SHREYANSHU BHUSHAN

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PROFESSIONAL SUMMARY

AI Researcher with over **2 years** of industry experience and **3 years** of academic research expertise, currently holding an **F-2 residency visa in Korea** (no visa sponsorship required). Passionate about developing and applying diverse algorithms to solve real-world challenges. My primary research areas include Natural Language Processing (**NLP**), particularly Large and Small Language Models (**LLMs/sLLMs**), Optical Character Recognition (**OCR**), Vision-Language Models (**VLMs**), and **Computer Vision** (image processing/image generation). I focus on developing compact models optimized for efficient on-device and offline performance.

EXPERIENCE

AI Researcher May 2023 – Present

NEOALI Co. Ltd. | *Seoul, South Korea*

- **LLMs/sLLMs/VLMs R&D:** Research and develop compact, on-device language models.
- **Model Fine-Tuning:** Optimize models for enhanced performance.
- **Dataset Creation & Analysis:** Develop and analyze datasets to support model training and evaluation.
- **Prompt Engineering:** Design and refine prompts to maximize model effectiveness.
- **Structured Data Extraction:** Convert tables, charts, and diagrams to text.
- **Document AI:** Develop solutions for extracting and processing text from diverse documents.
- **OCR Enhancement:** Leverage Vision-Language Models to improve OCR accuracy and contextual understanding.
- **Document Translation:** Translate text across PPT, PDF, DOC, and Excel while preserving formatting.

Graduate Student Researcher Mar. 2021 – Feb. 2023

Kyungpook National University | *Daegu, South Korea*

- Conducted research on integrating NLP and Computer Vision tasks using **Deep Learning** methodologies.
- Specialized in developing techniques for image-based summarization.

AI Youth Trainer for Intel | **Intern** Sep. 2020 – Feb. 2021

Shashwat Foundation | *Remote*

- Guided and mentored a group of students in developing their AI project ideas into proof-of-concepts.
- Demonstrated strong organizational and analytical skills in managing tasks and projects.

Software Developer | **Intern** Apr. 2018 – May 2018

Huawei Technologies | *Bengaluru, India*

- Developed a software tool for storing, modifying, searching, and converting data between JSON and CSV formats.
- Utilized skills in JAVA, JSON syntax and format, CSV format, user interface design for managing records in JSON format, and JSON/CSV parsing.

EDUCATION

Master of Science | Kyungpook National University, South Korea Mar. 2021 – Feb. 2023

- Major: Artificial Intelligence, GPA: 4.1/4.3
- Relevant Courses: Deep Learning, Advanced Artificial Intelligence, Computer Vision

Bachelor of Science in Engineering | Kyungpook National University Sep. 2018 – Jul. 2020

- Major: Computer Science, GPA: 3.81/4.3
- Exchange Student
- Relevant Courses: Linear Algebra, Artificial Intelligence, Machine Learning

Bachelor of Technology | Christ University, India Jul. 2016 – Aug. 2018

- Major: Computer Science and Engineering, GPA: 3.6/4.0
- Exchange Program with KNU (2+2 Double Degree)
- Relevant Courses: Data Structures and Algorithms, Discrete Mathematics

RELEVANT PROJECTS

AskMe

- Provide answers to questions based on the given document.
- Process and analyze complex documents such as contracts, insurance policies, and financial statements.
- Support multiple file formats, including PDF, DOC, and PNG.
- Utilize Retriever-Augmented Generation (**RAG**) along with a combination of extractive and generative models, enhanced by **prompt engineering**, to ensure accurate answer generation.

LayGen - AI Translate As It Is

- Translate various document file types, including PPT, PDF, DOC, and more, into any language in a single seamless operation.
- Operates entirely **on-device** and **offline**, ensuring the safety of your data.
- Maintains the original layout, font size, and font color to preserve the document's visual integrity.

VLMFusion OCR: Combining OCR Power with Vision Language Model

- Combines two or more OCR engines using Vision Language Models for enhanced accuracy and reliability.
- Balances the limitations of individual OCR systems, resulting in superior text recognition and extraction performance.

SlideAssist: Your intelligent assistant for PowerPoint presentations

- Provides accurate answers to questions about your PPT slides by analyzing the content within the presentation.
- Designed with a lightweight VLM and **retrieval model**, ensuring minimal memory usage while still delivering robust assistance and insights.

