

Curriculum Vitæ

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). “Effectiveness 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 Effect 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 confirm 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 final
 - 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 final
 - 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)
 - * Differential 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 office 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-specific 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) – Differential calculus
 - * Calculus 2 (4 Quarters) – Integral calculus
 - * Multivariable Calculus (5 Quarters) – Calculus with several variables
 - * Numerical Analysis – Root finding methods, interpolation, numerical differentiation 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
 - * Differential 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 infinities.
 - 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 Effect in a noisy learning environment
- JMM 2018, San Diego CA January 2018
Feature-Label-Order Effect 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

Service, Professional Activities, Outreach

- Math 3 Calculus Coordinator, Hanover NH August 2019 - June 2021
Coordinating the Math 3 Calculus team at Dartmouth College by managing administrative duties with assignments, midterms, integration of Khan Academy, and final.
- Future Faculty Program Advisor, Hanover NH January 2019 - Present
Preparing Math graduate students for the academic job market at Dartmouth College
- Women in Science Program Advisor, Hanover NH January 2019 - June 2021
Advisor for undergraduate women in Science through WISP at Dartmouth College
- Math Mentor Program, Irvine CA Aug 2015 - May 2018
Graduate Student Mentor Coordinator for UCI math department.
- Math Graduate Student Colloquium, Irvine CA Aug 2015 - May 2018
Co-chair and organizer.
- DECADE Competitive EDGE mentor, Irvine CA Summer 2017
Mentor to incoming graduate students from diverse backgrounds participating in research with the Diverse Educational Community and Doctoral Experience (DECADE).
- Joint Mathematics Meetings, Seattle WA Jan 4-9, 2016
Co-chair for AMS Contributed Paper Session on Computer Science, Information, Control Theory, and Economics, II.
- UCI Middle School Math Circle, Irvine CA Fall 2013–May 2017
Volunteer for group of instructors to develop and coordinate math activities for middle school students in Orange County.
- Southern CA Regional Jr. Science And Humanities Symposium, Irvine CA March, 2014-2016
Judge.
- Mathlete, Irvine CA Fall 2012 - May 2018
Captain and Organizer of the Math Department Intramural Sports team.

Honors and Awards

- Postdoctoral Scholar Professional Development Award (Dartmouth College) 2019
- Jean-Claude Falmagne Dissertation Award (UC Irvine) 2018
- Competitive EDGE mentor (UC Irvine) (\$400 stipend) 2017
- Teaching Excellence (UC Irvine) 2017
- Tom Angell Fellowship Graduate Student Commendation Award (UC Irvine) 2017
- Outstanding Mathematics Teaching Assistant Award (UC Irvine) 2016
- Excellence in Teaching Certification (UC Irvine) 2016
- Mentoring in Excellence Program Certification (UC Irvine) (Six-Week certification) 2016
- Pedagogical Fellowship (UC Irvine) (\$2000 stipend) 2016-2017
- Outstanding Contributions to the Department Award (UC Irvine) 2015
- UC Berkeley Undergraduate Scholarship (UC Berkeley) 2009-2011

Skills, Training, Certification

- MATLAB
Mathematical modeling, stochastic processes, Markov Chains, learning algorithms
- R
Mathematical modeling, statistical learning, logistic regression
- Mathematica
Mathematical modeling, plotting, coding
- Certificate of Teaching Excellence
Advanced training in evidence-based pedagogy
- UCI Center for Integration, Research, Teaching, and Learning (CIRTL) Associate Level
Curriculum development, active learning research, Inquiry Based Learning, formative and summative assessment
- Mentoring Excellence Program Certification
Conflict resolution, Peer advisor

References

Feng Fu, Ph.D
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Natalia Komarova, Ph.D (Thesis Advisor)
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