
- A36 Martine Ceberio, Olga Kosheleva, Vladik Kreinovich, (2012). “Simplicity Is Worse Than Theft: A Constraint-Based Explanation of a Seemingly Counter-Intuitive Russian Saying”. Proceedings of the **Fifth International Workshop on Constraint Programming and Decision Making CoProD’12**, Novosibirsk, Russia, September 23, 2012.

#### □ Edited Research Books

- B1 Ceberio, M., Kreinovich, V. (eds) **Decision Making under Uncertainty and Constraints: A Why-Book**, Springer, Cham, Switzerland, to appear, 2022.
- B2 Ceberio, M. C., Kreinovich, V. Y., (eds) **How Uncertainty-Related Ideas Can Provide Theoretical Explanation for Empirical Dependencies**. Springer, 2021.
- B3 Kearfott, R. B., Batyrshin, I., Reformat, M., Ceberio, M. C., Kreinovich, V. Y. (eds) **Fuzzy Techniques: Theory and Applications**. Springer, 2021.
- B4 Bede, B., Ceberio, M. C., De Cock, M., Kreinovich, V. Y.. (eds) **Fuzzy Information Processing 2020**. Springer, 2020.
- B5 Ceberio, M. C., Kreinovich, V. Y. (eds) **Decision Making under Constraints**. Springer, 2020.
- B6 Ralph Baker Kearfott, Ildar Batyrshin, Marek Reformat, Martine Ceberio, and Vladik Kreinovich (eds.), “**Fuzzy Techniques: Theory and Applications**”, Springer Verlag, Switzerland, 2019.
- B7 Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making: Theory and Applications**, Springer Verlag, Berlin, Heidelberg, 2018.
- B8 Martine Ceberio and Vladik Kreinovich (eds.), **Constraint Programming and Decision Making**, Springer Verlag, Berlin, Heidelberg, 2014.

#### □ Contributed Presentations Related to Education

- Ed1 **Google Faculty in Residence Panel**: moderated by Jaye Espe, June 2021.
- Ed2 Martine Ceberio, Jonatan Contreras, “**Putting the Focus on Learning**”, UTEP’s SOL (Support for Online Learning) Conference 2021.
- Ed3 Sarah Taylor Hug, Martine Ceberio, et Al. “**Reflecting on Reflection: Integrating critical ways of thinking into computer science teaching and learning practice**”. SIGCSE 2021.
- Ed4 Miguel Juarez, Joy Urbina, Maria G. Vallejo, Mike Pitcher, Hector Lugo, Karla Alaya, Martine Ceberio. Panel on “**Thinking Historically and Creating Digitally: History in 3D at the University of Texas at El Paso**”. Presented at the 2019 Digital Frontiers Conference, Austin, September 2019.
- Ed5 Brianna Blaser, Martine Ceberio, Latifa Jackson, Nayda Santiago, Richard Ladner. Panel on “**Inspiring Diverse Women in Computer Science Research**”. Tapia Conference, September 18-21, 2019

