

Qixuan Wang

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EDUCATION

Duke Kunshan University

Bachelor of Science in Applied Mathematics and Computational Science

Kunshan, China

September 2020 – May 2024

- **Combined Cumulative GPA:** 3.624/4.0 (Dean's List: Fall 2020), **Major GPA:** 3.7/4.0

Duke University

Exchange Program

Durham, USA

January 2023 – May 2023

- **GPA:** 4.0/4.0 (Dean's List with Distinction: Spring 2023)

PUBLICATIONS

- Italo Simonelli and **Qixuan Wang**. An Elementary Proof of the Law of Iterated Logarithm for Minima and New Extensions of the Borel-Cantelli Lemma. *Under Review*, 2022.
Available at [SSRN](#); listed on SSRN's [Top Ten](#) download list for Probability & Statistics eJournal

RESEARCH EXPERIENCES

Diffusion Probabilistic Models [\[Code\]](#)

Supervised by Professor Jian-Guo Liu (Duke University)

Durham, USA

May 2023 – Present

- Adopted the input perturbation method to the single image generation and proposed an improved version of the single image denoising diffusion model (SinDDM)
- Achieved better generated image quality than the original method and planned to apply the new algorithm to speech synthesis and text generation

The Sunflower Lemma

Supervised by Professor Italo Simonelli

Kunshan, China

June 2022 – December 2022

- Aimed to make an improvement of the existing lower bound for finite delta systems
- Pinpointed and corrected a mistake in a formula for calculating the lower bound in a paper by Harvey L. Abbott and got the correct lower bound in some cases

The Borel-Cantelli Lemma and the Growth Rate of Partial Maxima

Supervised by Professor Italo Simonelli

Kunshan, China

October 2021 – June 2022

- Presented a new, simple proof of the law of iterated logarithm for minima of uniform random variables and proved new extensions of the Borel-Cantelli Lemma
- Published a preprint on SSRN – [An Elementary Proof of the Law of Iterated Logarithm for Minima and New Extensions of the Borel-Cantelli Lemma](#)

PROJECTS

[Bark Voice Cloning and Voice Cloning for Chinese Speech](#)

- Integrated Bark voice cloning with SambertHifigan for Chinese speech and created an intuitive, easy-to-use user interface [\[Code\]](#) [\[Demo\]](#)
- Received over 1,300 stars on GitHub; one of the Top 20 applications sorted by trending on Hugging Face

[ChatGLM2 Voice Cloning](#)

- Enabled users to chat with any character they like in real time using large language models, talking face animation and voice cloning [\[Code\]](#)
- Received over 450 stars on GitHub

[Modeling the COVID-19 Epidemic with Ordinary Differential Equations](#)

Supervised by Professor Konstantinos Efsthathiou

- Discussed thoroughly the SIR (Susceptible-Infected-Removed) model for the spread of disease and some of its variants in epidemiology [\[Report\]](#) [\[Slides\]](#)
- Combined several variants of the SIR model to get a new model that takes more parameters into account

TALKS

- **The Sunflower Lemma: Understanding Highly Regular Patterns in a Large Uniform Family**
DKU Discrete Math Seminar
November 24, 2023 [[Recording](#)]
- **The Borel-Cantelli Lemma and the Growth Rate of Partial Maxima**
DKU Discrete Math Seminar
March 24, 2023 [[Slides](#)]
- **The Probabilistic Method: The Basic Method and the Local Lemma**
DKU Discrete Math Seminar
September 23, 2022 [[Slides](#)]

TEACHING EXPERIENCES

- Tutor in **Real Analysis** (MATH 308): Spring 2023
- Tutor in **Probability and Statistics** (MATH 206): Spring 2023, Fall 2023
- Tutor in **Probability and Statistics** (MATH 205): Spring 2022, Fall 2022, Spring 2023, Fall 2023
- Tutor in **Introduction to Applied Statistical Methods** (STATS 101): Spring 2022

LEADERSHIP EXPERIENCES & SERVICE

- Founder of United Platform sponsored by DKU Innovation Incubator: From Fall 2021 to Spring 2022 [[News](#)]
- Vice President of DKU Soccer Association: From Fall 2021 to Spring 2022 [[News](#)]
- Director of Publicity of DKU Soccer Association: Spring 2021 [[News](#)]
- Played for DKU Varsity Soccer Team: From Fall 2020 to Fall 2022 [[News](#)]

DEMOCRATIZATION OF ARTIFICIAL INTELLIGENCE

- **A content creator:** Made more than **30** videos about how to use various applications of generative AI, such as speech synthesis, stable diffusion, and large language models on bilibili – one of China's most popular video-sharing platforms. My [channel](#) now has over **8k** followers, and my videos have about **600k** views in total.
- **Open-source projects:** Built many deep learning applications, all of which are open-source. My [GitHub](#) projects have received over **2k** stars in total. My speech synthesis [project](#) was one of the Top **20** applications sorted by trending on Hugging Face.
- **Entrepreneurship:** Worked on a startup project named [TalkTalkAI](#). My goal is to let everyone enjoy a better life and work more efficiently through human-centered AI. I have discussed my startup project with the partners of two venture capital firms (**Y Combinator China** and Panda Capital) and collaborated with other AI startups actively.

INTERNSHIP

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|---|-------------------------|
| Luoyang Electrical Energy Storage and Transformation System Co., Ltd. | Luoyang, China |
| • Participated in the development of a high-energy-density lithium-ion battery system | May 2022 – July 2022 |
| • Worked on designing and testing a wide operating temperature power supply system | |
| Information Technology Department of Innoscience | Suzhou, China |
| • Worked on a Python program for yield testing and anomaly detection | July 2022 – August 2022 |

RELEVANT COURSEWORK

- Relevant courses taken at **Duke Kunshan University**:
Linear Algebra, Probability and Statistics, Numerical Analysis, ODE and Dynamical Systems, Advanced Introduction to Probability, Partial Differential Equations, Abstract Algebra, Measure and Integration, Deep Learning
- Relevant courses taken at **Duke University**:
Real Analysis (MATH 431), Statistical Learning and Inference (STATS 432)

TECHNICAL SKILLS

Programming languages: Python, R, Java, Julia, LaTeX, Markdown, Mathematica
Battery engineering: battery management systems, circuit modeling and simulation