Zhengze Yu

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EDUCATION

University of Chinese Academy of Sciences Beijing, China
*B.E. in **Artificial Intelligence*** *Sep 2021 - Jun 2025*

- **Advisors:** Prof. Changsheng Xu (Academic), Google Scholar.
  Prof. Junyu Gao (Research), Google Scholar.
- **Relevant Coursework**: Fundamentals of Programming and Experiments in C, Data Structure and Algorithms, Pattern Recognition and Machine Learning, Principles of Artificial Intelligence, Discrete Mathematics, Cognitive Neuroscience, Knowledge Engineering, Text Data Mining, Game Theory.

***Admission to UCAS's undergraduate program requires a **top 0.1%** ranking in China's national college entrance examination (Gaokao), representing the most competitive and selective academic pathway in China. UCAS is affiliated with the Chinese Academy of Sciences (CAS), which ranks **No. 1 globally in the Nature Index** and **No. 5 worldwide in AI (CSRankings, AI all areas)**.*

RESEARCH EXPERIENCE

Multi-modal Video Editing with Attention Injection Advised by Prof. Junyu Gao
Institute of Automation, Chinese Academy of Sciences *Sep 2024 - Apr 2025*

- Completed my bachelor thesis within a National Natural Science Foundation (NSFC) project, targeting controllable and multimodal video editing.
- Proposed an attention-injection-based video editing framework integrating text, image, and video transformations for seamless multimodal editing.
- Constructed a comprehensive benchmark for video editing, covering eight metrics across three dimensions, including semantic consistency, temporal consistency, and generation quality to address the lack of standardized evaluation in video editing.
- Built a dataset derived from V2VBench and VideoP2P to ensure the compatibility with my video editing benchmarks.
- Optimized VideoP2P performance by using LLMs for constraint refinement during editing, improving object consistency and frame/video–text alignment.
- Established a complete framework consisting of dataset design, model implementation, standardized evaluation, and optimization strategies for controllable video editing.

Video Generation Models and Optimization Techniques Advised by Prof. Junyu Gao
Institute of Automation, Chinese Academy of Sciences *Mar 2024 - Jul 2024*

- Conducted an in-depth study of video generation frameworks; explored diffusion-based, autoregressive, GAN-based, and transformer-based approaches, focusing on the temporal consistency of long video generation.
- Analyzed architectural designs in video diffusion models and compared divide-and-conquer and temporal autoregressive strategies.
- Studied optimization techniques such as quantization, knowledge distillation, pruning, and low-rank approximation.
- Developed strong proficiency in research techniques, including formal mathematical formulation, data visualization, figure preparation, model implementation with ablation and comparative experiments, and proper citation and referencing in research papers.

PROJECTS

Cross-Domain Multilingual Text Clustering Analysis Advised by Prof. Jiajun Zhang
University of Chinese Academy of Sciences *Mar 2024 - Sep 2024*

- Encoded over 10,000 sentences from five specialized domains (IT, Koran, Law, Medical, Subtitles) using pretrained BERT models to obtain semantic sentence representations.
- Applied PCA to visualize high-dimensional embeddings, revealing clear domain separation and validating BERT's ability to capture cross-domain semantic structure.
- Implemented K-Means clustering on BERT embeddings to perform unsupervised domain grouping, achieving an overall clustering accuracy of 85.6%.
- Evaluated clustering quality using confusion matrices and error analysis, identifying semantic overlaps between domains.

Multilingual Text Compression via Subword Tokenization Advised by Prof. Jiajun Zhang
University of Chinese Academy of Sciences *Feb 2024 - Mar 2024*

- Built a multilingual text compression pipeline using Byte Pair Encoding (BPE) across five languages (en, cs, de, es, fr).
- Trained subword models with vocabulary sizes from 500 to 3000 and evaluated their impact on tokenization and compression efficiency.
- Quantified compression rates on held-out test sets and analyzed the trade-off between vocabulary size, token fragmentation, and encoding length.
- Compared compression behavior across languages, revealing how linguistic structure affects subword efficiency.

ACADEMIC SERVICE & LEADERSHIP

19th "Light of Automation" Public Science Day
Institute of Automation, Chinese Academy of Sciences *May 2023*

- **Organizer, Presenter**: Involved in all stages of the exhibition, from coordinating displays on humanoid robots, multimodal AI, and brain-inspired systems to presenting generative video synthesis technologies that exemplify advances in large-scale AI models.

RoboRAVE Asia
Jiuhua Resort & Convention Center *Sep 2021*

- **Judge**: Advised participants on optimizing robot design and programming; judged robot combat matches, ensuring fair play.

SKILLS

Machine Learning & AI: Pytorch, Tensorflow, Pandas, SQL.

Programming Languages: C, C++, Python, Java, R.

Languages: English (Full Professional Proficiency), Mandarin Chinese (Native).