- Ed6 Melanie Martin, Eliana Valenzuela-Andrade, Martine Ceberio, Carlos E. Colon-Barrios, Antoine Picard, Josilene Quintana, Nayda Santiago, Akkady Tchaba. Panel on “**Problem-Solving as a Strategy to Improve the Academic Performance at HSIs: A CAHSI and Google Pilot Project**”. Tapia Conference, September 18-21, 2019
- Ed7 Ann Gates, Martine Ceberio. Joint presentation on **Strategies to Foster Retention during an Enrollment Growth Period**. Tapia Conference, September 18-21, 2019
- Ed8 Panel at the CS4All Knowledge Forum. Panel on “**Transition from Post Secondary to Industry: What do Students Need in Order to Make this Transition Successfully?**”. September 12-13, 2018.
- Ed9 “**Computer Science Opportunities for Middle and High-School Students**” at the 2nd Annual Canutillo ISD Professional Development Conference, GRIT (Growth, Resilience, Innovation, Tenacity). The University of Texas at El Paso, August 15-17, 2018.
- Ed10 “**Computational Thinking in the Classroom**” at the 2nd Annual Canutillo ISD Professional Development Conference, GRIT (Growth, Resilience, Innovation, Tenacity). The University of Texas at El Paso, August 15-17, 2018.
- Ed11 “**Innovative Teaching - Bilingualism and Learning Across the Disciplines**”, a UTEP EDGE and Center for Faculty Leadership and Development workshop, with co-presenters E. Mein and A. Esquinca – February 2018.
- Ed12 Presentation to El Paso High School teachers at El Paso High School, about **Computational Thinking in the Classroom, across Disciplines** – Feb. 2018. Audience  $\approx$  100.
- Ed13 Presentation at the **EPISD Hour of Code event for Teachers** – EPISD, Dec. 2017. Audience  $\approx$  60.
- Ed14 Contributed presentation at the Teacher Networking Technology Conference in November 2015 in El Paso about “**Computational Thinking in the Classroom**”. Audience: about 35 teachers from all disciplines, from K-12.
- Ed15 Contributed presentation at the Teacher Networking Technology Conference in October 2014 in El Paso about “**Coding your way through school**”. Audience: about 50 teachers from all disciplines, from K-12.
- Ed16 Presentation to the Clint Independent School District about **Computer Science**, May 2014
- Ed17 Invited speaker for a Webinar for all teachers of Ysleta School District about **how they can bring computer science in their classroom and what they can do if they are CS / math teachers**, March 2014.

## Grants and Contracts since 2012

### □ Total Grants and Contracts since 2012

Since 2012: Total is \$5,480,888 (**\$1,443,905** as PI).

- **Federal funding: \$385,905** as PI and \$3,786,983 for projects in which I am co-PI

- **Army funding: \$999,000** as PI and \$190,000 for projects in which I am co-PI
- **Industry funding: \$59,000** as PI and \$35,000 as co-PI.
- **University funds: \$25,000** from URI and two IDRs (IDR1 & IDR2)

□ **Federal, since 2012**

1. **NSF Research Experience for Teachers – Co-PI RET Site: Cybersecurity Research Experience for Educators through Data Science (CREEDS)**. September 2022 – August 2025. Amount: \$600,000.
2. **Department of Education MSEIP – Co-PI Developing Software Engineering Leaders of Tomorrow**. October 2019 – September 2022. Amount: \$742,174.
3. **NSF IUSE/PFE RED – Co-PI IUSE/PFE:RED: Toward a Model of Change for Preparing a New Generation for Professional Practice in Computer Science**. July 2016 – June 2021. Amount: \$1,919,849.
4. **NSF Research on Gender – Co-PI Latinas in Computer Science and Engineering: A Qualitative**. September 15, 2012 – September 14, 2016 extended. Amount: \$524,960.00.
5. **American Association for the Advancement of Science WIRC MSIs – PI Predicting Experts’ Decisions and Disagreements using Argumentation Networks and Soft Constraints**. November 2012 – October 2013. Amount: \$19,472.00.
6. **NSF CCF 0953339 – PI CAREER: Symbolic-Numeric Constraint-Based Solutions for Real-World Scientific Problems**, 01/2010 to 12/2016. Amount: \$564,650 + additional \$32,000 REU supplement (2010, 2011, 2012).

□ **Other, since 2012**

1. **Google – PI Google exploreCSR: Building Pathways to Graduate School** Received in Summer 2019, Project for Fall 2019 and Spring 2020. Amount: \$18,000.00.
2. **Google – PI Google exploreCSR: Building Pathways to Graduate School** Received in Summer 2018, Project for Fall 2018 and Spring 2019. Amount: \$35,000.00.
3. **ARMY RESEARCH LABORATORY through STANFORD UNIVERSITY Army High Performance Computing Research Center– PI HPC Modeling and Simulation of Underbody Blast Parameter Estimation Problems**, start: January 1, 2014, end: December 31, 2017. Amount: \$994,000.
4. **STEM Accelerator Fund: CS1 Course Redesign (cont’d)**. Amount: \$3,500, Spring 2018.
5. **STEM Accelerator Fund: CS1 Course Redesign**. Amount: \$8,500, Fall 2016 & Spring 2017.
6. **Google CS Engagement Award: Ceberio, Martine (PI). Revamping CS1 to increase retention**. Amount: \$5,000. (January 2015 – December 2015).



