ZHOU WU

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PROFESSIONAL EXPERIENCE

iFLYTEK December 2022 - January 2023
Intern

· Developed and optimized a real-time online translation model engine, significantly enhancing performance, translation accuracy, and response speed. Leveraged advanced sequence-to-sequence translation algorithms, refining attention mechanisms to reduce latency and improve efficiency. Fine-tuned models for multilingual support, ensuring a seamless and consistent user experience across diverse languages.
· Contributed to the development of iFlytek Spark, a cutting-edge AI-driven platform, by implementing innovative features and optimizing system architecture for scalability and robustness.

Alibaba Group, China January 2023 - October 2024
Algorithm Engineer

· Played a key role in the transformation of AMap's map module from 2D to 3D using advanced 3D Gaussian Splatting (3DGS) techniques. Enhanced visual representation and user interaction by integrating high-fidelity 3D rendering, resulting in an improved and immersive user experience.
· Collaborated with cross-functional teams to design and implement scalable algorithms for spatial data processing, optimizing computational efficiency and reducing rendering latency.
· Conducted rigorous testing and validation of 3D mapping features, ensuring high-quality performance and compatibility across various devices and platforms.

Eryuan Digital Technology, China October 2024 - Present

· Founded and currently lead an innovative startup specializing in AI-powered digital scripted experiences within virtual metaverse tourist attractions. Successfully secured RMB 85 million (approximately USD 12 million) in funding, underscoring investor confidence in the company's vision and technological capabilities.
· Spearheaded the development of proprietary AI-driven narrative systems, enabling immersive storytelling and interactive experiences in virtual environments. Integrated advanced AI algorithms to enhance user engagement and personalization.
· Collaborated with industry partners and stakeholders to establish strategic partnerships, driving innovation and expanding market reach in the emerging field of metaverse tourism.

EDUCATION

Chongqing Institute of Engineering *August 2019 - May 2023*
Bachelor of Science in Computer Science and Technology *Overall GPA: 75/100*

- Relevant Coursework: Backend Development, Machine Learning, Deep Learning (Self-Taught)
- Key Skills Acquired: Proficiency in backend systems design, hands-on experience with machine learning frameworks, and foundational knowledge of deep learning algorithms.

TECHNICAL SKILLS

Programming
Python, C++, Java, JavaScript, and SQL for backend development, data mining, and automation; Bash and Shell scripting for system-level tasks.

Deep Learning & Machine Learning
TensorFlow, PyTorch, Keras, and Scikit-learn for AI model development; Neural Networks (CNNs, RNNs, Transformers), NLP, and Computer Vision for advanced applications; Hyperparameter tuning, Transfer Learning, and Model Compression for optimization.

Tools & Platforms
Git, Docker, Kubernetes, and Linux/Unix for development and deployment; Matplotlib, Seaborn, Plotly, and Tableau for data visualization; AWS (S3, EC2, Lambda), GCP, and Azure for cloud computing.

RESEARCH INTERESTS

Large Language Models (LLMs), Agents, and Knowledge Graphs:
Explore the integration of LLMs with intelligent agents and knowledge graphs to enable advanced reasoning, decision-making, and contextual understanding. Investigate applications in AI-driven storytelling, personalized recommendations, and multimodal data fusion for immersive virtual environments.

3D Gaussian Splatting (3DGS) & 4DGS and Derivative Applications:
Pioneer research in 3DGS and 4DGS techniques for rendering lifelike virtual worlds and dynamic scenes in real-time. Focus on their application in metaverse tourism, digital twin modeling, and spatial computing to enhance visual fidelity and user immersion.

Data Mining and Advanced Analytics:
Leverage data mining methodologies to extract actionable insights from large-scale datasets. Specialize in anomaly detection, trajectory analysis, and pattern recognition using machine learning and big data technologies (e.g., Spark, Snowflake, BigQuery). Explore applications in urban mobility, behavioral analytics, and predictive modeling.

PUBLICATIONS

Submitted Papers:

- **ATFL: A Federated Self-Supervised Learning Framework for Trajectory Anomaly Detection Across Cities**
  Submitted to *KDD 2025*.
  Proposed ATFL, a novel federated self-supervised learning framework that leverages contrastive learning and tile-based spatial representations to address trajectory anomaly detection challenges. Introduced a reinforcement learning-based tile selector and personalized model aggregation, achieving high accuracy and robustness on real-world datasets with heterogeneous sampling rates and dynamic data.
- **MQADet: A Plug-and-Play Paradigm for Enhancing Open-Vocabulary Object Detection Using Multimodal Question Answering**
  Submitted to *IJCAI 2025*.
  Introduced MQADet, a three-stage framework (Text-Aware Subject Extraction, Text-Guided Multimodal Object Positioning, and MLLM-Driven Optimal Object Selection) that significantly improves open-vocabulary object detection performance on complex textual queries. Demonstrated superior results across multiple benchmarks.

In Progress:

- **Manuscript for ICCV 2025**: Developing novel techniques for dynamic facial expression recognition. Focus on capturing subtle emotional cues in real-time for applications in immersive virtual environments and human-computer interaction.
- **Experiments for NIPS 2025**: Conducting research on integrating 3DGS with multimodal data (RGB-D, LiDAR) for enhanced object detection in complex scenes. Explore the fusion of

large language models (LLMs) and computer vision to improve contextual understanding and localization accuracy in dynamic environments.

Research Focus:
My research primarily focuses on 3D Gaussian Splatting (3DGS), Large Language Models (LLMs), Computer Vision (CV), and Data Mining. I am actively contributing to these fields by developing innovative frameworks and methodologies to address real-world challenges.