

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*
👤 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
- *When is the quotient of a semigroup ring by a monomial ideal Cohen–Macaulay?*
 - KU Combinatorics Seminar
- *When is the quotient of a semigroup ring by a monomial ideal Cohen–Macaulay?*
 - Algebra and Combinatorics Seminar

📍 Virtual

📍 The University of Kansas

📍 Texas A&M Univ.

📅 Jun 2021

📅 Apr 2021

📅 Apr 2021



> <i>Monomial ideals in affine semigroup rings</i> • CombinaTexas 2021	📍 Texas A&M Univ.	📅 Feb 2021	🔗
> <i>Monomial ideals in affine semigroup rings</i> • Graduate Algebra Symposium	📍 (Virtual)	📅 Oct 2020	🔗
> <i>Universal Property via Yoneda Lemma</i> • Graduate Student Seminar	📍 Texas A&M Univ.	📅 Nov 2019	
> <i>Generalized Ishida Complex</i> • Algebra and Combinatorics Seminar	📍 Texas A&M Univ.	📅 Nov 2019	
> <i>Integrate $xy(x+y)$ over \mathbb{Z}_p with Haar measure</i> • Gathering in Graduate Expository Mathematics (GIGEM)	📍 Texas A&M Univ.	📅 Feb 2019	🔗
> <i>Topological Data Analysis on Single-Nucleotide Polymorphism data</i> • Graduate Student Seminar	📍 Texas A&M Univ.	📅 Nov 2018	
> <i>Effective Resistance Preserving Isomorphism</i> • Graduate Student Seminar	📍 Texas A&M Univ.	📅 Oct 2017	🔗

TEACHING & MENTORING

> <i>Explorations in Mathematics (MATH 167) – Instructor</i> 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, Fall 2021	
> <i>Business Calculus (MATH 142) – Instructor</i> 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	
> <i>AWM Peer Mentor</i> 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	🔗
> <i>Directed Reading Program Mentor</i> Discussed weekly with an undergraduate mentee to study mathematical topics outside of the undergraduate course-work.	📍 Texas A&M Univ.	📅 Spring 2020, Fall 2019	🔗
> <i>Engineering Calculus I/II (MATH 151/152) – Teaching Assistant</i> 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	
> <i>Functions, Trigonometry and Linear Systems (MATH 150) – Teaching Assistant</i> Lead weekly recitation, wrote and graded biweekly quizzes.	📍 Texas A&M Univ.	📅 Spring 2021, Spring 2019, Fall 2018	
> <i>Engineering Mathematics III (MATH 251) & Business Calculus (MATH 142) & Applied Algebra (MATH 433) – Grader</i> Graded (bi)weekly assignments or quizzes.	📍 Texas A&M Univ.	📅 Summer 2019, Summer(1st) 2018, Spring 2018	
> <i>Linear Algebra (MATH 304/311/323) – Help Session</i> Tutoring undergraduate students about junior-level linear algebra courses.	📍 Texas A&M Univ.	📅 Fall 2017	

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
CombinaTexas 2019
Session Moderator
Integral Bee
Volunteer
STEMFest
Volunteer
High School Math Contest
Volunteer
Math Circle
Volunteer

📅 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



LaTeX/TikZ

Python, SageMath, Macaulay2

C++



ACADEMIC REFEREES

👤 <i>Dr. Laura Matusevich</i> <ul style="list-style-type: none">• Professor	📍 Department of Mathematics at Texas A&M University	✉ laura at tamu.edu	🔗
👤 <i>Dr. Sarah Witherspoon</i> <ul style="list-style-type: none">• Professor	📍 Department of Mathematics at Texas A&M University	✉ sjw at tamu.edu	🔗
👤 <i>Dr. Catherine Yan</i> <ul style="list-style-type: none">• Professor	📍 Department of Mathematics at Texas A&M University	✉ cyan at math.tamu.edu	🔗