7. **ARMY RESEARCH LABORATORY through STANFORD UNIVERSITY Army High Performance Computing Research Center– Co-PI *HPC Modeling and Simulation of Underbody Blast Parameter Estimation Problems***, start: April 1, 2013, end: December 31, 2013. Amount: \$190,000.
  8. **Raytheon – Co-PI *Virtual Geocaching – STEM Student Software Application*** Fall 2012 – Spring 2013. Amount: \$36,000.00.
  9. **UTEP Inter-Disciplinary Research fund – Co-PI *Research on Identity and Participation in Science, Technology, Engineering, & Science (STEM)-IDR***, The University of Texas at El Paso, February 1, 2012 - January 31, 2013. Amount: \$20,000.00.
  10. **UTEP Inter-Disciplinary Research fund – Co-PI *IDR1: Interdisciplinary Research Group on Decision Making and Judgment***, The University of Texas at El Paso, Spring 2012 – Spring 2013. Amount: \$5,000.00.
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## Service / Outreach since 2012

### Professional Service since 2012

- **Reliable Computing Journal:** Editor in Chief, January 2019 – March 2023
- **North American Fuzzy Information Processing Society – NAFIPS**
  - President, January 2019 – December 2020
  - President-elect, January 2017 – December 2018
- Member of **NSF CISE Committee of Visitors** – Fall 2019  
This committee (of 21 people from the US and Canada) was in charge of auditing the NSF CISE processes: from which programs are proposed, to the review process, the awarding process, budgets, time to response, etc. The committee was also in charge of making recommendation to NSF CISE.
- **IEEE Technical Committee on Soft Computing**
  - Member, since March 2016
  - Awarded 2018 “IEEE Most Active SMC Technical Committee Award” for the third time.
- **Springer Soft Computing Journal Editorial Board:** Member, Nov. 2011 – Jan. 2013.
- **Conference organization and chairing of program committees**
  - **CoProD:** Constraint Programming and Decision Making Annual International Workshop. Program and general co-chair since 2008 (<http://coprod.constraintsolving.com>)
  - **ACM Symposium of Applied Computing, track on Knowledge Representation and Reasoning:** Co-chair 2016 – 2021.
  - **NAFIPS:** 2016: co-chair and co-program chair ([nafips.cs.utep.edu](http://nafips.cs.utep.edu)); 2012 and 2014: co-program chair. Program committee member annually.

- **Program Committee Member**

- SIGCSE 2020, 2021, RESPECT 2020, 2021, FLAIRS-29, -30 (the Florida AI Research Society), IJCAI'19, '15, '13 (International Joint Conference in Artificial Intelligence), RCRA 2017 (Rappresentazione della Conoscenza e Ragionamento Automatico), IAE/AIE 2017 (International Conference on Industrial Engineering, Other Applications of Applied Intelligent Systems)), MICAI'13 (Mexican Conference in Artificial Intelligence), WSCS'13 (World Conference on Soft Computing), WEA'12 (Workshop on Engineering Applications), M-PREF'12, '13, '14, '15 (international workshop at ECAI'12 & '13–European Conference on Artificial Intelligence) & '15 at IJCAI 2015, NAFIPS'15 – 23 special session on Interval Computations, Workshop on Intelligent Personalization (IP) — Joint Workshop on Constraints and Preferences for Configuration and Recommendation (CPCR) and Intelligent Techniques for Web Personalization (ITWP) at IJCAI 2015, CSP track at ACM SAC, 2005 – 2014
- Grace Hopper Celebration 2012 New Investigator Subcommittee Member (Fall 2011 – Summer 2012)

