

# Jessica C. De Silva

Department of Mathematics · California State University, Stanislaus

Curriculum Vitae

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## Employment

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### Assistant Professor of Mathematics

California State University, Stanislaus

Turlock, CA

August 2018 – current

## Education

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### Ph.D. in Mathematics

University of Nebraska–Lincoln

Dissertation Title: *Graphs with Few Spanning Substructures*

August 2018

### M.S. in Mathematics

University of Nebraska–Lincoln

December 2014

### B.A. in Mathematics

California State University, Stanislaus

May 2013

## Publications

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### *Anti-Ramsey Multiplicities*

*Australasian Journal of Combinatorics* Volume 73, Issue 2 (2019). J. De Silva, X. Si, M. Tait, Y. Tuncbilek, R. Yang, M. Young. [http://ajc.maths.uq.edu.au/pdf/73/ajc\\_v73\\_p357.pdf](http://ajc.maths.uq.edu.au/pdf/73/ajc_v73_p357.pdf)

### *Turán Numbers of Vertex-Disjoint Cliques in $r$ -Partite Graphs*

*Discrete Mathematics* Volume 341, Issue 2 (2017). J. De Silva, K. Heysse, A. Kapilow, A. Schenfisch, M. Young. <https://authors.elsevier.com/a/1W53-,H-cBBFY>

### *Increasing Paths in Edge-Ordered Graphs: The Hypercube and Random Graph*

*The Electronic Journal of Combinatorics* Volume 23, Issue 2 (2016). J. De Silva, T. Molla, F. Pfender, T. Retter, M. Tait. <http://www.combinatorics.org/ojs/index.php/eljc/article/view/v23i2p15>

### *On the Distance Spectra of Graphs*

*Linear Algebra and Its Applications* Volume 497, (2016), 66–87. G. Aalipour, A. Abiad, Z. Berikkyzy, S. Butler, J. Cummings, J. De Silva, W. Gao, K. Heysse, L. Hogben, F. Kenter, J. Lin, M. Tait. <http://arxiv.org/abs/1509.01196>

### *Hat-Guessing Strategies and the Cooperative Card Game Hanabi*

*Mathematics Magazine*, Volume 88, No. 5 (2015), pp. 323–336. C. Cox, J. De Silva, P. DeOrsey, F. Kenter, T. Retter, R.J. Tobin. <http://www.jstor.org/stable/10.4169/math.mag.88.5.323>

### *The Combinatorics of Interval Vector Polytopes*

*The Electronic Journal of Combinatorics*, Volume 20 Issue 3 (2013). J. De Silva, G. Dorfsman-Hopkins, J. Pruitt, A. Ruiz, M. Beck. <http://www.combinatorics.org/ojs/index.php/eljc/article/view/v20i3p22>

### *The Alignment of Arbitrary Contours Using Area Difference Distance Measurement*

*SIAM Undergraduate Research Online*, Volume 5 (2012). J. De Silva, K. Murata, J. An. <http://www.siam.org/students/siuro/vol5/S01181.pdf>

## Preprints

### *Very Well-Covered Graphs with the Erdős-Ko-Rado Property*

Submitted to *Involve*. J. De Silva, A. Dione, A. Dunkelberg, P. Harris. <https://arxiv.org/pdf/2106.09067.pdf>

### *An analysis of a fair division protocol for drawing legislative districts*

*Under revision*. J. De Silva, B. Gales, B. Kagy, D. Offner. <http://arxiv.org/pdf/1811.05705.pdf>

## Newsletters and Blogposts

### ***A Virtual Summer at Lawrence Berkeley National Laboratory***

*BIG Math Network* (2021). J. De Silva.

<https://bigmathnetwork.org/2021/05/31/a-virtual-summer-at-lawrence-berkeley-national-laboratory/>

### ***Pacific Math Alliance holds first conference***

*Math Alliance Newsletter* August Issue (2020). J. De Silva.

<https://mathalliance.org/wp-content/uploads/2020/09/August.pdf>

## In Preparation

### ***Graphs with Few Spanning Pseudoforests***

J. De Silva, A. J. Radcliffe.

### ***Preparing for the Academic Job Market***

Invited submission for the AMS Blog *e-Mentoring Network in the Mathematical Sciences*. J. De Silva.

## Grants & Awards

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### Grants and funding

#### **(PI) National Science Foundation Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM) Program**

Collaborative National Science Foundation grant with Fresno State.

