

BYEONGSU YU

Texas A&M University - Department of Mathematics

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EDUCATION

Ph.D. in Mathematics

Advisor: Dr. Laura Felicia Matusevich

Texas A&M University

May 2022(expected)

M.Sc. in Mathematics

Advisor: Dr. Woong Kook and Dr. Hyuk Kim (Co-advising)

Seoul National University

Aug 2017

B.B.A. in Business Administration

B.Sc. in Mathematics

B.A. in Philosophy

Yonsei University

Aug 2015

PUBLICATIONS

1. *Local cohomology of monomial ideals in affine semigroup rings*

Laura Felicia Matusevich and Byeongsu Yu

In preparation

2. *Shape-Preserving Dimensionality Reduction: An Algorithm and Measures of Topological Equivalence*

Byeongsu Yu and Kisung You

Submitted

3. *Standard pairs of monomial ideals over non-normal affine semigroups in SageMath*

Byeongsu Yu

J. Softw. Algebra Geom. (accepted)

4. *Standard pairs for monomial ideals in semigroup rings*

Laura Felicia Matusevich and Byeongsu Yu

Submitted

5. *A study on establishing legal causation of collective hazardous substances cases in a statistical viewpoint*

Dohyun Park and Byeongsu Yu

공익과 인권 (en: Public Interest and Human Rights), Vol. 15, pp. 209-261, 2015

SOFTWARE

1. *StdPairs: Library for symbolic computation over a monomial ideal of an affine (non-normal) semigroup with SageMath*

Byeongsu Yu

2. *TDakit: Toolkit for Topological Data Analysis with R*

Kisung You and Byeongsu Yu

TALKS AND PRESENTATIONS

POSTERS

Standard pairs for monomial ideals in semigroup rings

Algebra, Geometry and Combinatorics Day - XVIII

UIUC

Mar 07, 2020

TALKS

Contravariant functor appearing on monomial ideals of affine semigroup rings

Categories and Companions Symposium

Virtual

Jun 2021

When is the quotient of a semigroup ring by a monomial ideal Cohen–Macaulay?

KU Combinatorics Seminar

The University of Kansas

Apr 2021

- When is the quotient of a semigroup ring by a monomial ideal Cohen–Macaulay?
📍 Texas A&M Univ.
📅 Apr 2021
🔗
- Monomial ideals in affine semigroup rings
📍 Texas A&M Univ.
📅 Feb 2021
🔗
- Monomial ideals in affine semigroup rings
📍 (Virtual)
📅 Oct 2020
🔗
- Universal Property via Yoneda Lemma
📍 Texas A&M Univ.
📅 Nov 2019
- Generalized Ishida Complex
📍 Texas A&M Univ.
📅 Nov 2019
- Integrate $|xy(x+y)|$ over \mathbb{Z}_p with Haar measure
📍 Texas A&M Univ.
📅 Feb 2019
🔗
- Topological Data Analysis on Single-Nucleotide Polymorphism data
📍 Texas A&M Univ.
📅 Nov 2018
- Effective Resistance Preserving Isomorphism
📍 Texas A&M Univ.
📅 Oct 2017
🔗

TEACHING & MENTORING

- Explorations in Mathematics (MATH 167) – Instructor
📍 Texas A&M Univ.
📅 Fall 2020, Fall 2021
- Business Calculus (MATH 142) – Instructor
📍 Texas A&M Univ.
📅 Summer(1st) 2020, Spring 2020
- AWM Peer Mentor
📍 Texas A&M Univ.
📅 Fall 2019 – present
🔗
- Directed Reading Program Mentor
📍 Texas A&M Univ.
📅 Spring 2020, Fall 2019
🔗
- Engineering Calculus I/II (MATH 151/152) – Teaching Assistant
📍 Texas A&M Univ.
📅 Summer(2nd) 2020, Fall 2019, Summer(2nd) 2018, Summer 2021
- Functions, Trigonometry and Linear Systems (MATH 150) – Teaching Assistant
📍 Texas A&M Univ.
📅 Spring 2021, Spring 2019, Fall 2018
- Engineering Mathematics III (MATH 251) & Business Calculus (MATH 142) & Applied Algebra (MATH 433) – Grader
📍 Texas A&M Univ.
📅 Summer 2019, Summer(1st) 2018, Spring 2018
- Linear Algebra (MATH 304/311/323) – Help Session
📍 Texas A&M Univ.
📅 Fall 2017

SERVICE & OUTREACH

Student Working Seminar for Algebraic Statistics
Organizer

📅 Fall 2021

CombinaTexas 2021

Session Chair

📅 Feb 20-21, 2021

Student Working Seminar for Algebra and Geometry

CO-Organizer (w. Pablo Ocal)

📅 Fall 2020, Fall 2021



American Mathematical Society Graduate Student Chapter

Vice Preseident

📅 Fall 2019 - Spring 2020

Student Working Seminar for Category Theory

Organizer

📅 Summer 2019 – Fall 2019



CombinaTexas 2019

Session Moderator

📅 Mar 23, 2019

Integral Bee

Volunteer

📅 Mar 26, 2018

STEMFest

Volunteer

📅 Feb 3, 2018

High School Math Contest

Volunteer

📅 Oct 21, 2017

Math Circle

Volunteer

📅 Fall 2017 – Spring 2018

AWARDS & HONORS

➤ *Best Prize in Undergraduate Research*

📅 Sep 2014

📍 Yonsei Univ. (Computational Science and Engineering)

➤ *Award of Excellence in Economics Dissertation Contest*

📅 Nov 2009

📍 Maeil Business Newspaper (Seoul, South Korea)

BUSINESS EXPERIENCE

➤ *38 Securities – Intern*

📍 Quincy, MA.

📅 Jan 2015 – Feb 2015

Developing algorithmic option trading application using open C++ API from Interactive Brokers.

➤ *Ars Praxia (former: TREUM) – Research Intern*

📍 Seoul, Korea.

📅 Jan 2013 – Jul 2013

Implemented a time-series analysis of a semantic network generated from 492,754 mentions on Twitter related to two elections, the Seoul city mayoral election of 2011 and the South Korean presidential election of 2012.

➤ *17th Division, Republic of Korean Army – Sergeant*

📍 Seoul, Korea.

📅 Feb 2011 – Nov 2012

- Squad leader for the human resource department of the headquarters of the 307 th independent artillery battalion.
- Reported the quinquennial financial status of the battalion for the financial audit of the Korean Army Headquarters.

LANGUAGES

English, Korean



LaTeX/TikZ

Python, SageMath, Macaulay2

C++