- **Reviewer for... (a selection of review assignments since 2012 only)**

- Conferences: including Workshops at CP, SAC (Symposium of Applied Computing) (for the CSP track), NAFIPS (North American Fuzzy Information Processing Society), ECAI (the European Conference on Artificial Intelligence), FIE (the Frontiers In Education conference), IJCAI (the International Joint Conference in Artificial Intelligence), Mexican International Conference on Artificial Intelligence (MICAI) 2011, 2012, 2013, PPAM 2013, 2015, Workshop on Engineering Applications (WEA), 2012, FLAIRS 2016, FuzzIEEE 2016, ICTCS 2014 (the Italian Conference on Theoretical Computer Science), AI\*IA 2016 (the XV International Conference of the Italian Association for Artificial Intelligence), IFSA-NAFIPS 2013, FuzzIEEE 2017, AMAI.
- Journals: including Reliable Computing, INFORMS Journal on Computing, Information Sciences, Journal of Experimental and Theoretical Artificial Intelligence, the Annals of Mathematics and Artificial Intelligence, Artificial Intelligence, Special Issues of Soft Computing, Journal of Logical and Algebraic Methods in Programming, Transactions on Mathematical Software, AAAS-Science, Acta Cybernetica, Journal of Advanced Computational Intelligence and Intelligent Informatics.
- Proposals: Member of NSF panels in CISE (once or twice annually since 2012).
- Others:
  - \* Grace Hopper Conference: reviewer of 2014 scholarship applications
  - \* DoD 2014 Star Award reviewer
  - \* NCWIT Collegiate Award reviewer 2015, 2016
  - \* NCWIT Educator Award reviewer 2015

- **Students**

- External advisor for a team of CS undergraduate students at Texas A&M Corpus Christi – Spring 2021.
- External reviewer of a PhD dissertation for the Computer Science program at the University of Paris 6, France, 2017.

- Co-Supervisor of 2 graduate students from ENSTA France (advisor: Prof. Luc Jaulin), interning in the TRACS lab at UTEP for five months from April to August 2014, and for three months in summer 2016 (TRACS is the lab on Theoretical Research driven by Applications in CS, which includes my research group CR2G: [cr2g.constraintsolving.com](http://cr2g.constraintsolving.com))
- External reviewer of a PhD dissertation for the Executive Board of the Italian Association for Logic Programming (GULP), 2012.

- **External Tenure and Promotion Reviews**

- External reviewer for 2 Tenure and Promotion cases of US Universities: fall 2021

## Institutional Service since 2012

### □ Department Service

- Current assignments

- **Graduate advisor to all MS CS students**
- **Tenure & Promotion Committee** member – since September 2012
- **CS Undergraduate Curriculum Committee** member
- **CS Fundamentals course cluster CQI committee** member since fall 2022, chair from 2015 to 2022
- **Lead** of a departmental brown bag discussion series on teaching topics (e.g., transitioning to teaching large classes)
- **Computer Science Department's course schedule** – 2007 to 2010, 2012 to 2017, and since Fall 2018 (in an advisory capacity)

- Previous assignments

- **CS Faculty Search committee**, Fall 2018 – Spring 2019, Fall 2019 – Spring 2020, co-chair in Fall 2021 – Spring 2022 (2 positions).
- **CS Faculty Annual Performance Review Committee** – Feb. 2015 to May 2022
- **CS Academic advisor to undergraduate students** – about 25 a semester – until Fall 2021
- **CS Chair sub**: 2 weeks in July 2021
- **Weekly online social hour**, lead – March 2020 to Summer 2021
- **Faculty Advisor**:
  - \* CS student organization called Out of Bounds (activity: project group development) – 2021-2022
  - \* ACM-W chapter at UTEP (Founder and advisor, 2012 – 2018) As the ACM-W advisor, I guided and supervised the ACM-W students in the following projects that were funded by NCWIT or Google:
    - NCWIT Seed Fund: in spring 2014 to develop a still existing mentoring program for CS UG students

