Qixuan Wang

qw103@duke.edu | GitHub | Home Page

EDUCATION

Duke Kunshan University **Kunshan, China**
Bachelor of Science in Applied Mathematics and Computational Science September 2020 – May 2024
- **Cumulative GPA:** 3.622/4.0 **(**Dean's List: Fall 2020), **Major GPA:** 3.7

Duke University **Durham, USA**
Exchange Program 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: http://dx.doi.org/10.2139/ssrn.4240800**;** listed on SSRN's Top Ten download list for: Probability & Statistics eJournal

RESEARCH EXPERIENCES

Diffusion Probabilistic Models [Code] **Durham, USA**
Supervised by Professor Jian-Guo Liu (Duke University) 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 visual results compared to the original method and intended to apply the new algorithm to speech synthesis and text generation

The Sunflower Lemma **Kunshan, China**
Supervised by Professor Italo Simonelli 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 a particular case

The Borel-Cantelli Lemma and the Growth Rate of Partial Maxima **Kunshan, China**
Supervised by Professor Italo Simonelli 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, which was listed on SSRN's Top Ten download list for Probability & Statistics eJournal

PROJECTS

Bark Voice Cloning and Voice Cloning for Chinese Speech
- Integrate Bark voice cloning with SambertHifigan for Chinese speech [Code]
- Received over 780 stars on GitHub; one of the Top 20 applications (sorted by trending) on Hugging Face

ChatGLM2 Voice Cloning
- Chat with any character you like in real time: ChatGLM2+SadTalker+Voice Cloning [Code]
- Received over 360 stars on GitHub

Modeling the COVID-19 Epidemic with Ordinary Differential Equations
Supervised by Professor Konstantinos Efstathiou
- Discussed thoroughly the SIR model and some variants of it in epidemiology
- Combined several variants together to get a new model, which takes more parameters into account [Report] [Slides]

Approximation Theory and Related Applications
Supervised by Professor Konstantinos Efstathiou
- Discussed several techniques in approximation theory such as discrete least squares approximation, continuous least squares approximation, and Chebyshev polynomials
- Investigated a wide range of applications of discrete least squares approximation. [Report] [Slides]

TALKS

- **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**: I have made almost **30** videos about various applications of generative AI such as speech synthesis, voice conversion, and stable diffusion on a video-sharing platform called bilibili – one of the most popular video-sharing platforms in China. My channel now has over **6k** followers and my videos have more than **400k** views in total.
- **Open-source projects**: I have built a lot of machine learning applications and all of them are open-source. My GitHub projects have received over 1.1k stars in total. My speech synthesis project was one of the Top 20 applications (sorted by trending) on Hugging Face.
- **Entrepreneurship**: I am working on a startup project named TalkTalkAI. My goal is to let everyone enjoy the benefits of the development of speech technology. I have met and discussed with the partners of two venture capital corporations (Y Combinator China and Panda Capital) about my startup project.

INTERNSHIP

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:
  Introduction to Applied Statistical Method (R), Introduction to Data Science (Python), Introduction to Programming and Data Structure (Java), Linear Algebra, Probability and Statistics, Numerical Analysis (Julia), ODE and Dynamical Systems (Mathematica)
- 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
Machine learning: PyTorch, TensorFlow, SciPy
Data analysis: Pandas, NumPy, Matplotlib