

BYEONGSU YU

Texas A&M University - Department of Mathematics

✉ byeongsu.yu@tamu.edu

📍 BLOC 506B

🌐 byeongsuyu.github.io

🐦 @yoo99101

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 quotients of affine semigroup rings over monomial ideals*

👤 Laura Felicia Matusevich and Byeongsu Yu

In preparation

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

👤 Kisung You and Byeongsu Yu

Submitted



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

👤 Byeongsu Yu

Submitted



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?*

 - Algebra and Combinatorics Seminar

📍 Texas A&M Univ.

📅 Apr 2021

🔗
- *Monomial ideals in affine semigroup rings*

 - CombinaTexas 2021

📍 Texas A&M Univ.

📅 Feb 2021

🔗
- *Monomial ideals in affine semigroup rings*

 - Graduate Algebra Symposium

📍 (Virtual)

📅 Oct 2020

🔗
- *Universal Property via Yoneda Lemma*

 - Graduate Student Seminar

📍 Texas A&M Univ.

📅 Nov 2019
- *Generalized Ishida Complex*

 - Algebra and Combinatorics Seminar

📍 Texas A&M Univ.

📅 Nov 2019
- *Integrate $|xy(x+y)|$ over \mathbb{Z}_p with Haar measure*

 - Gathering in Graduate Expository Mathematics (GIGEM)

📍 Texas A&M Univ.

📅 Feb 2019

🔗
- *Topological Data Analysis on Single-Nucleotide Polymorphism data*

 - Graduate Student Seminar

📍 Texas A&M Univ.

📅 Nov 2018
- *Effective Resistance Preserving Isomorphism*

 - Graduate Student Seminar

📍 Texas A&M Univ.

📅 Oct 2017

🔗

TEACHING & MENTORING

- *Explorations in Mathematics (MATH 167) – Instructor*

Gave lectures via face-to-face and online simultaneously, wrote lecture notes and 4 exams, wrote weekly quizzes, held weekly office hours.

📍 Texas A&M Univ.

📅 Fall 2020
- *Business Calculus (MATH 142) – Instructor*

Gave lectures via face-to-face and online, wrote/graded 3 midterm exams and a final exam, wrote weekly quizzes, held weekly office hours.

📍 Texas A&M Univ.

📅 Summer(1st) 2020, Spring 2020
- *AWM Peer Mentor*

Peer-mentor for the first-year mathematics graduate students to help them adapt to new environment and responsibilities.

📍 Texas A&M Univ.

📅 Fall 2019 – present

🔗
- *Directed Reading Program Mentor*

Discussed weekly with an undergraduate mentee to study mathematical topics outside of the undergraduate coursework.

📍 Texas A&M Univ.

📅 Spring 2020, Fall 2019

🔗
- *Engineering Calculus I/II (MATH 151/152)*

– Teaching Assistant

Wrote/graded weekly Python lab assignments and solution sets, and weekly quizzes.

📍 Texas A&M Univ.

📅 Summer(2nd) 2020, Fall 2019, Summer(2nd) 2018, Summer 2021
- *Functions, Trigonometry and Linear Systems (MATH 150)*

– Teaching Assistant

Lead weekly recitation, wrote and graded biweekly quizzes.

📍 Texas A&M Univ.

📅 Spring 2021, Spring 2019, Fall 2018
- *Engineering Mathematics III (MATH 251) & Business Calculus (MATH 142) & Applied Algebra (MATH 433) – Grader*

Graded (bi)weekly assignments or quizzes.

📍 Texas A&M Univ.

📅 Summer 2019, Summer(1st) 2018, Spring 2018
- *Linear Algebra (MATH 304/311/323) – Help Session*

Tutoring undergraduate students about junior-level linear algebra courses.

📍 Texas A&M Univ.

📅 Fall 2017

SERVICES & OUTREACH

CombinaTexas 2021

Session Chair

Student Working Seminar for Algebra and Geometry

📅 Feb 20-21, 2021



CO-Organizer (w. Pablo Ocal)
 American Mathematical Society Graduate Student Chapter
 Vice Preseident
 Student Working Seminar for Category Theory
 Organizer
 CombinaTexas 2019
 Session Moderator
 Integral Bee
 Volunteer
 STEMFest
 Volunteer
 High School Math Contest
 Volunteer
 Math Circle
 Volunteer

📅 Fall 2020
 📅 Fall 2019 - Spring 2020
 📅 Summer 2019 – Fall 2019
 📅 Mar 23, 2019
 📅 Mar 26, 2018
 📅 Feb 3, 2018
 📅 Oct 21, 2017
 📅 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



TeX/TikZ



Python, Macaulay2



C++