- Google IgniteCS program: in spring 2016, ACM-W was awarded its first Google IgniteCS project to put in place formal and informal program to teach computer science to young students at a middle school of El Paso. In spring 2017, they received their second award for a similar program at a high-school of El Paso.
- In fall 2017, they were very active in helping with the NCWIT Aspirations in Computing program and they are working on developing and submitting a Google First project.
- **Computer Science Advancement of Women in Computing committee** member, Aug. 2015 to 2020
- **Programming Languages course cluster Committee:** Chair, Aug. 2013 – May 2015
- **Computer Science website:** Webmaster, 2011 – 2014
- **CS ABET preparation Committee:** Member, Sept. 2012 – Fall 2013
- **2013 CS Faculty Search Committee:** Chair, Aug. 2012 – May 2013
- **2012 CS Faculty Search Committee:** Member, Dec. 2011 – April 2012

#### □ College-level Service

- **Dean’s Search Committee:** member – Fall 2021 and Spring 2022
- **Ad-hoc Committees and Activities**
  - **Post-tenure Committee** member – Summer 2020
  - **UTEP Computer Science Representative & Presenter**, UT System meeting of Colleges of Engineering, with Brazilian Delegation – August 2019
  - **College Faculty Marshall** – May 2019
  - **Gold-Nugget Selection Committee:** Spring 2019
  - **Presenter**, LSAMP Cohort – Spring 2019
  - **NSF CAREER grant mentoring program:** Presenter (for junior faculty) – Feb. 2019
  - **Internal Grant Competition:** Reviewer – NSF MRI 2020, 2018, 2017, DoD HBCU MSI 2021
  - **University-wide NSF CAREER grant mentoring program:** Presenter and mentor (program for junior faculty led by the College of Engineering) – Feb. 2018
  - **Task force on Faculty Success:** 2013 – 2017
- **NCWIT Extension Services:** Member of the College team who worked on **increasing the number of female students in Computing.** Fall 2012 – Summer 2014
- **Facilitation Team For Information and Security:** Sept. 2011 – Nov. 2012

## □ **University-level Service**

### ● Current Assignments

- **Facilitator** of an ACUE micro-credential course on Fostering a Culture of Belonging – Spring 2023
- **Chair** of the **Graduate Council** – 09/2022-08/2024
- **Provost Fellow** for Diversity, Equity, and Inclusion – since September 2022
- Committee Member:
  - \* **Inter-Collegiate Athletics Council** member – since November 2020
  - \* **UTEP Academy of Distinguished Teachers** member – since Fall 2019
  - \* **Women’s Advisory Council to the President:** Ex-officio member (as past chair), since 2019
  - \* **COURI’s Board of Advisors:** Member, since 2015. COURI is the Campus Office for Undergraduate Research Initiatives at UTEP
  - \* **UTEP’s Mama Ph.D. group:** Member, since 2010
- **UTEP internal Regents’ Outstanding Teaching Award**
  - \* Reviewer – Annually
  - \* Mentor to an applicant in 2021 and 2022, who was awarded the Outstanding Teaching Award in 2022.
- **UTEP EDGE Fellow** – since February 2018
- **OSCCR Hearing Officer** – since September 2018

### ● Previous Assignments

- **Faculty Senate Committee on Committees** – Spring 2019 – Fall 2021
- **Mentoring Circles** Faculty mentor – Spring 2020 (canceled after one session due to pandemic), Spring 2021
- **Provost Search Committee** – Fall 2019 - Spring 2020
- Ad-hoc Committees
  - \* **Flo Hyman Award Selection committee** recognizing K-5, 6-8, 9-12 young women with outstanding leadership and athletic record – member, August 2021 to February 2022
  - \* **President of Hearing Tribunal** – June 2021 to September 2021
  - \* **BUILD mentoring award** reviewer – July 2020
- **Faculty Senate:** Vice-President, 2014 – 2015
- **Executive Council of the Faculty Senate**
  - \* Member as representative of UTEP’s College of Engineering, 2015 – 2017
  - \* Secretary, 2012 – 2014
  - \* Representative of the executive council on the IT standing committee of the Faculty Senate, 2013 – 2014

