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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 -

School of Mathematics, Georgia Institute of Technology, Atlanta, USA

Mentor: Vladimir Koltchinskii

EDUCATION

Ph.D. in Applied Mathematics

September 2023 - April 2026

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, Marta Strezecka and Sara Van de Geer.

Invite: Vladimir Koltchinskii, 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. Gavriloopoulos 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.
- Generalization Error of Mean Field Shallow Neural Networks, with G.Lecué, T. Suzuki, and T. Wakayama.

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 Radostaw 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.

Jul 2026

Department of Statistics, Rutgers University, USA. Host by Qiyang Han. 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.