# Yuhang YAN (Henry)

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## Education

**The Chinese University of Hong Kong (CUHK)** Sep. 2021 - Jul. 2025 (expected)
*Bachelor of Science in Computer Science (CSCI)* Hong Kong SAR, China

- CGPA: **3.757**; Senior GPA: **3.894**/4.000 (**Dean's List, Top 10%**)
- **ELITE Stream** of Faculty of Engineering; A member of **S.H. Ho College**
- **Spring semester exchange** to École Polytechnique Fédérale de Lausanne (**EPFL**), 2023-24
- **Spring semester exchange** to Yuanpei College, Peking University (**PKU**), 2022-23

## Research Experience

**Fact or Fairness? Identifying Over-Balanced Issues** *(Capstone Project)* Apr. 2024 - present
*Supervised by Prof. Michael R. Lyu (CUHK)* Hong Kong SAR, China

- **Bias Detection in Generative Models**: Analyzed biases in generative models across 19 social statistics, focusing on the representation of various races and genders, and identifying disproportionate predictions related to demographics.
- **Cognitive Bias Performance Evaluation**: Refined prompts based on psychological research to evaluate generative models' performance in scenarios involving common cognitive biases, assessing their ability to mitigate biased outputs.
- **Fairness Quantification and Trade-off Exploration**: Established metrics to quantify fairness in model outputs, investigating the trade-off between content accuracy and equitable representation across different demographic groups.

**Evaluation on the Vulnerability of Current Generative Models** Feb. 2024 - Jun.2024
*Supervised by Prof. Sabine Süsstrunk (EPFL)* Lausanne, Switzerland

- **"Jailbreak" Analysis & Defense Mechanism Development**: Identified vulnerabilities in current generative models through ten "jailbreak" techniques and developed defense mechanisms, enhancing model security and reliability.
- **Content Moderation and Bypass Detection**: Applied reinforcement learning and greedy search to detect alternative expressions of sensitive terms, significantly improving content moderation and bypass prevention.
- **Safety and Fine-Tuning for Resilience**: Conducted simulations and fine-tuned models to reinforce vulnerabilities, optimizing defense strategies and enhancing resilience against biased content while maintaining high performance.

**Efficient Video Analytics** Jun. 2023 - Sep. 2023
*Supervised by Prof. Eric Lo (CUHK)* Hong Kong SAR, China

- Won the **Best Project Award 2023** among 58 undergraduate projects.
- **Multi-modal AI System for Lost-and-Found**: Developed a system using CLIP and OWL-ViT models to search large-scale airport video data via text and images, significantly improving AI's role in lost-and-found services.
- **Custom Dataset & Model Evaluation**: Created a custom airport video dataset and established evaluation standards, selecting high-performing Zero-Shot Object Detection and NLP models, reducing processing time by 5-8 hours.
- **Frame Detection Optimization**: Designed an algorithm to detect frames of lost items with improved tolerance levels, increasing efficiency in searching large video footage while maintaining high accuracy and recall rates.

## Work Experience

**AiMall Technology Co., Ltd** Jun. 2024 - Aug. 2024
*Algorithm Engineer Intern* Shenzhen, China

- **Cloud-Based Video and Audio Embedding Storage**: Embedded video and audio frames as vectors and stored them in a cloud database, enabling seamless query-based retrieval and reducing search time from 30+ hours to minutes.
- **Fine-tuned Vision-Language Models (VLMs)**: Applied Swift and LoRA to enhance object detection in the company's surveillance system, fine-tuning VLMs and achieving a 30% improvement in fune-tuning processing speed.
- **Model Quantization for Efficiency**: Implemented AWQ and GPTQ techniques to optimize large language models (LLMs) for deployment, improving data processing efficiency by 60% and streamlining large-scale search operations.
- **LLM Self-Recognition Fine-Tuning**: Fine-tuned large language models (LLMs) using open-source datasets such as Alpaca and Swift/self-cognition to enhance self-awareness and recognition capabilities.

**AIJobTech, Ltd** Mar. 2024 - present
*Co-founder & CTO* Hong Kong SAR, China

- **Co-founded AI-driven Job Matching Startup**: Led the creation of a company focused on automating and personalizing job searches using AI, with the mission to improve job matching and job-seeking efficiency.
- **Technical Leadership and Product Development**: Directed the development of AI tools for resume polishing and job matching, delivering personalized recommendations and enhancing user success in job searches.

## Skills

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| **Languages** | English (Proficient), Mandarin (Native) and Cantonese (Intermediate). |
| **Programming** | C/C++, Java, JavaScript, MATLAB, Python{Flask, PyTorch, TensorFlow} and SQL. |
| **Tools** | LaTeX, Conda, Git, Linux and Spark. |