Fall 2021

(in preparation)

#### **2021 Visiting Faculty Program**

Department of Energy at Lawrence Berkeley National Laboratory

Summer 2021

\$27,000 (funded)

#### **(PI) Harnessing the Data Revolution: Data Science Corps Proposal**

Collaborative National Science Foundation grant with Fresno State and UC Merced.

Spring 2021

\$1,500,000 (declined)

#### **(Co-PI) HHMI IE3 Phase 1 Learning Grant**

Howard Hughes Medical Institute Inclusive Excellence 3 learning grant.

Spring 2021

\$30,000 (accepted)

#### **Dataquest & AI Inclusive Underrepresented Genders Scholarship**

Support for six months of premium access to Dataquest content.

Fall 2020

\$294 (funded)

#### **2020 SACNAS Registration Scholarship**

Funded by the Mathematical Sciences Research Institute.

Fall 2020

\$310 (funded)

#### **(Co-PI) HHMI IE3 Pre-Proposal\***

Howard Hughes Medical Institute Inclusive Excellence 3 grant.

\*Competition delayed due to COVID-19.

Fall 2020

(accepted)

#### **PUMP Undergraduate Research Group Grant**

Preparing Undergraduates through Mentoring toward PhDs

Fall 2020–Spring 2021

\$11,000 (funded)

#### **(Co-PI) 2020 Pacific Math Alliance Conference\***

National Science Foundation Conferences and Workshops in the Mathematical Sciences

\*Cancelled due to COVID-19.

Fall 2019–Spring 2020

(proposal prepared)

#### **2020 Visiting Faculty Program**

Department of Energy at Lawrence Berkeley National Laboratory

Summer 2020

\$36,000 (funded)

#### **(Co-PI) 2019 Pacific Math Alliance Conference**

National Science Foundation DMS - 1931009

Summer 2019 – Spring 2020

\$28,000 (funded)

#### **Stanislaus State College of Science Faculty and Staff Development Funds**

2019 PIC Math Summer Workshop Travel Grant

Spring 2019 – Summer 2019

\$1,485 (funded)

**Women and Mathematics Ambassador for the IAS**

Support for weekend conference funded by the Institute for Advanced Study.

Fall 2017 – Spring 2018

\$2,500 (funded)

**Mini-Collaboration Grant**

Grant funded by the NSF and NSA to visit research collaborators.

Fall 2016 – Spring 2017

\$1,500 (funded)

**NSF Graduate Student Research Fellowship**

The NSF-GRFP recognizes and supports outstanding graduate students in NSF-supported science, technology, engineering, and mathematics disciplines.

Fall 2013 – Spring 2018

\$138,000 (funded)

**Awards****STEM-NET Faculty Fellow**

Awarded 6 WTUs of assigned time for grant-related scholarly activity.

2021-22 AY  
CSU STEM-NET**Exceptional Service to Students Award**

Awarded 3 WTUs of assigned time.

Spring 2020  
Stanislaus State**Sustainable Research Pathways 2019**

Sustainable Horizons Institute

Fall 2019  
Lawrence Berkeley  
National Laboratory**2018 Lathisms Honoree**

Lathisms features prominently the extent of the research and mentoring contributions of Latinxs and Hispanics in different areas of the Mathematical Sciences.

Fall 2018

**Walter Mientka Graduate Teaching Award**

Department award given annually to one graduate student for excellence in teaching.

Fall 2016  
University of Nebraska–Lincoln**Outstanding First Year Graduate Student Award**

Department award given annually to one successful first year student.

Fall 2014  
University of Nebraska–Lincoln**J. Burton Vasche Award**

Awarded to one outstanding Stanislaus State senior at commencement.

Spring 2013  
Stanislaus State**Undergraduate Research Projects****A Robust Image Segmentation Algorithm**

Sherly Yaghoubi; funded by VFP.

Summer 2021  
Lawrence Berkeley  
National Laboratory**Searching for Erdős-Ko-Rado Graphs**Co-mentored with Pamela Harris at Williams College.  
Williams College Students: Adam Dionne and Aidan DunkelbergSpring 2021  
Williams College**Game Theoretic Analysis of Pokémon GO**Co-mentored with Jonathan Brown at Bakersfield College.  
Bakersfield College Students: Pablo Castro and Edenilson Zetino  
Stan Student: Kevin Lopez; funded by RISE

Fall 2020 – Spring 2021

Stanislaus State

**Applying Data Techniques to Cellular Biology**

Jesselyn LaBelle; funded by RISE.

