Bekhzod Olimov

SUMMARY

I am an experienced AI Researcher and Engineer with over 5 years of dedicated practice in the fields of computer vision (CV) and natural language processing (NLP). My journey in artificial intelligence has been driven by a passion for innovation and a commitment to leveraging advanced technologies to solve complex problems. I have a proven track record of developing and deploying state-of-the-art AI solutions that enhance operational efficiency and deliver impactful results across various industries.

Skills

- Highly proficient in Python with foundational knowledge in Java
- Extremely experienced at Deep Learning frameworks, such as PyTorch, PyTorch Lightning, transformers, and Hugging Face
- Skilled at Deep Learning frameworks, such as TensorFlow, Keras, and NumPy
- Exceptionally adept at Machine Learning libraries, such as scikit-learn, cv2, pandas, and scipy.
- Capable of server and cloud technologies, such as docker, API development (streamlit and gradio) as well as version control systems such as Git
- Skilled in communication & teamwork and adept at working under pressure

EDUCATION

Kyungpook National University

PhD in Computer Science and Engineering

EXPERIENCE

Senior AI Engineer and Researcher

AI Team Lead

• Computer Vision:

- * Managing and leading the software development for a cervical cancer detection device
- * Designing AI algorithms for early detection, implementing AI models for cell classification
- * Optimizing inference pipelines
- * Integrating the software with medical imaging hardware
- * Developing advanced image generation techniques using GANs to ensure uniformity in image characteristics (such as color and texture) across devices
- * Developed Application Programming Interfaces (APIs) to facilitate seamless communication between the frontend and backend components of the application

Senior AI Engineer and Researcher

Computer Vision Part Team Lead

• Computer Vision:

- * Managed and successfully executed 5+ long-term projects in computer vision
- * Conducted 200+ short-term mini projects in computer vision using Kaggle open-source databases
- * Focused expertise in image retrieval, image generation, semantic segmentation, object detection, crowd counting tasks
- * Engineered APIs to facilitate communication between the front-end and back-end components of the application
- * Orchestrated deployments utilizing Docker and implemented application deployments on cloud infrastructure platforms such as AWS

Vitasoft, South Korea

October 1, 2022 - September 30, 2024

Daegu, South Korea GPA - 4.5/4.5

Rinorbit, South Korea October 1, 2024 - Present

- * Executed parallel computation for deep learning training utilizing the PyTorch Lightning library
- * Developed Application Programming Interfaces (APIs) to facilitate seamless communication between the frontend and backend components of the application
- * Implemented containerization of applications using Docker technology to streamline deployment, ensure consistency across different environments, and enhance scalability.

• Natural Language Processing:

- * Conducted text-data driven deep learning model training and inference procedures
- * Developed retrieval augmented generation and optical character recognition projects
- * Collaborated closely with project managers to ensure adherence to project timelines and milestones, facilitating the timely delivery of AI projects
- * Executed "on-premise" projects utilizing Hugging Face and Transformer libraries
- * Developed Application Programming Interfaces (APIs) to facilitate seamless communication between the frontend and backend components of the application
- * Implemented containerization of applications using Docker technology to streamline deployment, ensure consistency across different environments, and enhance scalability.

Graduate School Researcher

Kyungpook National University, South Korea July, 2019 - September, 2022

Multimedia Processing Information Lab AI Lead

• Computer Vision:

- * Led and successfully executed 5+ long-term projects in computer vision
- * Specialized in image classification, semantic segmentation, object detection tasks
- * Published 10+ scientific papers in the most prestigious SCIE journals based on the conducted projects
- * Instructed undergraduate students coding practice by facilitating their proficiency in deep learning frameworks, such as TensorFlow and PyTorch
- * Supervised and guided undergraduate students in writing scientific papers on deep learning methodologies and applications, fostering their research and presentation skills
- * Cooperated with industrial companies to integrate AI technologies into their production processes, leveraging expertise in computer vision to enhance efficiency and innovation.

$\circ~$ Natural Language Processing:

- * Accomplished several sequence data-based projects, including text classification and sentiment analysis
- * Collaborated closely with project managers to ensure adherence to project timelines and milestones, facilitating the timely delivery of AI projects
- * Instructed undergraduate students coding practice by facilitating their proficiency in NLP-related deep learning frameworks, such as PyTorch, transformers, and Hugging Face

PROJECTS & RESEARCH

• Weight Initialization-based rectified Linear Unit:

* In this paper, we undertake research focused on the mathematical foundations of various weight initialization strategies to identify the most effective approach. For optimal training, we aim for the activation of each layer in the CNN model to adhere to a standard normal distribution with a mean of 0 and a standard deviation of 1.

