Asrar Alruwayqi
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EDUCATION

Carnegie Mellon University — *Pittsburgh, PA*
Master of Science in Computer Vision — Aug 2024

Majmaah University — *Riyadh, SA*
Bachelor of Computer Science — *Jun 2016*

WORK EXPERIENCE

XuLab at Carnegie Mellon University — *Pittsburgh, PA*
Research Assistant — *Nov 2022 - Mar 2023*

- Actively engaged in pioneering research at XuLab, collaborating closely with esteemed faculty members and postdoctoral researchers.
- Spearheaded a groundbreaking project focused on the development of an innovative approach using contrastive learning for self-supervised object detection, contributing significantly to the field of computer vision research.
- Demonstrated a profound commitment to academic excellence and research rigor in all aspects of the project, from conceptualization to implementation.

National Center for Artificial Intelligence — *Riyadh, SA*
R&D Research Engineer — *April 2021 - July 2022*

- Undertook a pivotal role in a research-driven environment, demonstrating a relentless pursuit of knowledge and innovation.
- Achieved remarkable success in academic research endeavors, including the development of a highly accurate brain tumor radiogenomic classifier using 3D MRI data, showcasing a strong commitment to advancing medical technology.
- Strategically addressed challenges related to noisy annotations in mammogram images, elevating the quality of medical data, and contributing substantively to the field of medical imaging research.

National Information Center — *Riyadh, SA*
Software Developer — *April 2019 - April 2021*

- Fused the realms of technology and research by playing an instrumental role in the development of cutting-edge software solutions.
- Applied a research-oriented approach to automate and optimize face recognition systems in airport environments, enhancing the efficiency and accuracy of security processes.
- Spearheaded research-driven projects, such as the Saudi National IoT platform, which collected extensive data for academic and research purposes, contributing to the advancement of IoT technologies.

Saudi Telecommunications Company — *Riyadh, SA*
Software Developer — *Jan 2016 - April 2019*

- Embarked on an academic journey within the telecommunications industry, employing a research-oriented mindset to resolve complex technical challenges.
- Leveraged research-driven insights to address launch issues in the App Store, optimizing code and ensuring seamless user experiences.
- Contributed to the development of internal iOS applications tailored for research and project management, exemplifying a commitment to excellence in academic and professional endeavors.

RESEARCH PROJECTS

- dynamic Scene 3D Reconstruction. — *CMU, Pittsburgh, PA 2023/2024*

- Proposed a revolutionary method for representing dynamic 3D scenes using a single feature plane.
- Designed as a simplified yet robust representation for dynamic 3D scene modeling and re-rendering.
- Envisioned to drastically reduce computational overhead while maintaining high-quality reconstructions.

- ***Dense Contrastive Learning for Self-Supervised Object Detection.*** *CMU, Pittsburgh, PA 2022/2023*

- Executed rigorous empirical evaluations concerning the integration of dense contrastive learning methodologies within the realm of self-supervised object localization and recognition.
- Leveraged the advanced capabilities of the Detectron2 framework, employing a ResNet-50 architectural foundation as the primary feature extraction mechanism.
- Anticipate that this research endeavor holds the potential to usher in notable advancements and seminal contributions to contemporary computer vision literature and practices.

- ***Detecting and Classifying Lesions in Mammograms using Custom Neural Net.*** *NCAI, Riyadh, SA 2022/2021*

- Developed an innovative approach to automate the diagnosis, localization, and classification of breast cancer lesions.
- Leveraged a custom CNN Fusion architecture and intelligently combined multiple views to optimize diagnostic accuracy, even for invisible tumors.
- The research project represents a substantial advancement in medical imaging technology.

- ***Multi-View MRI Approach for Classification of MGMT Methylation using a 3D fusion model.*** *NCAI, Riyadh, SA 2022/2021*

- Designed and implemented a sophisticated fusion model that integrates data from three distinct MRI views (axial, sagittal, and coronal).
- Developed a novel method to select optimal images based on tumor area segments and feret diameter criteria.
- Submitted the research findings to the AI in Medicine journal, representing a significant contribution to the field of medical image analysis.

- ***Vehicle Detection and Tracking in Complex Traffic Circumstances.*** *Independent Project 2021/2020*

- Undertook an independent research project focused on the development of a two-stage model for vehicle detection and tracking in challenging traffic scenarios.
- Employed YOLOv5 for initial detections and integrated StrongSORT, based on OSNet, to combine motion and appearance information for robust vehicle tracking.
- The project's findings were submitted to the Computer and Geoscience journal, showcasing the potential to enhance transportation safety.

SKILLS

Programming language: Python, C#, Swift, JavaScript, C++
Framework: PyTorch,TensorFlow.
Tools / Libraries: Pydicom, PyTorch3D, Torchio, OpenCV, 3D slicer.
Certificates: Summer program - Machine Learning *University of Oxford, Aug 2022*
Coursework: Deep reinforcement learning, Visual learning and recognition, Learning from 3D, geometry -based methods in vision.

AWARDS

• 3rd winner in computer vision competition	AI Center	*Riyadh, SA 2021*
• 3rd winner in creative Hackathon track	The Ministry of Interior	*Riyadh, SA 2020*
• 1st winner in medical Hackathon track	MIT Hacking Medicine	*Riyadh, SA 2018*