

Zhengbo Xu

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EDUCATION BACKGROUND

Peking University | School of Electronic Engineering and Computer Science, *Turing Class* **Beijing, China**
Degree: BSc (SUMMA CUM LAUDE), **Major:** Intelligent Science and Technology Sep. 2019 - Jun. 2023
GPA: 3.78/4.0, **Rank:** 5/81 **Major GPA:** 3.83/4.0, **Major score:** 92/100

PUBLICATIONS

X. Gao, **Zhengbo Xu**, J.Y. Liu (2023) **FBImpant: Diffusion Model for Text-Driven Image-to-Image Translation with Frequency Band Implantation**. Submitted to 2024 Conference on Computer Vision and Pattern Recognition (CVPR)

T.L. Jiang, Y.G. Yin, W.Y. Yuan, C.X. Hao, Y.H. Du, **Zhengbo Xu**, Joshua Hicks (2023) **Alone but Not Lonely : Awe Fosters Positive Attitudes Towards Solitude (Preprint)**. 2023 Nature Mental Health, doi: 10.21203/rs.3.rs-3261143/v1

X. Gao, **Zhengbo Xu**, J.H. Zhao (2023) **Frequency-controlled Diffusion Model for Versatile Text-guided Image-to-Image Translation**. Accepted by 2023 Association for the Advancement of Artificial Intelligence (AAAI)

W.J. Wang, **Zhengbo Xu**, H.F. Huang, J.Y. Liu (2022) **Self-aligned Concave Curve: Illumination Enhancement for Unsupervised Adaptation**. ACM Multimedia 2022, doi: 10.1145/3503161.3547991

RESEARCH EXPERIENCE

A Study on Diffusion Model Editing Technology Based on Low and High-frequency Signal Separation

Research Assistant at Wangxuan Institute of Computer Technology

Jul. 2023 - Nov. 2023

Advisor : Jiaying Liu, Professor of Wangxuan Institute of Computer Technology

- Investigated existing methods based on the Diffusion Model aimed at image editing, including Plug-and-Play, Prompt-to-Prompt, SDEdit, etc.; studied the construction of the methods and analyzed the methods' shortback while doing editing task; decided the focus - structure coherence of designing the method for the research
- Tested different methods on several tasks, including semantic manipulation, style translation and content creation; calculated image semantic similarity and structure similarity to quantify the results
- Achieved better performance in semantic segmentation and style translation at levels of image semantic similarity and structure similarity
- Submitted two papers to top conferences in the field of computer vision

A Study on Icon Generation Technology Based on Generative Adversarial Network

Research Assistant at Wangxuan Institute of Computer Technology

Apr. 2022 - Jun. 2023

Advisor : Jiaying Liu, Professor of Wangxuan Institute of Computer Technology

- Investigated image translation methods related to generative adversarial network, including pix2pix, CycleGAN, StyleGAN, etc., and analyzed the pros and cons of the methods
- Adopted covariance matrix adaptation evolution strategy (CMA-ES) on StyleGAN to promote the diversity of outputs and delay overfitting in the task of icon style transfer with real photo
- Designed a two-step inversion method to ensure the consistency of image translation in image features
- Used several loss functions to calculate the difference between input photo and generated results, and applied a color-finetuning step to improve the color consistency in the task of icon style transfer with real photo
- Gained a better performance over other baselines, including CycleGAN, StyleGAN with classic inversion method

A Study on Awe Fosters Positive Attitudes Towards Solitude

Research Assistant at Jiang Lab

Sep. 2022 - May 2023

Advisor : Tonglin Jiang, Professor of School of Psychological and Cognitive Sciences

- Investigated in the frequently used text similarity calculation methods in interdisciplinary research through 15 pieces of literature, and analyzed the theoretical feasibility of the methods from the perspective of AI
- Adopted Python to mine experimental data with a total of more than 100,000 pieces in Twitter corpus
- Utilized semantic feature based on BERT Model to calculate text similarity, calculated the degree of the text containing information on a certain dimension, quantified the solitude index and awe index in the experiment, and verified the correlation between the solitude index and awe index

PATENT

J.Y. Liu, W.J. Wang, **Zhengbo Xu**, Z.M. Guo (2022) **A low-light Enhancement Method and System Based on Curve Family Functions**. Patent No.: 2022101337613.4, Feb. 2022

INTERNSHIP EXPERIENCE

Thunder Fire Studio **Hangzhou, China**

Numerical Game Designer Jul. 2021 - Aug. 2021

- Utilized Unity to configure game files including logic tree in Unity, FBX files, CSV files, etc., and accomplished four to five iterative versions on a daily basis
- Performed market research for five similar games launched by competent companies, and drafted a research report illustrating the pros and cons of the games and proposing innovation ideas
- Collaborated with the Fuxi AI Support team to fulfill the HCI design of the game
- Explored the game's mechanism and found bugs by participating in the game test on a weekly basis

PKU Chen Zhonggeng Clinical Psychology Center **Beijing, China**

Receptionist Sep. 2022 - Jun. 2023

- Received, sorted inquiries, and matched four to five visitors every week
- Answered phone calls and solved inquiries in different categories six to eight times every week
- Accepted weekly training through case study and perceived evaluation and counseling knowledge

Tomorrow Advancing Life (TAL) **Beijing, China**

Mathematics Teacher Feb. 2023 - Apr. 2023

- Recorded mathematical contest lectures applicable to high school students
- Participated in designing and drafting syllabus and scripts for four lectures

STUDENT ACTIVITIES

PKU Student Union | Domestic Service Department | Officer Sep. 2019 - Jul. 2021

- Planned and organized the PKU star event - Drama Star Talent Contest; recruited 20 teams in the preliminary round and held eight sessions in total
- Launched the "PKU Style Tonight" activity by collaborating with other PKU student associations, organized four cultural tours and attracted about four to nine stalls and more than 200 participants for each tour; designed posters, souvenirs, etc. with unique activity logo
- Initiated the "Drama for Tonight" activity, and attracted more than 300 students to short plays

PKU Freshmen Training Camp | Tutor Sep. 2020 & Sep. 2022

- Led a class of 32 students, designed and organized class activities for 5 days for each camp
- Provided follow-up help for the freshmen in study and life

PKU Class of School of Mathematical Sciences | Class Leader Sep. 2019 - Jul. 2020

- Acted as the class leader of 35 students, and provided service to professors and students
- Organized four class activities including watching movies, playing board games, etc.
- Helped with preventing students from suffering from COVID-19

PKU Summer Camp | Tutor Jul. 2020

- Led a class of 30 high school students, designed and organized class activities for 5 days

HONORS AND AWARDS

PKU Merit Student Sep. 2020, Sep. 2021, Sep. 2022

PKU POSCO Scholarship Sep. 2022

PKU Third-level Scholarship Sep. 2021

PKU Suzhou Industrial Park Scholarship Sep. 2020

Silver Medal in Chinese Mathematical Olympiad(CMO) Nov. 2018

First Prize in National Olympiad in Informatics in Provinces (NOIP) in Liaoning Province Nov. 2017

ADDITIONAL INFORMATION

Computer skills: proficient in C++, Python, Unity; intermediate in SQL, Latex; basic in R, SPSS

Design skills: proficient in Photoshop; intermediate in Procreate, Adobe Premiere, Premium Pro

Interest: modern dance, ballroom dance