Zeshan **Chen**

SOFTWARE ENGINEER · SATELLITE-ENABLED WEB APPLICATIONS , AI

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"To rest in the highest excellence."

Summary

Software Engineer at China Satellite Network (Hainan Branch) with one year of experience designing and developing LEO satellite communication software and assisted in preparing application materials for a government-funded science and technology project, which successfully secured funding. Previously **interned at Huawei Xi'an**, where I optimized Ascend operators for the **MindSpore** deep-learning framework, boosting training throughput by 12%. Proficient in **Linux, Python, and Java**, I excel at dissecting complex problems and rapidly mastering new technologies whenever the mission requires.

Education

Xi'an Jiaotong University(985) *Xi'an, Shaanxi, China*

M.S. IN SOFTWARE ENGINEERING *Sep. 2021 – Jun. 2024*

- Awarded the First-Class Academic Scholarship for outstanding academic performance.

Southeast University (985) *Nanjing, Jiangsu, China*

B.S. IN ENVIRONMENTAL SCIENCE *Sep. 2017 – Jun. 2021*

- Received the National Encouragement Scholarship for outstanding academic performance.

Work Experience

China Satellite Network (Hainan) *Hainan, P.R.China*

SOFTWARE ENGINEER *Jul. 2024 - Present*

- Built a Web-GIS maritime situational-awareness platform on OpenLayers, ingesting and fusing heterogeneous real-time feeds (radar, AIS, broadband/narrow-band) with on-the-fly algorithms and visualization.
- Owned end-to-end delivery: containerized deployment, CI/CD pipelines, cloud O&M and performance tuning.
- Acted as lead author for the government co-sponsored satellite-Internet project, delivering two key technical reports—"Multi-path Coded Transmission Management" and "Heterogeneous Resource Management in Space-Air-Ground Integrated Networks"—both accepted by expert review on first submission.

Huawei Technologies Co., Ltd. Xi'an Research Institute *Xi'an, P.R.China*

ALGORITHM ENGINEER (INTERN) *Jun. 2023 - Dec. 2023*

- Developed low-level AI operators for Huawei's MindSpore framework; delivered and upstreamed two "difficult"-rated operators to the official repository, earning the "Great Ascend Developer" award.
- Designed and migrated the Variational Auto-Encoder (VAE) model to MindSpore, achieving a reconstruction error < 0.1; the trained model was accepted into Huawei's model zoo.

Projects

1.Agent for YatchManager *China Satellite Network (Hainan) / Internal Project*

AI ASSISTANT DEVELOPER *Jan. 2025 – Jul. 2025*

- Designed and developed a full-stack AI assistant from scratch, utilizing a tech stack including Flask, Autogen, Python, WebSocket, and Vue2, aimed at enhancing customer service efficiency and operational capabilities for a yacht regulation platform.
- Successfully implemented the AI assistant as an intelligent customer service agent, efficiently answering client inquiries regarding yacht status, historical data, and navigation safety.
- Integrated and enabled command execution functionalities, such as real-time yacht positioning upon client request ("Where is Yacht X now?"), dynamically displaying its current location on a map.
- Developed a vessel historical track visualization module, supporting the drawing and display of complete navigation paths for specified vessels on a map based on client commands.
- Built an intelligent navigation advisory system that delivers the latest safety notices in text and automatically marks corresponding hazardous zones on the map.

Projects

2.SAM-LoRA: Parameter-Efficient Fine-Tuning for Small-Object Segmentation in Remote Sensing *China Satellite Network (Hainan) – Internal R&D*

COMPUTER VISION ENGINEER   *Jul 2024 – Feb 2025*

- Identified that SAM under-segments small and low-contrast moving objects common in satellite imagery, leading to poor mask quality for downstream multi-object tracking.
- Added rank-16 LoRA to Q/V of all SAM ViT-H blocks (+0.8 M params) and fine-tuned the last block for global context, achieving 5% IoU gain in 6 GPU-hours.
- Gained a 5% absolute IoU boost on our internal test set. In zero-shot evaluations on remote-sensing tracking datasets, SAM-LoRA generates masks that closely match expert annotations.

3.Multi-path Coding Transmission Based on Space–Air–Ground Integrated Network *China Satellite Network (Hainan) / Internal Research Task*

RESEARCHER (PROTOCOL DESIGN & TECHNICAL DOCUMENTATION)   *Mar 2025 – May 2025*

- Conducted an in-depth study on the application of multipath coded transmission in satellite internet systems, focusing on challenges such as high-latency links, path heterogeneity, and unstable connectivity.
- Analyzed issues in multipath transmission including packet reordering, protocol stack complexity, and middlebox incompatibility (e.g., firewalls, NATs), and proposed targeted solutions.
- Designed a UDP-based multipath transport protocol framework with linear coding support, enabling robust decoding without strict packet ordering and reducing reliance on retransmission.
- Proposed a dynamic path scheduling mechanism that adapts to real-time network conditions to optimize throughput and latency across heterogeneous links.
- Independently completed literature survey, theoretical protocol design, and final technical report within one month to support project closure.

4.Denoising Methods for Hyperspectral Images Based on Spatial–Spectral Modeling and Self-supervised Training *University Research Project*

GRADUATE THESIS (HYPERSPECTRAL IMAGE DENOISING)   *May. 2023 – May. 2024*

- Proposed TS-SSINet, a two-stage denoising model leveraging spatial–spectral interactive learning. The first stage applies SpatialFormer blocks to model spatial dependencies via window-based attention, while the second stage enhances each spectral band through bidirectional feature propagation across adjacent bands.
- Addressed the parameter inefficiency and limited long-range dependency in conventional 2D/3D CNN-based methods by combining attention mechanisms and lightweight feedforward modules.
- Developed Blind2Visible, a self-supervised hyperspectral denoising method based only on noisy inputs, incorporating a visibility-aware regularized loss function to mitigate information loss during blind-spot training.
- Introduced a global-aware masking strategy to better exploit spectral correlations and encourage broader contextual learning, overcoming the limitations of random masking in traditional blind-spot networks.
- Validated the proposed methods on various synthetic and real-world noise types (e.g., Gaussian, stripe, dead lines), achieving competitive or superior results in MPSNR, MSSIM, and MFSIM compared to supervised baselines.