David Milan

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Education

2008	Ph.D.	**University of Nebraska-Lincoln**, Mathematics
		Dissertation: C*-algebras of Inverse Semigroups
		Advisors: John Meakin and David Pitts
2001	B.S.	**University of Nebraska-Lincoln**
		Mathematics and Computer Science

Teaching Experience

- **Professor**, The University of Texas at Tyler, 2020–present.

- **Associate Professor**, The University of Texas at Tyler, 2014–2020.

- **Assistant Professor**, The University of Texas at Tyler, 2008–2014.

- **Teaching Assistant**, University of Nebraska, 2001–2008

Publications – (*) indicates undergraduate coauthor

- On the inverse hull of a Markov shift (with Aria Beaupré*, Anthony Dickson*, and Christin Sum*), to appear in International Journal of Algebra and Computation.

- On a class of inverse semigroups related to Leavitt path algebras (with John Meakin and Zhengpan Wang), Advances in Mathematics **384** (2021).

- Zigzag maps and the path category of an inverse semigroup (with Allan Donsig, Jennifer Gensler*, Hannah King*, and Ronen Wdowinski*), Semigroup Forum (2019).

- Classes of uniformly most reliable graphs for all-terminal reliability (with Kassie Archer and Christina Graves), Discrete Applied Mathematics **267** (2019) 12-29.

- Condition (K) for inverse semigroups and the ideal structure of their C^*-algebras (with Scott LaLonde and Jamie Scott*), Journal of Algebra, **523** (2019), 119-153.

- Amenability and uniqueness for groupoids associated with inverse semigroups (with Scott LaLonde), Semigroup Forum, **95** (2017), no. 2, 321-344.

- Joins and cover in inverse semigroups and tight C*-algebras (with Allan Donsig), Bulletin of the Australian Mathematical Society, **90** (2014), no. 1, 121-133.

- Reliability polynomials having arbitrarily many inflection points (with Christina Graves), Networks, **64** (2014), no. 1, 1-5.

- On inverse semigroup C*-algebras and crossed products (with Benjamin Steinberg), Groups, Geometry, and Dynamics, **8** (2014), no. 2, 485-512.

- The stick number for the simple hexagonal lattice (with C. Mann and J McLoud-Mann), Journal of Knot Theory and Its Ramifications, **21** (2012), no. 14, 15pp.

- C*-algebras of inverse semigroups: amenability and weak containment, Journal of Operator Theory, **63** (2010), no. 2, 317-332.

Student Publications

- On the long-repetition-free 2-colorability of trees (J. Antonides*, C. Kiers*, N. Yamzon*), Rose Hulman Undergraduate Mathematics Journal, **18** (2017), no. 1, 262-269.

Grants

- (PI) **REU Site: Algebra, Graphs, and Number Theory at UT Tyler** 2022-2024
  Funded for $311,154 by the NSF.

- (Co-PI) **Brazos Analysis Seminar** 2020-2022
  Conference series funded for $49,999 by the NSF.

- (PI) **Texas Undergraduate Mathematics Conference Grant** 2018-2019
  Conference series funded for $14,553 by the NSF.

- (PI) **Renewal of REU Site at UT Tyler** 2017-2019
  Funded for $254,443 by the NSF.

- (PI) **Renewal of REU Site at UT Tyler** 2014-2016
  Funded for $258,739 by the NSF.

- (Senior Personnel) **REU Site at UT Tyler** 2011-2013
  Funded for $213,795 by the NSF.

- (PI) **UT Tyler Faculty Research Grant** 2009
  Internal grant funded for $7,184.

Awards and Honors

- **White Fellowship for Teaching Excellence** 2016
  Awarded by UT Tyler to recognize outstanding teachers ($2500).

- **Research Award** 2014
  Awarded by UT Tyler to recognize research accomplishments.

- **IMMERSE Early Career Faculty Fellow** 2011
  Designed and taught 6-week graduate algebra course focused on understanding a research paper for incoming
  graduate students. The project was supported by an NSF grant.

- **Project Next Fellow** 2008-2009
  Project NExT (New Experiences in Teaching) is a professional development program for recent math PhDs
  supported by the Mathematical Association of America.

