

Junyao Hu (胡钧耀)

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EDUCATION

China University of Mining and Technology (Xuzhou, China) Sep 2019 - Jun 2023
B.Eng. in Computer Science and Technology. Score: 88.78, GPA: 4.17/5.00, Rank: 10/129 (top 8%). [[Certificate](#)]
Coursework: Python Programming Practice (100), Artificial Intelligence Control (98), Linear Algebra (97). [[Transcript](#)]

PUBLICATIONS

Zhang, Z.*, **Hu, J.***, Cheng, W., Paudel, D., & Yang, J. (2024). ExtDM: Distribution extrapolation diffusion model for video prediction. In *CVPR* (pp. 19310-19320). (CCF-A, co-first author) [[Paper](#)][[中译版](#)]

RESEARCH EXPERIENCE

Effective Video Prediction Method based on Diffusion Model Dec 2022 - Jun 2024

CV Lab, Nankai University (Tianjin, China). Supervised by [Jufeng Yang](#), [Wentao Cheng](#). [[Code](#)][[Video](#)]

- Conducted extensive research on prevalent video diffusion models and video prediction methods, enhanced the understanding of different methods' features and advantages by delving into the analysis of pertinent literature.
- Innovated a novel approach that extrapolates video content from current frames towards future ones by modeling the distribution shift of motion cues, significantly reducing the computational load in the denoising process.
- Completed comparative experiments on MCVD, LFD, RaMViD, and ablation studies on different settings like prediction space type, attention mechanism, analysed experiment results, authored the foundational manuscript.
- Led to a co-first author publication at CVPR 2024, served as a poster presenter at VALSE 2024.

Intelligent Vision Lawn Mower Jun 2023 - Jun 2024

CV Lab, Nankai University (Tianjin, China). Supervised by [Jufeng Yang](#). [[Code](#)][[Video](#)]

- Executed comprehensive market research, assessed the strength and weakness of rival products, validated the robustness of Raspberry Pi and the practicality of AI algorithms through consulting and technical evaluations.
- Developed an effective obstacle avoidance algorithm, deployed the algorithm in Robot Operating System (ROS), enabling the lawn mower to integrate vision and ultrasonic sensing for pedestrian and obstacle detection and evasion.
- Crafted functional prototypes of the control app, liaised with the developer to convey technical details, executed field tests to assess the app's performance across various environments, provided constructive feedback for refinement.

Mine 3D Construction & Location Technology Mar 2021 - Jun 2023

China University of Mining and Technology (Xuzhou, China). Supervised by [Jiaqi Zhao](#), [Yong Zhou](#). [[Report](#)][[Video](#)]

- Designed movement control and communication software for the robot car by ROS and Qt Creator programming.
- Collected and labeled lane line segmentation data, engineered an effective lane detection algorithm based on U-Net.
- Served as deputy captain and competed in intelligent car competition, achieving the national third-place award.

EasyWriting: Intelligent Content Creation Platform May 2022 - Aug 2022

China University of Mining and Technology (Xuzhou, China). Supervised by [Yanmei Zhang](#). [[Report](#)][[Video](#)]

- Scraped and cleaned data about articles of title, content and type from official political commentary websites.
- Developed the website using Django, designed functions such as generating suggested article titles and summary.
- Served as team leader and participated in software design competition, achieving the national third-place award.

HONORS & AWARDS

Undergraduate National Scholarship - Ministry of Education Dec 2020

National College Student Intelligent Car Competition - National Third Prize Sep 2022

China Software Cup College Student Software Design Competition - National Third Prize Oct 2022

China Undergraduate Mathematical Modeling Competition - Provincial First Prize Oct 2021

Excellent Undergraduate Graduate Scholarship - China University of Mining and Technology Jun 2023

ACADEMIC SERVICE

Reviewer: CVPR'24 ([Outstanding Reviewer](#), top 2%), ACM MM'23, TMM'23

Teaching Assistant

- High School Student Talent Plan Jun 2024
Guided students to learn Python programming, provided advice for their practical projects. [\[Code\]](#)[\[Video\]](#)
- Freshman Education Lecture Aug 2022
Offered actionable advice to freshmen on thriving academically and socially in college on my experience. [\[Slide\]](#)[\[Video\]](#)
- Discrete Mathematics May 2021
Strengthen students to grasp concepts through targeted review sessions enriched with example problems. [\[Slide\]](#)[\[Video\]](#)

Open Source Repository

- Common Metrics on Video Quality Jun 2024
Integrated FVD, PSNR, SSIM, and LPIPS calculation methods for assessing generated videos' quality easily. [\[Code\]](#)
- Academic Project Page Template Vue Jan 2024
Developed a new project homepage template based on Vue, which supports one-click copying of BibTex. [\[Code\]](#)
- MiniSora Mar 2024
Collected the latest and interesting papers about video generation, managed the repository's PR and review. [\[Code\]](#)

Community Contributor

- SmartFlow WeChat Official Account Jun 2024
Authored articles for the account, delivering comprehensive analyses and interpretations of CVPR Best Paper. [\[Post\]](#)
- Datawhale Sep 2020
Served as promotion ambassador, promoted team learning activities and competitions to new learners. [\[Post\]](#)

WORKING EXPERIENCE

Vice Director of Video Production Department

Sep 2021 - Jun 2022

CUMT/CUMTCS New Media Center (Xuzhou, China). [\[Code\]](#)[\[Video\]](#)

- Employed Python crawlers to detect sensitive content in website articles by utilizing Requests and Selenium.
- Supervised 2 short films, produced 30+ videos to promote the campus, with 250K+ likes.

MISCELLANEOUS

Languages: English: IELTS (TBD), CET-6 (540), CET-4 (541); Mandarin Chinese: Native.

Skills: Deep learning and data analysis (PyTorch, NumPy, Scikit-learn, Seaborn), web development (Gradio, Streamlit, Vue, Django), digital media production (Stable Diffusion, Midjourney, Photoshop, Premiere).

Strength: Self-driven power (learned online courses like CS231n, GAMES003), time-management capability (utilized time management app to manage my study plan), leadership (served as class monitor for 10 years).

Hobbies: Self-media (reached 2.7M+ plays on [Bilibili](#), sharing school life and scientific research experience), running (completed half marathon once), singing (performed during school's [Gala](#) as member of the choir).