Fall 2020 – current  
Stanislaus State**Mean-Shift Algorithm in C++**

Andrew Aguilar and Jasmin Rodriguez.

Fall 2020 – Spring 2021  
Stanislaus State**Analysis of Mathematics Major Success at Stanislaus State**

Aaron Cordeiro and Sherly Yaghoubi; funded by PUMP URG.

Fall 2020 – Spring 2021  
Stanislaus State**A Hypergraph-based Image Segmentation Algorithm**

Darcy Brunk and Juan Valencia; funded by VFP and SERSCA.

Summer 2020 – Spring 2021  
Stanislaus State

**Track & Field Data Science Project\***

Rommell Pennell.

\*On pause during COVID-19.

Spring 2020

Stanislaus State

**Data Science Projects**

Andrew Aguilar, Kevin Lopez, Jasmin Rodriguez, Juan Valencia; funded by CSU-LSAMP and RISE.

Fall 2019 – Spring 2020

Stanislaus State

**Campus Walkability**

Andrew Aguilar, Samantha Batham, Felice Dacpano, Morgan Hogue, Teresa Martin, Jonathan Moss, Jasmin Rodriguez, Juan Valencia.

Spring 2019 – current

Stanislaus State

**Summer Research Co-Advisor**

Summer Undergraduate Applied Mathematics Institute at Carnegie Mellon University.

Summer 2017, 2018

SUAMI

**Invited Talks*****Image Segmentation via Hypergraph-based MRF Models***

Canadian Discrete and Algorithmic Mathematics Conference

Spring 2021

CanaDAM Online Meeting

***Gerrymandering: A Piece of Cake***

Finite Mathematics Course Guest Speaker

Spring 2021

Soka University of America

***A Virtual Summer at Lawrence Berkeley National Laboratory***

Humboldt State Mathematics Department Colloquium

Spring 2021

Humboldt State

***A Virtual Summer at Lawrence Berkeley National Laboratory***

San Jose State Mathematics Department Colloquium

Spring 2021

San Jose State

***Image Segmentation via Hypergraph-based MRF Models***

If You Build It They Will Come: Presentations by Scholars in the National Alliance for Doctoral Studies in the Mathematical Sciences

Spring 2021

Joint Mathematics Meetings

***Graphs with Few Spanning Pseudoforests***

Women in Combinatorics Virtual Colloquium

Fall 2020

Women in Combinatorics

***A Virtual Summer at Lawrence Berkeley National Laboratory***

Cal State East Bay Mathematics Department Colloquium

Fall 2020

Cal State East Bay

***A Virtual Summer at Lawrence Berkeley National Laboratory***

Sonoma State Mathematics Department Colloquium

Fall 2020

Sonoma State University

***A Hypergraph Image Segmentation Algorithm***

Data Analytics and Visualization Research Group

Summer 2020

Lawrence Berkeley  
National Laboratory***The (Data) Science of Instagram Filters\****

Dinner with the Scientists

\*Postponed due to COVID-19.

Spring 2020

Stanislaus State

***Graphs with few Spanning Pseudoforests***

Women in Mathematics Special Session

\*Cancelled due to COVID-19.