- **Fields Institute Invited Researcher** 2007

Mentoring

Senior Capstone projects

- A. Kumar, *On Markov shifts and graph inverse semigroups* 2022

- N. Johnson, *Efficiency of error correcting codes* 2021

- N. Evans, *PLR groups: abstract algebra and music* 2020

- C. Smith, *The classification of wallpaper patterns* 2019

- M. Maxfield, *Marketing models and predictions with markov chains* 2018

- Y. Perez, *On inverse semigroups of self-similar graph actions* 2017

- F. Larkin, *Discovering digits of π* 2016

- C. Hartnett, *Markov chains and sports statistics* 2015

- T. Lynn, *On the randomness of card shuffling* 2014

- J. Yoerger, *The Cantor set and the Cantor-Lebesque Function* 2014

- K. Horn, *Cayley graph ambiguity*   2013

- D. Althof, *On monogenic semigroups*   2010

- K. Duggan, *Fourier Series and Music*   2009

Masters Theses

- (Reader) H. Bautista, *On the intersection number of finite groups*   2019

- (Reader) B. Tran, *Equivalent constructions of Cartan pairs*   2018

- (Adviser) A. Christian, *Differential geometry – curvature and holonomy*   2015

- (Reader) M. Field, *A survey of line graphs and Hamiltonian paths*   2012

- (Reader) T. Russell   2011

Research Experience for Undergraduates

- A. Beaupre, A. Dickson, and C. Sum   2019
  Inverse semigroups associated with Markov shifts

- J. Gensler, H. King, and R. Wdowinski   2018
  Zigzag maps and the path category of an inverse semigroup

- T. Arrigoni, A. Black, J. Harter and Y. Perez   2017
  Inverse semigroups associated with self-similar graph actions

- C. Bang, J. Scott, and V. Villalobos   2016
  Uniqueness theorems for inverse semigroups

- D. Blackwell, C. Hunt, and K. Johnson   2015
  Reliability polynomials of simple graphs having arbitrarily many inflection points

- P. Egging, R. Laudone, and A. Owens   2014
  Coloring Techniques for Pattern Avoidance over an Infinite Sequence

- J. Antonides, C. Spychalla, and N. Yamzon   2013
  On the long-repetition-free 2-colorability of trees

- A. Berger, C. Simmons, J. Troyka, and L. White,   2012
  Long-square-free words and graph colorings

Research Talks

- *On inverse hulls of Markov subshifts*   2020
  Invited talk for the AMS Special Session on Recent Trends in Semigroup Theory in Denver, CO

- *C^*-algebras associated with inverse semigroups and étale groupoids*   2019
  Invited talk at Brazos Analysis Seminar in Waco, TX.

- *On non-Hausdorff étale groupoids*   2019
  Invited talk at International Workshop on Operator Theory and its Applications in Lisbon, Portugal.

- *Condition (K) for inverse semigroups and the ideal structure of their C^*-algebras*   2018
  Contributed talk at the Great Plains Operator Theory Symposium in Oxford, OH.

- *Partial Symmetries, inverse semigroups, and inverse semigroup algebras*   2017
  Invited talk at 2017 Research Symposium for University of Washington Bothell and Seattle University REU groups in Bothell, WA.

- *Amenability and uniqueness for groupoids associated with inverse semigroups*   2016
  Invited talk at Spring Central Sectional Meeting in Fargo, ND.

- *Amenability and uniqueness for groupoids associated with inverse semigroups*   2016
  Contributed talk at the Joint Mathematics Meetings in Seattle, WA.

- *Finitely aligned semigroupoids and tight C*-algebras* 2014
  Contributed talk at the Joint Mathematics Meetings in Baltimore, MD.

- *Tight representations of inverse semigroups* 2012
  Contributed talk at the Great Plains Operator Theory Symposium in Houston, Texas.

- *Crossed product results for inverse semigroup algebras* 2012
  Invited talk at INFAS in Des Moines.

- *A tour of C*-algebras generated by partial isometries* 2010
  Invited talk at SFA department colloquium in Nacogdoches, TX.

- *On the C^*-algebras of E-unitary inverse semigroups* 2008
  Invited talk at the West Coast Operator Algebra seminar in Flagstaff, AZ.

Service to Students

- Numerous math club talks 2008-2019

- Judge for Lyceum Student Research Showcase 2017-2019

- Putnam Exam advisor 2013-2019

- Organized student conference trips

TUMC in Nacogdoches, TX	2018
NCUWM in Lincoln, NE	2018
JMM in San Diego, CA	2018
TUMC in San Antonio, TX	2017
TUMC in Beaumont, TX	2016
Texas MAA in Abilene, TX	2010
TUMC in Huntsville, TX	2009
Texas MAA in Denton, TX	2009

- Academic advisor 2008-present
  I have advised over 20 students.

Service to Profession

- Invited grant reviewer for the NSF 2019

- Invited Journal Referee

  Journal of Operator Theory
  Journal of Algebra
  Semigroup Forum

- Judge for Undergraduate Research Poster Session 2011-2020

- Conference organizer

Executive committee for the TUMC	2013-present
Co-PI for Brazos Analysis seminar	2020-2022
Volunteer organizer for Texas Section of the MAA	2011