

SHREYANSHU BHUSHAN

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PROFESSIONAL SUMMARY

AI Engineer/Researcher with over **3 years** of industry experience, passionate about developing and applying diverse algorithms to solve real-world challenges. 1st-place winner of the Intel AI PC Innovation Challenge 2025 and first-author of papers at ACL 2024 and AACL-IJCNLP 2022, I design and ship production AI systems spanning **Agentic AI**, 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 also develop efficient, compact AI systems optimized for on-device and offline deployment.

EXPERIENCE

AI Engineer/Researcher

May 2023 - Present

NEOALI Co. Ltd. | Seoul, South Korea

- **Agentic AI:** Architected autonomous, tool-using AI agents for multi-step reasoning, planning, and end-to-end document-workflow automation, deployed in a production multi-agent document-review system.
- **On-Device Document Translation:** Led development of LayGen, an offline, on-device engine that translates PPT, PDF, DOC, HWPX, and Excel while preserving original layout, font size, and color - 1st place, Intel AI PC Innovation Challenge 2025.
- **LLM / sLLM / VLM R&D:** Researched, fine-tuned, and benchmarked large, small, and vision-language models across open-source, on-device, and cloud platforms (OpenAI, Claude, Gemini), selecting models to balance accuracy, latency, and inference cost in production.
- **OCR Enhancement:** Fused multiple OCR engines with Vision-Language Models to lift text-recognition accuracy by 30% over single-engine baselines on noisy, real-world documents.
- **Document AI:** Developed Retrieval-Augmented Generation (RAG) pipelines that combine extractive and generative models to deliver accurate, evidence-grounded answers over contracts, policies, and financial statements.
- **Model Fine-Tuning & Optimization:** Fine-tuned sLLMs and LLMs for efficient on-device and offline inference.
- **Dataset Creation & Analysis:** Designed and curated multilingual training and evaluation datasets, with systematic error analysis to diagnose failure modes and guide model iteration.
- **Prompt Engineering:** Designed and systematically refined prompt and evaluation strategies, improving output reliability and consistency across agentic, extraction, and translation tasks.
- **Structured Data Extraction:** Built algorithms that convert tables, charts, and diagrams into structured, machine-readable text.

Graduate Student Researcher

Mar. 2021 - Feb. 2023

Kyungpook National University | Daegu, South Korea

- Pioneered a novel block-diagram-to-text task bridging **NLP** and **Computer Vision**, first-authored at AACL-IJCNLP 2022 and extended to the multilingual BlockNet fusion model at ACL 2024.
- Built BD-EnKo, a high-quality English-Korean block-diagram dataset, and led the chart-analysis module that won 2nd place at the national AI Grand Challenge 2022.

AI Youth Trainer for Intel | Intern

Sep. 2020 - Feb. 2021

Shashwat Foundation | Remote

- Mentored student teams in turning AI project ideas into working proof-of-concept prototypes under Intel's AI for Youth program.
- Coached students on problem framing, model selection, and execution, guiding multiple projects from concept to working demo.

Software Developer | Intern

Apr. 2018 - May 2018

Huawei Technologies | Bengaluru, India

- Built a Java tool to store, search, and convert structured data between JSON and CSV formats.
- Designed the parsing logic and user interface for managing JSON records, strengthening core software-engineering fundamentals.

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

Reviewer Agent

- Built a multi-agent system that evaluates proposals and documents, auto-generates filled evaluation reports, and answers questions about them.
- Score documents against criteria with evidence, risks, and rankings; fill report templates (text, grade tick-marks, detailed opinions); chat with a tool-using **Q&A agent**; and edit text with an inline AI assistant - extensible via a **Skills marketplace**.
- Utilize Retrieval-Augmented Generation (**RAG**) with a **multi-agent** pipeline, prompt engineering, and a self-validating **Think-Structure-Repair** loop to ensure accurate, evidence-grounded results.

AskMe (Document AI)

- Engineered a Document-AI assistant that answers natural-language questions grounded in the source document.
- Process and analyze complex documents such as contracts, insurance policies, and financial statements.
- Support multiple file formats, including PDF, DOC, and PNG.
- Utilize **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 | [Link](#)

- Translates PPT, PDF, DOC, HWPX, and more into any language, fully on-device - awarded 1st place at the Intel AI PC Innovation Challenge 2025.
- 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.

Hwp2html — HWPX to HTML Conversion Engine | [Link](#)

- Converts **HWPX** (Hangul Word Processor format) documents into clean, **Pandoc-friendly** HTML, plain text, or structured metadata using a pure **JavaScript pipeline** with no native dependencies.
- Supports multiple usage modes including **CLI**, **standalone scripts**, and **JavaScript API** for flexible integration.
- Preserves document fidelity through a parse-resolve_styles-render pipeline, faithfully reproducing tables, embedded images, footnotes, lists, drawing shapes, and inline formatting in the final **HTML** output.

Html2hwp - HTML to HWPX Conversion Engine | [Link](#)

- Converts HTML documents into **HWPX** using a pure JavaScript pipeline with no native dependencies.
- Supports multiple usage modes including **CLI**, **standalone scripts**, and **JavaScript API** for flexible integration.
- Preserves document structure through an **AST-based transformation**, ensuring consistent formatting, styles, and layout in the final HWPX output.

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, resulting in superior text recognition and extraction performance.

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 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: Programming: Python, C++, C, Java, JavaScript | ML & DL: PyTorch, TensorFlow, CUDA, scikit-learn, OpenCV, Transformers, NumPy, Pandas | LLMs & Agentic AI: LLM/sLLM/VLM, RAG, Prompt Engineering, Fine-Tuning, LangChain, LangGraph, vLLM, Ollama | NLP & Vision: NLP, NLG, OCR, Document AI, Image Processing/Generation, Deep Learning | Deployment & MLOps: Docker, FastAPI, Streamlit, Gradio, Pandoc, On-Device/Offline Inference, GCP, AWS | Model APIs: OpenAI, Claude, Gemini | Web: HTML, CSS

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.