- \* Representative of the executive council on the UGCC and Student Grievance Committee standing committee of the Faculty Senate, 2014 – 2015
- \* Member: 2010 – 2012
- **Executive committee of the Computational Sciences Program** 2008 – 2015
- **Board of the Women’s Resource Center** (now Student Resource Center): 2011 – 2014
- **UTEP’s Undergraduate Curriculum Committee** (standing committee of the Faculty Senate): 2011 – 2014
- **Computational Sciences Faculty Search:** Member, September 2013 – April 2014
- **Women’s Advisory Council to the President**
  - \* Chair, Sept. 2010 – December 2012
  - \* As past chair, Jan. 2013 – Dec. 2013
  - \* Member, 2006 – 2013

□ **University of Texas System**

- Member of the **UT System’s Academy of Distinguished Teachers** – since spring 2020
  - Membership sub-committee member
  - Well-being sub-committee member
- **Curriculum Innovation** Proposal reviewer – spring 2021

**Local / State / Global Outreach & Service since 2012**

- **Google Faculty Development Programs**
  - Virtual Cohort subgroup lead – since spring 2020  
This group meets once a month to discuss pedagogy in computer science.
  - 2019 Faculty in Residence mentor (Mountain View, CA) – June 2019
- **Advisory Boards**
  - Merced College Computer Science programs – since spring 2021
- **Local Advisory Boards**
  - El Paso High STEM Academy – 2019-2022
  - Harmony Science Academy of El Paso – 2012-2021
  - Bel-Air’s T-STEM Academy – 2017-2020
  - Parkland’s T-STEM Academy – 2015-2018
  - Eastlake High School CSE program – 2015-2019
  - Saint Patrick’s Elementary and Middle School – 2013-2017
- **Faculty advisor for a virtual research program for high-school students** (Fall 2020 + upcoming Spring 2021)

- Nexus program at UTEP moved online: 6-week online program; 8 female (junior and senior) HS students participated in the pilot program in fall 2020. We will conduct a similar program starting in late March with freshmen and sophomore female HS students.
- **Faculty advisor for summer research projects for high-school students** (2010 through 2017 and since 2021)
  - Nexus program at UTEP: summer internship for high-school students in my research lab. *Notably: an unprecedented high-number of interns participated in summers 2014 and 2016: 7 female high-school students)*
- **NCWIT Aspirations in Computing Regional Affiliate Competition Coordinator**
  - Coordinator of the El Paso affiliate, fall 2015 to spring 2018
  - Coordinator of the El Paso/Las Cruces affiliate from 2011 to spring 2014  
*15 schools of El Paso/Las Cruces and the wider area have participated in the competition, and over 50 young women have been honored.*
- **Presentations about computer science** I regularly give presentations about computer science, at UTEP or at various schools of the El Paso area.
  - **Presentations to K-12 Students**
    - \* Presentation to El Paso High School Computer Science students – Spring 2022.
    - \* Presentation to El Paso High School students visiting UTEP – Feb. 2018. Audience  $\approx 80$ .
    - \* Presentation to the Girls-Who-Code group from Harmony Science Middle School of El Paso – UTEP, May 2017. Audience: 8.
    - \* Presentation to an all-girls summer camp at Fab Lab El Paso – June 2016
    - \* Presentation at Harmony Science Academy of El Paso about computer science and careers (December 2014)
    - \* Invited speaker at the New Mexico Celebration of Women in Computing, Las Cruces, NM (November 2012).
  - **Presentations to College Students**
    - \* Guest speaker at the Annual banquet of UTEP’s SWE student chapter, 2018
    - \* Presentation to doctorate students about being a professor in computer science, May 2015
- **Career Fairs/Days presenter:**
  - Harmony Science Academy: promoting Computer Science, (November 2016)
  - Girls Powered Event presenter at Eastwood High School in El Paso (October 2016)
  - Ibero Academy: Presentation about Computer Science to Kindergarteners, 1st graders, and 2nd graders (May 2014)
  - Loretto Academy of El Paso – all-girls middle and high school (April 2011, April 2012, April 2014)
- **UTEP tours and open house events**
  - Hosted a day of Computer Science for Bel-Air High School in June 2017 (about 50 students)