Experience: Python, PyTorch, Activation function, Image Classification

• Biomedical Semantic Segmentation Project:

* In the present paper, our objective was to enhance the performance of the U-Net model by introducing modifications that include the development of a fast U-Net (FU-Net). This variant incorporates bottleneck convolution layers within both the contraction and expansion pathways of the model.

Experience: TensorFlow, Keras, Efficient Computation, Model Architecture, Semantic Segmentation

• Autonomous Vehicle Operation Semantic Segmentation Project:

* In this study, we proposed a robust, efficient, and fast network (REF-Net) that integrates meticulously designed encoding and decoding pathways. Specifically, the contraction path incorporates a blend of dilated and asymmetric convolution layers, augmented by skip connections and bottleneck layers. Meanwhile, the decoding path utilizes a nearest neighbor interpolation method, which requires no trainable parameters to restore the original image size. Experience: PyTorch, Efficient Computation, Autonomous Driving, Model Architecture, Semantic Segmentation

• Anomaly Detection in Manufacturing Project:

* In this study, we proposed an unsupervised learning-based, computationally inexpensive, efficient, and interpretable model named UzADL for Automated Visual Inspection. This system comprises three main stages. First, unlabeled images are annotated using a pseudo-labeling algorithm. Second, the identified instances undergo training. Third, an anomaly interpretation technique is employed to explicitly visualize defective regions in identified abnormal instances.

Experience: Python, PyTorch, Anomaly Detection, Model Architecture, Defected Area Heatmap

$\circ~$ Disable Individuals Signs Detection in Vehicles:

* We provided instruction to undergraduate students on conducting deep learning research, writing a scientific paper, and presenting it at a scientific conference. The research focused on detecting signs of disabled individuals in vehicles. The project was initiated from scratch, involving comprehensive tasks such as data collection, model formulation, and inference.

Experience: Python, PyTorch, Object Detection, Model Architecture, YOLO, Bounding Box

$\circ~$ Counting Number of People in the Crowd:

* Following the Seoul Halloween crowd crush in October 2022, we conducted research to identify densely populated areas and preemptively alert law enforcement about potential accidents using Deep Learning techniques.

Experience: Python, PyTorch, Object Detection, Model Architecture, YOLO, Bounding Box

• Real and Synthetic Korean Licence Plate Generator:

* Conducted research on generating synthetic and real image data for vehicle registration plates in South Korea. The generated dataset was utilized to train an AI model for a "License Plate Recognition Parking Management System".

Experience: Python, PyTorch, Image Generation, GAN, Licence Plate Generation

- $\circ~$ Triplet data-based Contrastive loss Image Retrieval Research:
 - * Undertook in-depth research on developing a model for retrieving real-life images based on sketch images. The trained model was implemented to detect counterfeit luxury goods in the Customs office of the Republic of Korea.

Experience: Python, PyTorch, Image Retrieval, PyTorch Lightning, Triplet Data, Contrastive Learning

$\circ\,$ Recommendation system for "GPARTS" online market place for automotive used parts:

* Developed a recommendation system using real-life images of automobile used parts. The trained model was employed to recommend used part serial number uploaded by a user.

Experience: Python, PyTorch, Image Retrieval, PyTorch Lightning, Triplet Data, Contrastive Learning

• Mini Projects using open-source databases:

* Successfully completed 200+ mini projects utilizing publicly available databases in Kaggle website in various Deep Learning tasks, such as image classification, object detection, semantic segmentation, natural language processing, multi-modal training.

Experience: Python, PyTorch, Jupyter Notebook, Triplet Loss, Deep Learning

 $\circ~$ Manga2Webtoon using AI:

* Embarking on a project to convert Japanese and Chinese manga into Korean Webtoons using AI involves several sequential steps. These include segmenting parts using semantic segmentation, applying color to the original grayscale images using image generation models, extracting text from speech bubbles using Optical Character Recognition (OCR), and more.

Experience: Python, PyTorch, Semantic Segmentation, Object Detection, OCR, Image Colorization

INFO & LANGUAGES

GenderMaleAge, DOB32 years, 1992/04/06NationalityUzbekistanEnglishTOEIC scoreKoreanTOPIK scoreUzbekNativeRussianBilingual