AdVision Pro: Create Stunning Marketing Visuals in Seconds

- Generate marketing advertisement images with engaging slogans in any language you desire.
- Edit and customize the visuals to align with your brand’s style and preferences.

Chart2Excel: End-To-End Framework for Conversion of Chart Images into Excel Tables

- Developed an end-to-end framework for extracting key information from charts and converting it into Excel tables.
- Implemented distinct algorithms tailored for various types of charts to ensure accurate data extraction.
- Integrated two Optical Character Recognition (OCR) systems to enhance text extraction accuracy.

Table to Excel: Converting table images into editable Excel files

- Implemented an end-to-end framework for converting table images into Excel files.
- Ensured functionality for both clear and noisy images.

PUBLICATIONS

Unveiling the Power of Integration: Block Diagram Summarization through Local-Global Fusion
***Shreyanshu Bhushan**, Eun-Soo Jung, Minho Lee*

ACL 2024 | Link

- Introduced BlockNet, a fusion framework that summarizes block diagrams by integrating local and global information for both English and Korean languages.
- Developed BD-EnKo, a high-quality multilingual dataset for block diagram data.
- Introduced BlockSplit, an OCR-based algorithm for local information extraction and trained an OCR-free transformer architecture for global information extraction using the BD-EnKo dataset and public data.

Block Diagram-to-Text: Understanding Block Diagram Images by Generating Natural Language Descriptors
***Shreyanshu Bhushan**, Minho Lee*

AACL-IJCNLP 2022 | Link

- Proposed a novel task of converting block diagram images into text through a framework called BloSum, which extracts contextual meaning from images as triplets to aid in summary generation using LLM.
- Introduced a new dataset specifically for complex computerized block diagrams, detailing the dataset preparation process.

PATENTS

- Jung Eun-Soo, Toikkanen Miika Timo Samuli, **Bhushan Shreyanshu**, K C Bibek. AI-Based Method and System for Understanding Document Structures. [Patent Number: 10-2024-0132123] (2024.09.27)
- Hwang Kyung-ho , Lee Minho , **Bhushan Shreyanshu**. Relevant Method for Understanding Block Diagrams and Generating Natural Language Descriptions. [Patent Number: 10-2024-0101342] (2024.07.31)

SKILLS & LANGUAGES

Skills: Python | C++ | C | Java | PyTorch | TensorFlow | CUDA | Pandas | NumPy | Scikit learn | NLP | NLG | LLM | VLM | OpenCV | Image Processing | Deep Learning | Streamlit | FastAPI | GCP | Gradio | HTML | Arduino

Languages: English (*fluent*) | Hindi (native) | Korean (*beginner*)

AWARDS

Intel AI PC Innovation Challenge Jan. 2025

Intel | *Seoul, South Korea*

- **1st Place** Winner of the AI PC Innovation Challenge for leading the development of Laygen, an offline, on-device translation module preserving layout, font size, and color with high accuracy.

Artificial Intelligence Grand Challenge Competition Dec. 2022

Ministry of Science and ICT / IITP | *Seoul, South Korea*

- **2nd Place** Winner of the AI Grand Challenge (AGC) for leading the chart analysis segment in a QA task involving documents with text, tables, and charts, ensuring accurate answer extraction from chart images.

KNU Graduate School Innovation Project Scholarship Dec. 2021

Kyungpook National University | *Daegu, South Korea*

- Awarded for Excellent International Student

KNU International Graduate Scholarship Mar. 2021

Kyungpook National University | *Daegu, South Korea*

- Recipient for full scholarship for Graduate Studies at KNU.

Honorary International Ambassador Jun. 2020

Kyungpook National University | *Daegu, South Korea*

- Officially appointed as an Honorary International Ambassador of KNU for enthusiasm and achievements as an international student.

VOLUNTEER EXPERIENCE

AI Instructor Aug. 2021 – Feb. 2023

Kyungpook National University | *Daegu, South Korea*

- Served as an AI Instructor for ABR Lab's foundational education program for incoming students.
- Delivered comprehensive instruction on various topics within Computer Vision and Natural Language Processing.
- Possessed advanced technical and scientific expertise.

Mentor Jul. 2021 – Feb. 2023

Kyungpook National University | *Daegu, South Korea*

- Served as a presenter at ABR Lab's journal club, leading discussions on emerging AI technologies and recent scholarly publications.
- Demonstrated a proactive approach to continuous professional development and learning.
- Exhibited exceptional proficiency in both written and verbal communication.