Curriculum Vit

Timmy Ma

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Research Interests

Applied Mathematics - stochastic processes, Markov chains, statistical learning, probability
Complex Social Phenomena - linguistics, language learning

Education

Ph.D. Mathematics | University of California, Irvine May 2018

Thesis Advisor: Natalia Komarova, Ph.D.
Dissertation: A Nonlinear Approach To Learning From an Inconsistent Source (with some applications)

M.S. in Mathematics | University of California, Irvine Sept 2014
B.A. in Mathematics | University of California, Berkeley May 2011
A.S. in Mathematics | El Camino Community College May 2009

Papers and Preprints

Chen, X., Wang, X., Ma, T., Escudero, D., & Fu, F. (2020). \E ectiveness of Massive Travel Restrictions on Mitigating outbreaks of COVID-19 in China." in review.

Dong, T., Zeng, R., & Ma, T. (2019). \Diplomatic Dynamics of International Treaty Negotiations." The PUMP Journal of Undergraduate Research, 2, 199-224.

Ma, T., Lameira, A., & Komarova, N. L., (2019) \The Evolution And Meaning Of The First Word." In review Proceedings B

Ma, T., & Komarova, N. L. (2019), \Object-Label-Order E ect When Learning From an Inconsistent Source." Cogn Sci, 43: e12737. doi:https://10.1111/cogs.12737

Ma, T., Wood, K., Xu, D., Guidotti, P., Pantano, A., & Komarova, N.L., (2017), \Diversity and Admission Predictors for Mathematics PhD Success." Notices of the AMS, vol 65, No 6, p 676.

Ma, T., & Komarova, N.L., (2017), \Mathematical Modeling of Learning from an Inconsistent Source: A Nonlinear Approach." Bulletin of mathematical biology, 79(3), pp.635-661.

Employment

Assistant Professor | Xavier University of Louisiana Aug 2021 - Present
Instructor in Applied and Computational Mathematics | Dartmouth College 2018 - 2021
Graduate Student Researcher | University of California, Irvine 2012 - 2018
Teaching Associate | University of California, Irvine 2017 - 2018
Teaching Assistant | University of California, Irvine 2012 - 2017
Instructor | California Alliance for Minority Participation 2015 - 2017
Graduate Student Instructor | University of California, Berkeley 2011-2012

Research Experience

Assistant Professor | Xavier University of Louisiana Aug 2021 - Present

Advising undergraduate students in research projects in math biology, language regularization, and mathematical modeling.
Creating mathematical models to explain complex social phenomena with MATLAB and R.

Research Associate II | Dartmouth College July 2018 - July 2021

Creating mathematical models to explain complex social phenomena with MATLAB and R.
Participating member of the Fu Lab.
Advising undergraduate students in their research projects in epidemiology, immunology, opioid crisis, art history, sports analytics.
Advising Women In Science Program students in immunology research.
Teaching an undergraduate topics course in Applied Math. Topics include: Language algorithms, Markov chains, stochastic processes.
Facilitating the Future Faculty Program to prepare math graduate students for the academic job market.
Organizing the Applied and Computational Mathematics weekly seminars.
Presenting research at the JMM.
Conducting human subject experiments with IRB approval.

Graduate Student Researcher | University of California, Irvine Aug 2012 - July 2018

Creating mathematical models to explain complex social phenomena with MATLAB.
Advising undergraduate students in their research projects in language learning, color categorization.
Conducting human experiments to con rm simulated data from mathematical models on language learning.
Writing and receiving approval from Institutional Review Board to conduct human experiments.
Conducting statistical analysis of graduate performance in a Math PhD program to predict the success of a prospective graduate student.
Presenting research at the JMM and Mathfest.

Teaching Experience & Fellowship

Assistant Professor | Xavier University of Louisiana, New Orleans, LA 2021 - Present

Coordinating the Math 1070 Calculus team by managing administrative duties with assignments, midterms, integration of Khan Academy, and nal
Creating, implementing, and devising lesson plans for various undergraduate math courses.
Mentoring Supplemental Instructors from XULA's Tutoring center to help facilitate lectures in the classroom.
Writing, proctoring, and grading quizzes/exams.
Maintaining grade-book for lecture courses.
Creating and maintaining a healthy working and learning environment.
Providing support and guidance for students academically inside and outside the classroom.
Courses taught:

- Single Variable Calculus (Fall 2021, Spring 2022, Fall 2021)
- Developmental Math Drill

Instructor | Dartmouth College, Hanover, New Hampshire 2018 - 2021

Coordinating the Math 3 Calculus team by managing administrative duties with assignments, midterms, integration of Khan Academy, and nal
Creating, implementing, and devising lesson plans for various undergraduate math courses.
Mentoring Learning Fellows from the Dartmouth Center for the Advancement of Learning to help facilitate lectures in the classroom.
Utilizing online-centered educational tools such as Kahoot! and Khan Academy to formatively assess a classroom of 30-50 students.
Writing, proctoring, and grading quizzes/exams.
Maintaining grade-book for lecture courses.
Creating and maintaining a healthy working and learning environment.
Providing support and guidance for students academically inside and outside the classroom.
Courses taught:

