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Zong SHANG

Personal Information

- Last Name: Shang

- First Name: Zong

- Address: Bureau 3032, 5, avenue Henry Le Chatelier. 91120 Palaiseau, France

Academic Appointment

Visiting Assistant Professor   **Aug 2026 - Now**
School of Mathematics, Georgia Institute of Technology, Atlanta, USA

Mentor: Vladimir Koltchinskii

Education

Ph.D. in Applied Mathematics   **September 2023 - April 2026 (expected)**
Center for Research in Economics and Statistics (CREST)-École Nationale de la Statistique et de l'Administration Économique (ENSAE), Institut Polytechnique de Paris, Palaiseau, France

Advisors: Guillaume Lecué and Matthieu Lerasle

Reviewers: Vladimir Koltchinskii and Sara Van de Geer.

Jury: Alexandre Tsybakov, Claire Boyer, Vladimir Koltchinskii and Sara Van de Geer.

Invite: Marta Strezecka, and Taiji Suzuki.

Master in Data Science   **September 2022 - August 2023**
Institut Polytechnique de Paris, Palaiseau, France

Bachelor in Computer Science   **September 2017 - August 2021**
Jilin university, Changchun, China

Research

Interests
- Feature Space Decomposition (FSD) for refined uniform-convergence analyses of non-asymptotic population excess risk in supervised learning.

- Benign overfitting and related phenomena in modern statistical learning theory.

- New mathematical developments inspired by statistical learning, especially in empirical process theory and the geometry of Banach spaces.

Publications
All papers are listed in lexicographic order.

- A geometrical viewpoint on the benign overfitting and self-induced regularization properties of the minimum ℓ_2-norm interpolant estimator, Probability Theory and Related Fields, 2022, with G.Lecué.
- A Geometrical Analysis of kernel ridge regression and its applications, The Annals of Statistics, 2025, 53, 2592 - 2616, invited poster at NeurIPS 2025 upon recommendation by the Editors of the Annals of Statistics, with G. Gavrilopoulos and G.Lecué.

Pre-prints
- Upper bounds for the L^q empirical process via generic chaining, arXiv 2511.06338.
- Sharp convergence rates for Spectral methods via the feature space decomposition method, arXiv 2512.14473, with G.Lecué and Z. Li.

In preparation
- Benign overfitting property of the minimum norm interpolant estimator in regression and classification via Feature Space Decomposition, with R. Adamczak, G.Lecué and M. Strzelecka. Here is an introduction of this work.
- Generalization Error of Mean Field Shallow Neural Networks, with G.Lecué, T. Suzuki, and T. Wakayama, Preprint available upon request. Here is an introduction of this work.

Long-term Visiting

Dec 2023 - Jan 2024
Center for Statistical Science, Tsinghua University, China. Host by Qian Lin.
Aug 2025 - Oct 2025
RIKEN, Japan. Host by Taiji Suzuki. Funded by RIKEN-AIP Overseas Student Collaboration Program.
Oct 2025 - Dec 2025
Institute of Mathematics, University of Warsaw, Poland. Host by Radosław Adamczak. Funded by Erasmus+ PhD mobility grant.
Apr 2026 - Jun 2026
Department of Statistics and Data Science, Cornell University, USA. Host by Florentina Bunea. Funded by EUR.

Talks

Center for Statistical Science, Tsinghua University, China, 2023.
RIKEN - AIP, Tokyo University, Japan, 2024.
Seminar on Probability Theory and Mathematical Statistics, Department of Mathematics, Bielefeld University, Germany, 2024.
Meeting in Mathematical Statistics, Rencontres de Statistique Mathématique, New challenges in high-dimensional statistics, CIRM, France, 2024.
Seminar Series on the Mathematics of Data Science - Department of Applied Mathematics, Twente, Netherlands, 2025.
Seminar of Probability Group - Faculty of Mathematics, Informatics, and Mechanics, University of Warsaw, Poland, 2025.
Meeting in Mathematical Statistics, Rencontres de Statistique Mathématique, Statistical thinking in the age of AI: decision-making and reliability, CIRM, France, 2025.
Séminaire Probabilités et Statistiques, Laboratoire de Mathématiques d'Orsay (LMO), France, 2026.
Seminar Machine Learning Genoa Center (MaLGa), University of Genova, Italy, 2026.

Teaching

- AI-CS1013 - M3 - Integrals & Differential Calculus - TD, Bachelor in Artificial Intelligence, Data and Management Sciences, 2025 Spring, CentraleSupélec, Paris Saclay.

Professional

Reviewer of Annals of Applied Probability, Annals of Statistics ($\times 3$), Bernoulli, Electronic Journal of Statistics, Journal of the American Statistical Association, Journal of Machine Learning Research.

GRANTS

Visiting Grant
EUR -École Universitaire de Recherche 'DATA EFM'   *2026*

Visiting Grant
RIKEN-AIP Overseas Student Collaboration Program   *2025*

Visiting Grant
Erasmus+ PhD mobility grant   *2025*

Fellowship
PhD-track fellowship by Institut Polytechnique de Paris   *2021 - 2023*

Fellowship
PhD early call fellowship by l'École Doctorale de Mathématiques Hadamard (EDMH)   *2023 - 2026*

REFEREES

- **Guillaume Lecué**, Professor of Statistics and Machine Learning at ESSEC Business school, ESSEC Business School. 3 Av. Bernard Hirsch. B.P. 50105. 95021 Cergy, France, lecue@essec.edu.
- **Alexandre Tsybakov**, Professor of Statistics at CREST-ENSAE alexandre.tsybakov@ensae.fr, 5, avenue Henry Le Chatelier. 91120 Palaiseau, France.
- **Johannas Schmidt-Hieber**, Professor of Statistics at the University of Twente, Zilverling Building, Room 2057 Drienerlolaan 5, 7522 NB Enschede, a.j.schmidt-hieber@utwente.nl.
- **Radoslaw Adamczak**, Professor of Mathematics, Institute of Mathematics, University of Warsaw, ul. Banacha 2 / 02-097 Warszawa / Poland, radamcz@mimuw.edu.pl.