- Hosted a day of Computer Science and Engineering for Saint Patrick’s Elementary School
    - 3rd to 5th grade – in May 2017 (about 60 students)
  - Hosted a day of Computer Science and Engineering for Saint Patrick’s Middle School in December 2016 (about 80 students)
  - Hosted a day of Computer Science for Bel-Air High School in May 2016 (about 50 students)
  - Participates in UTEP’s Orange and black Days, and other events such as Open houses annually
  - Regularly prepare presentation material and train my research team students to give overviews of CS to visiting students.
- **High-school classroom innovation:**
    - Computer Science and Language Learning, Loretto Academy of El Paso (Fall 2013).
- **Judge:**
    - Science Fair judge at Harmony Science Academy Middle School, El Paso, February 2017.
    - Science Fair judge at St Patrick’s Elementary and Middle School, El Paso, February 2016 and 2017.
- **Other**
    - Hour of Code at St. Patrick’s Elementary and Middle School (December 2016)
    - Mentornet mentor in 2012 and 2013
    - Faculty advisor of the Harmony Science Academy Alumni Association at UTEP since 2015

## □ Professional Development

The following are programs and meetings I attended in recent years and that contributed to my professional development.

- **EdX STEM Inclusive Teaching**, Fall 2022
- **AAAS Sea Change Climate Assessment**, Fall 2022
- **Teaching Hybrid Academy**, February 2021
- **Teaching Online Academy**, May 2020
- **UTEP’s Dialogue in Leadership**, September 2020 - May 2021
- **Faculty in Residence at Google**, June 2018
- **UTEP Workshops and Conferences**
  - Annual Conference of the Center for Faculty Leadership and Development, on Inclusive Excellence, August 2022



- Humanizing Online Education During COVID-19 and Beyond – July 2020
  - Early College High-School Students: How to make sure that they are integrated in our classrooms – April 2019
  - Rethinking Engineering Education at Hispanic Institutions Workshop – March 2018
  - Reporting and Using your Data for Curricular Improvement, organized by Dr. Toni Blum at UTEP, March 2017
  - Large Class Seminar on Peer-Led Tutoring, organized by Dr. Cidgem Siring at UTEP, December 2017
  - on Teaching and Motivation, led by Olin College instructors, organized by UTEP STEM-Accelerator Project team, June 2016
  - Continuing Education Program, “Flipped Learning Brown Bag discussion,” Center for Research in Engineering and Technology Education (CREaTE), 2014
  - Leadership Development Institute at UTEP: 2012-2013
  - Problem-Based Learning workshops: in May 2012, May 2013, May 2014
- **Other Workshops**
    - Webinar: Equity in CS Education, hosted by CS4All, August 2020
    - Workshop: vREU – Affinity Research Group training, Summer 2020
    - Webinar: Zybook tools to teach online, April 2020
    - Webinar: Gradescope, Fall 2020
    - Workshop: Google’s Faculty in Residence reunion workshop, March 2019
- **Local Conferences**
    - Networking Technology & Content Conference, El Paso, TX. – Nov. 2014 and 2015
- **National Workshops and Conferences**
    - 2021 SIGCSE Conference – March 2021
    - 2019 Tapia Conference – September 2019
    - CRA-W Career Mentoring Workshop: Washington DC, November 2016
    - CE21 Community Meeting, NSF – 2010, 2011, 2012, 2014
    - Gender Summit, Washington DC – November 2013
    - NCWIT Summit, Tucson AZ – May 2013
    - CRA Career Workshop, Washington DC – 2012
    - CRA-W Workshop, Atlanta GA – 2012
    - Workshop Series: Affinity Research Group training, Puerto Rico – 2011, 2012