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. *Standard pairs of monomial ideals over non-normal affine semigroups in* SageMath
   👤 **Byeongsu Yu**
   Submitted

2. *Standard pairs for monomial ideals in semigroup rings*
   👤 Laura Felicia Matusevich and **Byeongsu Yu**
   Submitted.

3. *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**

AWARDS & HONORS

⟩ *Best Prize in Undergraduate Research* 📍 Yonsei Univ. (Computational Science and Engineering)	🗓 Sep 2014
⟩ *Award of Excellence in Economics Dissertation Contest* 📍 Maeil Business Newspaper (Seoul, South Korea)	🗓 Nov 2009

TALKS AND PRESENTATIONS

POSTERS

🗃 *Standard pairs for monomial ideals in semigroup rings*

● Algebra, Geometry and Combinatorics Day - XVIIII	📍 UIUC	🗓 Mar 07, 2020

TALKS

⟩ *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   📍 (Online)   📅 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*   📍 Texas A&M Univ. 📅 Fall 2020
  Gave lectures via face-to-face and online simultaneously, wrote lecture notes and 4 exams, wrote weekly quizzes, held weekly office hours.

- *Business Calculus (MATH 142) – Instructor*   📍 Texas A&M Univ. 📅 Summer(1st) 2020, Spring 2020
  Gave lectures via face-to-face and online, wrote/graded 3 midterm exams and a final exam, wrote weekly quizzes, held weekly office hours.

- *AWM Peer Mentor*   📍 Texas A&M Univ. 📅 Fall 2019 – present ↗
  Peer-mentor for the first-year mathematics graduate students to help them adapt to new environment and responsibilities.

- *Directed Reading Program Mentor*   📍 Texas A&M Univ. 📅 Spring 2020, Fall 2019 ↗
  Discussed weekly with an undergraduate mentee to study mathematical topics outside of the undergraduate coursework.

- *Engineering Calculus I/II (MATH 151/152) – Teaching Assistant*   📍 Texas A&M Univ. 📅 Summer(2nd) 2020, Fall 2019, Summer(2nd) 2018
  Wrote/graded weekly Python lab assignments and solution sets, and weekly quizzes.

- *Functions, Trigonometry and Linear Systems (MATH 150) – Teaching Assistant*   📍 Texas A&M Univ. 📅 Spring 2021, Spring 2019, Fall 2018
  Lead weekly recitation, wrote and graded biweekly quizzes.

- *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
  Graded (bi)weekly assignments or quizzes.

- *Linear Algebra (MATH 304/311/323) – Help Session*   📍 Texas A&M Univ. 📅 Fall 2017
  Tutoring undergraduate students about junior-level linear algebra courses.

SERVICES & OUTREACH

CombinaTexas 2021
Session Chair   📅 Feb 20-21, 2021

Student Working Seminar for Algebra and Geometry ↗
CO-Organizer (w. Pablo Ocal)   📅 Fall 2020

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

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   ● ● ● ● ●

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LATEX/TikZ   ● ● ● ● ●
Python, C, Macaulay2   ● ● ● ● ○
C++   ● ● ● ○ ○