- Single Variable Calculus (Fall 2018 (2 courses), Fall 2019, Winter 2020)
- Topics in Applied Mathematics (Winter 2019)
- Di erential Equations (Fall 2019)

Teaching Associate (Instructor) | University of California, Irvine Fall 2017 - Winter 2018

Teaching Associate for Math 2B (Integral Calculus)
Creating, implementing, and devising lesson plans for lecture.
Utilizing online-centered educational tools to formatively assess a classroom of 50-70 students.
Mentoring Teaching Assistants to facilitate the discussion sections.
Writing, proctoring, and grading quizzes/exams.
Maintaining grade-book for lecture courses.
Creating and maintaining a healthy working and learning environment.
Providing support and guidance for students academically inside and outside the classroom.

Teaching Experience & Fellowship Cont'd

Pedagogical Fellow | University of California, Irvine 2016 - 2017

Creating, implementing, and designing Teaching workshops for the Teaching Assistant Professional Development Program. Workshops include: quiz writing, active learning, diversity, microteaching, utilizing technology in the classroom, and o ce hours.
Designing a course to succeed on the academic job market and develop plans for long-term development on teaching.
Improving Teaching Assistants in the School of Physical Sciences through consultations of their pedagogical skills.
Mentoring other Teaching Assistants within the Math department in regards to teaching and pedagogy.
Studying both general and math-speci c pedagogical theory, as well as observing and implementing evidence-based teaching practices in discussion sections.

Teaching Assistant | University of California, Irvine Fall 2012{Winter 2018

Creating, implementing, and devising lesson plans for discussion sections.
Utilizing online-centered educational tools to assess students formatively in the classroom.
Writing, proctoring, and grading quizzes/exams.
Maintaining grade-book for lecture courses.
Courses Taught:

- Calculus 1 (2 Quarters) { Di erential calculus
- Calculus 2 (4 Quarters) { Integral calculus
- Multivariable Calculus (5 Quarters) { Calculus with several variables
- Numerical Analysis { Root nding methods, interpolation, numerical di erentiation and integration, numerical linear algebra
- Introduction to Group Theory { Groups, subgroups, normal groups, isomorphisms
- Introduction to Proofs (2 Quarters) { Set theory, if/then statements, induction, relations
- Linear Algebra { vector spaces, null-rank theorem, linear independence
- Di erential Equations { separation of variables, heat equation, wave equation

Instructor | California Alliance for Minority Participation (CAMP) Summer 2015 - 2017

Developing and implementing a unique three-week curriculum on Calculus and problem solving and paradoxes of in nities.
Teaching students about related rates, optimization, Riemann Sums, Fundamental Theorem of Calculus, volumes of objects with integrals.
Informing, advising, and mentoring students about career choices and opportunities from UCI.
Preparing incoming freshmen for their transition from high school to UCI.
Utilizing online-centered educational tools to assess students formatively in the classroom.

Graduate Student Instructor | University of California, Berkeley Fall 2011

Teaching Assistant for one semester-long Calculus course in Fall Program for Freshman.
Providing support and guidance for students academically inside and outside the classroom.

Seminar and Conference Talks

Mathfest 2022, Philadelphia, PA — August 2022
Bee Colony Optimization for Travelling Salesperson problem: New Orleans tour

JMM 2019, Baltimore MD — January 2019
Object-Label-Order E ect in a noisy learning environment

JMM 2018, San Diego CA — January 2018
Feature-Label-Order E ect in a noisy learning environment

JMM 2018, San Diego CA — January 2018
Using Kahoot! in the classroom to engage calculus students

Mathfest 2017, Chicago IL — July 28, 2017
Admission Predictors for PhD Success: Preliminary Results

Math Graduate Seminar, Irvine CA — May 26, 2017
Informational meeting: Follow-up on teaching and improvements for TAPDP

Diversity in Mathematics Festival, Irvine CA — Apr 15, 2017
Admission Predictors for PhD Success: Preliminary Results

LUCE Graduate Student Conference, Irvine CA — May 27th, 2016
Regularization of languages: A new mathematical framework of learning from an inconsistent source

Joint Mathematics Meetings, Seattle WA — Jan 4-9, 2016
Regularization of languages: A new mathematical framework of learning from an inconsistent source

Joint Mathematics Meetings, Seattle WA — Jan 4-9, 2016
Curriculum development for the California Alliance for Minority Participation Summer Science Academy

Honors and Awards

Postdoctoral Scholar Professional Development Award (Dartmouth College)	2019
Jean-Claude Falmagne Dissertation Award (UC Irvine)	2018

References

Feng Fu, Ph.D
Assistant Professor
Dartmouth College
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Natalia Komarova, Ph.D (Thesis Advisor)
Professor
University of California, Irvine
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Daniel Mann, Ph.D (teaching reference)
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