Spring 2020\*

AMS Western Sectional

***Graphs with few Spanning Pseudoforests***

Algebra, Geometry, and Combinatorics Seminar

Meeting

Spring 2019

San Francisco State University

***A Graph Theorist's Perspective on the Card Game SET***

Celebrating Women in Mathematics Colloquium Series

Spring 2019

Fresno State

<b>Mathematics and Nutrition</b> Central California Mathematics Project	Fall 2018 Stanislaus State
<b>Inspiration from a Former CSU Fellow</b> NSF-GRFP Writing Workshop	Fall 2018 CSUPERB Symposium
<b>Hat Guessing and Hanabi</b> Distinguished Women in Mathematics Lecture Series	Spring 2017 San Francisco State University
<b>Transitioning to Graduate School</b> New Graduate Student Welcome	Fall 2016 University of Nebraska–Lincoln
<b>AMS Southeastern Sectional Meeting</b> <i>The Complexity of <math>\ell</math>-Hamilton Cycles in Hypergraphs</i>	Spring 2016 North Dakota State University
<b>Hat Guessing and Hanabi</b> Math Club	Spring 2016 Nebraska Wesleyan University
<b>If All You Have is Thor's Hammer</b> ISU Discrete Math Seminar	Spring 2016 Iowa State University
<b>Hat Guessing and Hanabi</b> Joint Mathematics Meetings	Spring 2016 Seattle, WA
<b>Flash Research Presentations</b> Short talks for meetings and programs within the College of Science.	Fall 2018 – Spring 2019 Stanislaus State
<b>Contributed Talks and Panels</b> 11 conference and seminar research talks and 11 invited graduate school panels.	2013 – 2018
<b>Professional Development</b> <hr/>	
<b>Enhancing Equity Initiatives: Climbing Out of Traps and Tropes to make Transformative Change</b> Hosted by The Center for Minorities in the Mathematical Sciences.	Summer 2021 Virtual
<b>Advanced Workshop in Data Science for Mathematical Sciences Faculty</b> Supported by the MAA, SIAM, and TRIPODS.	Summer 2021 Virtual
<b>LatinX Mathematical Research Community</b> Supported by the American Institute of Mathematics.	Summer 2021 Virtual
<b>A DEI Workshop for REU Directors and Faculty Mentors</b> Hosted by The Center for Minorities in the Mathematical Sciences.	Spring 2021 Virtual
<b>Advocating for Students of Color in the Mathematics Community</b> Professional development experience hosted by the American Mathematical Society.	Fall 2020 Virtual
<b>The Meaning of Racial Equity</b> Webinar part of the Learning Lab's Equity Conversation Series.	Fall 2020 Virtual
<b>paraDIGMS Fall Conference</b> Conference hosted by the American Mathematical Society.	Fall 2020 Virtual
<b>2020 CRA-WP Early and Mid Career Mentoring Workshop</b> Hosted by the Computing Research Association.	Fall 2020 Virtual

<b>Broadening Participation: 2020 MPS Workshop for New Investigators</b> Hosted by the University of Florida in collaboration with the NSF Directorate for Mathematical and Physical Sciences (MPS).	Fall 2020 Virtual
<b>Field of Dreams Conference</b> An Institute for Mathematics and its Applications and National Alliance workshop.	Fall 2020 Virtual
<b>Career Paths in the Mathematical Sciences</b> An Institute for Mathematics and its Applications and National Alliance workshop.	Summer 2020 Virtual
<b>PIC Math Summer Workshop in Data Science</b> Preparing for Industrial Careers in Mathematical Sciences	Summer 2019 Brigham Young University
<b>CIENCIA Summer Institute</b> The Collaboration for Inclusive and Engaging Curriculum, Instruction, and Achievement	Summer 2019 Stanislaus State
<b>USTARS Early Career Faculty Workshop</b> Underrepresented Students in Topology and Algebra Research Symposium	Spring 2019 Iowa State University
<b>Certificate in Inclusive Teaching</b>	Spring 2019 – current Stanislaus State

## Service

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### *Club Advising and Mentoring*

<b>Research Competition Juror</b> Stanislaus State Student Research Competition	Spring 2021 Stanislaus State
<b>DZG Sorority Faculty Advisor</b> Delta Zeta Gamma, Inc.	Fall 2020 – current Stanislaus State
<b>FMP Faculty Mentor</b> Faculty Mentor Program	Fall 2019 – current Stanislaus State
<b>SACNAS Club Co-Advisor</b> Society for the Advancement of Chicanos/Hispanics and Native Americans in Science	Fall 2019 – current Stanislaus State
<b>SIAM Club Advisor</b> Society for Industrial and Applied Mathematics	Fall 2018 – current Stanislaus State
<b>LGBTQ+ Faculty Mentor</b> Stan State LGBTQ+ Faculty Mentor Program	Fall 2018 – current Stanislaus State

### *Program, Seminar, and Conference Committees*

<b>Getting in: Graduate School, Internships, and Funding</b> Workshop Celebrating Diversity Luncheon, with Padhu Seshaiyer.	Spring 2021 2021 SIAM Annual Meeting
<b>51st Bay Area Discrete Math Conference Co-organizer</b> With graduate students from UC Berkeley.	Spring 2021 Virtually hosted by UC Berkeley
<b>The EDGE Program Application Evaluator</b> Enhancing Diversity in Graduate Education	Spring 2021
<b>Fall 2020 Pacific Math Alliance Webinar Co-organizer</b> Organized and co-hosted 6 webinars for mathematics students in the Pacific region.	Fall 2020 Virtual

**50th Bay Area Discrete Math Conference Co-organizer**

With Anastasia Chavez.

Fall 2020

Virtually hosted by  
UC Davis**Northern California Undergraduate Mathematics Conference  
Co-organizer**

With Kenneth Hoover and David Martin.

\*Cancelled due to COVID-19.

