Ly Vireak Dara, MSc

+855-8959-9327 · lyvireakdara@gmail.com · vireakdara.github.io · github.com/Vireakdara · Google Scholar

PROFESSIONAL SUMMARY

Computer vision researcher specializing in open-vocabulary object detection and multi-object tracking robustness. First-author on EnYOLO-World — YOLO-World architecture improvements with PGI and FiLM-PAN (+3.1 AP, 52.2 AP on COCO, 78 FPS, under review at ELCVIA) — and lead researcher on VocabDriftMOT, the first benchmark for vocabulary-drift failure modes in OV-MOT (510 annotated events, 21 sequences). 5 publications. 4 years production ML engineering experience.

EDUCATION

M.S. Artificial Intelligence | Xidian University, Xi'an, China Sep 2023 – July 2026 (Expected)
Thesis: Enhanced Open-Vocabulary Object Detection using YOLO Architectures

B.A. Computer Science and Engineering | Royal University of Phnom Penh, CambodiaSep 2015 – Aug 2019

SKILLS

Programming: Python, JavaScript, Java, TypeScript, SQL
ML/DL Frameworks: PyTorch, TensorFlow, Scikit-learn, Hugging Face Transformers, YOLO Series (v5-v11), CLIP, ByteTrack
Computer Vision: OpenCV, TorchVision, Object Detection, Image Segmentation, ONNX
MLOps & Cloud: Docker, MLflow, FastAPI, Redis, GCP Cloud Run, Prometheus, Grafana, Git, REST APIs
Data & RAG: Pandas, NumPy, PostgreSQL, MongoDB, LangChain, ChromaDB, FAISS, Cross-Encoder Reranking

WORK EXPERIENCE

Software Engineer | Korea Software Innovation Global Network (KOSIGN) Oct 2020 – Aug 2023

- Developed and maintained full-stack applications serving 10,000+ users across Korea and Southeast Asia
- Designed PostgreSQL database schemas and optimized queries, reducing API response times by 40%
- Built RESTful APIs with Spring Boot handling 500+ requests/second with 99.9% uptime
- Collaborated with Korean development team using Agile methodology, delivering 12 product releases

Software Engineer | Web Essentials Oct 2019 – Aug 2020

- Built responsive front-end interfaces using React.js, improving user engagement by 25%
- Integrated third-party APIs for payment processing and authentication systems
- Implemented comprehensive testing procedures reducing production bugs by 30%

AI/ML PROJECTS

EnYOLO-World: Enhanced Open-Vocabulary Object Detection 2025

- First-author research: integrated PGI backbone and FiLM-Augmented PAN into YOLO-World, achieving +3.1 AP over baseline, 52.2 AP on COCO, 78 FPS
- Evaluated on 5+ benchmark datasets (LVIS, COCO, Objects365); RepRTA module for region-text alignment
- Under review at ELCVIA (Scopus-indexed journal)

VocabDriftMOT: Vocabulary-Drift Benchmark for OV-MOT 2026

- First benchmark for mid-stream vocabulary switching in OV-MOT; 510 annotated events across 21 MOT17 sequences and 3 detector variants
- Synonym transitions cause near-complete identity loss (IDF1-AT = 0.009) vs hypernym expansion (0.369) — 40x gap across all detector variants
- Introduced IDF1-AT and SJS metrics; PromptBridge V2 (70% gate accuracy) · github.com/Vireakdara/VocabDriftMOT

Multimodal Visual RAG System 2026

- Image search pipeline: CLIP + ChromaDB + cross-encoder reranker + LLaMA 3; Qwen2.5-VL-72B auto-describes images
- FastAPI + Docker + GCP Cloud Run · Live Demo · github.com/Vireakdara/multimodal-rag

OpenDet-Bench: Production Open-Vocabulary Detection Platform 2026

- YOLOv8 + ByteTrack + ONNX (1.54x speedup) + MLflow + Docker + GCP Cloud Run
- Real-time video analytics: FastAPI, Redis, WebSocket, Prometheus/Grafana · Live API

PUBLICATIONS

EnYOLO-World: Enhanced Open-Vocabulary Detection with PGI and FiLM-PAN
ELCVIA (Under Review) · First Author

Fine-Grained Meta-Learning with Semantic Augmentation for SAR Change Detection
IJCNN 2025 — International Joint Conference on Neural Networks · Co-Author

Fine-grained Meta-learning with Semantic Augmentation for SAR Change Detection
Journal of Applied Remote Sensing, Oct 2025 · SPIE · Co-Author

Non-Rigid Registration Based on Rotation-Invariant Feature Flow
IEEE IGARSS 2025 · Co-Author

An Edge-Enhanced Siamese Network for 3D Change Detection
IEEE IGARSS 2025 · Co-Author

LANGUAGES

Khmer (Native) · English (Fluent) · Chinese (HSK3)