Abdirashid Omar

Deep learning researcher focused on Vision AI, remote sensing, and geospatial analysis. I build reproducible research pipelines for satellite image understanding, change detection, object detection, pose estimation, tracking, segmentation, flood impact mapping, and practical computer vision systems.

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Experience

GRADUATE STUDENT RESEARCHER | Kookmin University

Dec 2024 - June 2026 | Seoul, South Korea

- Conducted research on deep learning and computer vision methods for remote sensing, human-centered vision, detection, tracking, segmentation, and scene analysis.
- Developed and evaluated Vision AI models for bitemporal change detection, object detection, human pose estimation, image segmentation, and environmental monitoring.
- Built reproducible research workflows using Python, PyTorch, Open-CD-style configurations, YOLOv8, DeepSORT, Siamese networks, and geospatial analysis tools.
- Designed experiments, compared model performance, prepared research reports, and translated computer vision methods into academic and applied AI projects.

ICT OFFICER | T-hub Innovation Center

Jul 2022 - Aug 2023 | Garoowe, Somalia

- Managed ICT operations and technology infrastructure supporting innovation programs, training sessions, workshops, and daily organizational activities.
- Maintained computer systems, software tools, local networks, data storage, and communication platforms for smooth internal operations.
- Provided technical support to staff, trainers, entrepreneurs, and program participants, resolving hardware, software, and connectivity issues.
- Supported digital training by preparing devices, setting up presentation systems, managing internet access, and assisting participants during sessions.

FIELD RESEARCHER / RESEARCH ASSISTANT | RAAGSAN Consulting

Mar 2023 - Aug 2023 | Garoowe, Somalia

- Supported field research projects focused on governance, community dialogue, and social development issues.
- Collected and analyzed qualitative data through stakeholder interviews, field notes, and community consultations.
- Organized transcripts, summarized findings, and extracted policy-oriented research themes for reporting.

Additional Professional Background

DATA LABELING & ANALYSIS | Data organization, annotation, qualitative analysis, transcript review, and structured dataset preparation for reporting or model development.

DESIGN BACKGROUND | Visual design, layout, and content organization for presentations, reports, training materials, documentation, and public-facing digital content.

TECHNICAL TRAINING & WORKSHOP SUPPORT | ICT tool preparation, participant support, and smooth delivery support for technology-focused training, workshops, and innovation programs.

Education

M.S. DATA SCIENCE / BIG DATA | Kookmin University

Sep 2023 - June 2026 | Seoul

B.S. COMPUTER SCIENCE | University of Bosaso

Sep 2019 - Jun 2022 | Somalia

Technical Skills

PROGRAMMING

Python, JavaScript, TypeScript, SQL, HTML/CSS

DEEP LEARNING & VISION

PyTorch, TensorFlow, CNNs, Siamese networks, U-Net, DeepLabV3, ResNet, ViTs, YOLOv8, DeepSORT, human pose estimation, segmentation, transfer learning, pseudo-labeling

REMOTE SENSING

Sentinel-1/2, SAR change analysis, optical water mapping, bi-temporal change detection, GIS impact analysis, GeoJSON, MapLibre

Research Interests

- Vision AI and applied computer vision
- Remote sensing and geospatial intelligence
- Change detection and environmental monitoring
- Human-centered vision systems
- AI for urban analysis and public impact

Languages

English: Professional
Korean: Conversational

Publication & Research Projects

COSA | IEEE Access Publication

IEEE | Code

- Proposed a lightweight decoder-side refinement module for bi-temporal remote sensing change detection.
- Used bi-temporal feature correlation to guide context sampling, multi-scale aggregation, and learnable residual gating across LEVIR-CD, S2Looking, DSIFN, and CLCD.

URBANCDNET | Korean Urban Building Change Detection

GitHub

- Developed a task-specific Siamese CNN for Korean urban building change detection from bi-temporal aerial imagery.
- Designed appearance-robust comparison, local temporal alignment, context refinement, scene calibration, and boundary-aware supervision.
- Achieved F1 0.7511 and IoU 0.6014 on the locked Korean test split, outperforming evaluated baselines in changed-class F1 and IoU.

LISTEN TO THE RIVER | Satellite-Based Flood Analysis for Somalia

GitHub | Live Dashboard

- Combined Sentinel-2 optical water mapping, Sentinel-1 SAR pre/post-event change analysis, mask fusion, and GIS impact layers.
- Produced an interpretable dashboard connecting flood extent to affected roads, buildings, and named places.
- Published event summary includes 196.03 km2 final story mask, 72.60 km2 strict S1/S2 overlap core, 92.35 km2 SAR-only extensions, 6,460 affected buildings, 542 affected roads, and 19 affected named places.

ADAPTIVE CROSSWALK TIMING SYSTEM | CCTV Computer Vision for Elderly Pedestrian Safety

GitHub

- Developed a computer vision research project for adaptive pedestrian signal timing using overhead CCTV imagery.
- Achieved 98.5% validation IoU with semi-supervised learning and pseudo-labeling.
- Used 241 manually labeled CCTV images plus 1,000 high-confidence pseudo-labels selected from 5,926 unlabeled AI-Hub images.
- Reported real-time inference capability at 77 FPS on 512×512 input resolution.

SEOUL LIVE CITY LENS | Real-Time Urban Signal Explorer

GitHub | Live Dashboard

- Combined a MapLibre-based Seoul heatmap, draggable magnifier lens, and multi-signal inspection for crowd, transit, traffic, and weather data.
- Processed 121 live Seoul hotspots into a client-side lens dataset with place names, categories, coordinates, crowd levels, transit metrics, traffic metrics, and weather metrics.
- Implemented a scheduled refresh model using GitHub Actions so the deployed dashboard can rebuild with updated public Seoul realtime data.

WHEN SEOUL WAS BUILT | Urban Building-Age Geospatial Mapping

GitHub

- Processed public Seoul building approval and geometry data into a citywide building-age map with reproducible geospatial scripts.
- Produced static SVG/PDF map outputs and summary artifacts for urban morphology analysis.

ARTSTYLENET | Deep Visual Style Similarity

GitHub

- Built a deep learning pipeline for artistic style similarity detection across 5,910 paintings from 51 artists.
- Used ResNet feature extraction, PCA dimensionality reduction, LDA clustering, and heatmap visualization.