Spring 2020\*

Stanislaus State

**49th Bay Area Discrete Math Conference Lead Organizer**Supported by the Stanislaus State College of Science, Institute for Mathematics  
and its Applications, and Elsevier.

Fall 2019

Stanislaus State

**MA in Mathematics Education Working Group**

With JungHa An, Michael Bice, Björg Jóhannsdóttir, and Lynda Wynn.

Fall 2019–current

Stanislaus State

**PMA Funding and Conference Committee Member**

Pacific Math Alliance

Fall 2018 – Fall 2020

**Graduate Student Ambassador**

Assist with graduate student recruitment and outreach initiatives.

Fall 2015 – Spring 2018

University of Nebraska–Lincoln

**Women and Mathematics at CMU Lead Organizer**One-day event for undergraduate women in mathematics at Carnegie Mellon  
University supported by the IAS and CMU.

Fall 2017 – Spring 2018

WAM@CMU

**Conference Planning Committee Member**

Nebraska Conference for Undergraduate Women in Mathematics

Fall 2015 – Spring 2017

NCUWM

**Steering Committee Member**

Center for the Integration of Research, Teaching, and Learning

Fall 2016 – Spring 2018

CIRTL@Nebraska

**Application Evaluator**

UCARE funds undergraduate research at UNL.

Spring 2016, Spring 2017

University of Nebraska–Lincoln

**Graduate Student Advisory Board Representative**

Department of Mathematics

Fall 2013 – Spring 2015

University of Nebraska–Lincoln

***Conference Sessions and Workshops Organized******Advances by Scholars in the Pacific Math Alliance\****

With Andrea Arauza and Mario Banuelos.

\*Cancelled due to COVID-19.

Spring 2020

AMS Western Sectional

***Women in Science, Math is More than Just Bubbles***

With Björg Jóhannsdóttir, Brian Jue, and David Martin.

Meeting

Spring 2019, 2020

Stanislaus State Annual  
Science Day***Productive failure: What can we learn from our teaching mistakes?***

With Sarah Loeb, Emily Meehan, and Kimberly Ayers.

Fall 2018

Joint Mathematics Meetings

***Early Career Women in Discrete Mathematics***

With Jessalyn Bolkema.

Fall 2018

Joint Mathematics Meetings

**NSF-GRFP Workshop Co-organizer**

With Matt Cover and Koni Stone.

Fall 2018

Stan State CECE

***Square One: The First Year of Graduate School***

Webinar series with the Office of Graduate Studies.

Fall 2017

University of Nebraska–Lincoln



**Mathematics and Statistics Breakout Session**

UNL Campuswide TA Workshop

Summer 2016, 2017

University of Nebraska–Lincoln

**Mathematics Graduate Student Seminar Co-organizer**

With Nathan Poppelreiter.

Fall 2014 – Spring 2015

University of Nebraska–Lincoln

**Journal Reviews***Discrete Applied Mathematics, Discrete Mathematics***Teaching****Theory of Numbers (MATH 3600)**

2 sections, 10, 15 students.

Fall 2021

Stanislaus State

**Discrete Structures (MATH 2300)**

2 sections, 29, 20 students.

Fall 2021

Stanislaus State

**Senior Seminar in Mathematics (MATH 4960)**

2 sections, 21, 18 students.

Fall 2020, Spring 2021

Stanislaus State

**Finite Mathematics (MATH 1500)**

1 section, 30 students.

Spring 2021

Stanislaus State

**Calculus I Laboratory (MATH 1412)**

1 section, 19 students.

Spring 2020

Stanislaus State

**Mathematics Component Co-facilitator**

STEM Discovery Academy, with Kenneth Hoover.

Summer 2019

Stanislaus State

**Operations Research (MATH 4430)**

1 section, 24 students.

Fall 2019

Stanislaus State

**Calculus II (MATH 1420)**

2 sections, 29, 28 students.

Fall 2018, Spring 2019

Stanislaus State

**Calculus I (MATH 1410)**

7 sections, 28 – 35 students.

Fall 2018 – Spring 2021

Stanislaus State

**Calculus I**

1 section, 32 students.

Summer 2018

Carnegie Mellon University

**Calculus II**

1 section, 13 students.

Spring 2017

University of Nebraska–Lincoln

**Math Modeling**

1 section, 36 students.

Fall 2016

University of Nebraska–Lincoln

**College Algebra**

2 sections, 38 and 17 students respectively.

Fall 2014, Spring 2015

University of Nebraska–Lincoln