




Shreyanshu Bhushan | AI Engineer & Researcher

Location: Seoul, South Korea | AI Engineer/Researcher, NEOALI

-  Specialization: Document AI, LLMs/sLLMs, Natural Language Processing, OCR, Vision-Language Integration
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Professional Summary

Distinguished AI engineer experienced in development and deployment of document intelligence, OCR, and LLM-based solutions. Expert in identifying and translating complex business and research challenges into robust, production-grade software used by global enterprises. Internationally awarded and published, with measurable impacts on enterprise automation and document understanding, and an unwavering commitment to privacy-by-design innovation.

Flagship Project Suite: LayGen

- Purpose: Multi-platform, end-to-end AI document translation and processing ecosystem with format preservation, security, and scalability at its core.
- Contribution: 100% core system, APIs, distributed server, extractor/reconstructor; 70% desktop UI/backend, 50% electron UI with collaboration.

LayGen Subprojects & APIs

- **LayGen Windows Desktop Application**

Problem: Existing translation tools fail to preserve formatting, require internet access, and cannot guarantee enterprise security.

Solution: Architected Python-based backend with advanced document parsing, integrating offline LLM and cloud GPT.

Electron-based frontend: Enabled batch uploads, progress, multi-format downloads. Developed layout-aware, style-preserving translation pipeline.

Tech & Tools: Python, ElectronJS, PyTorch, OpenAI GPT, sLLM, Image processing, Document parsing modules.

Impact: 95%+ format retention over seven file types. Offline translation reduced security risk by 100%; 60% decrease in translation processing time. User privacy and data security by design.

Contribution: 100% backend/core logic, 50% UI integration.

- **LayGen-Ubuntu Distributed System**

Problem: High-volume translation required for large teams with limited client resources.

Solution: Developed multi-client, multi-GPU server (Python, FastAPI) for centralized, high-throughput encrypted processing. Lightweight CLI for rapid deployment; load balancing and failover for high availability (99.8% uptime).

Tech & Tools: Python, FastAPI, REST, Docker, NVIDIA GPUs.

Impact: 3x processing acceleration; 90% reduction in client-side resource needs. Reduced multi-seat licensing and hardware costs by 40%.

Contribution: 100%

- **LayGen Enterprise APIs**

Problem: Businesses required scalable, secure, and automatable translation and extraction.

Solution: Designed modular REST APIs for text extraction, translation, and reintegration with AES-256 secure storage and GDPR compliance. Provided developer-ready endpoints for seamless workflow automation.

Tech & Tools: FastAPI, AES-256, JWT, Encrypted storage, Logging.

Impact: 35% cost reduction in document management. 5,000+ documents/day ≥ 99.9% reliability, <5s response average.

Contribution: 100%

Extractor API

Problem: Accurate, format-agnostic document text and data extraction from scanned, digital, and multi-lingual content.

Solution: Developed robust, multi-tier text extraction pipeline with OCR and layout detection. Multilingual Unicode normalization; handling PDFs, Office docs, HWPX.

Impact: 92%+ extraction accuracy, 98% reduction in format errors, robust with Asian, RTL scripts.

Contribution: 100%

File Reconstructor API

Problem: Need for reconstitution of translated data into fully formatted, editable documents of the original type.

Solution: Engineered reverse-compiler pipeline to regenerate docs (PPTX, DOCX, XLSX, PDF, HWPX etc.) from structured intermediate, maintaining rich layout.

Impact: 95%+ output fidelity, near-zero manual formatting required, batch workflow enabled.

Contribution: 100%



Recognition

- 1st Place – Intel AI PC Innovation Challenge 2024



Team AI Document Platform: AskMe

- **AskMe – Intelligent Document QA & Retrieval (Team Project)**

Problem: Rapid, accurate analysis and question-answering over complex, long formats (contracts, insurance, statements).

Structure: Retrieval-Augmented Generation (RAG) architecture combining retrievers and LLMs.

ALIParse: Multi-format extraction; layout models, intelligent chunking, semantic layout retention.

AskMe RAG: 83% query accuracy, 5x faster doc analysis, 40% cost savings.

Contribution: 50% on parsing engine (ALIParse); 50% on RAG system integration.



Advanced OCR & Document Analysis Solutions

- **VLMFusion OCR – Vision-Language Model Fused OCR Engine**

Problem: Legacy OCR is limited in accuracy, language coverage, and noisy document handling.

Solution: Built a system leveraging layout detection, EasyOCR, PaddleOCR, and Vision-Language Models. Implemented post-hoc sequence correction and multilingual (20+ scripts) support.

Impact: 10% accuracy boost over best single-engine systems. Enabled robust OCR on government forms and noisy, real-world imagery.

Contribution: 100%

- **AdVision Pro – AI Marketing Visual Generation**

Problem: Creating brand-consistent ads with quick localization is time & resource-intensive.

Solution: Automated AI generation of marketing imagery with multi-language, brand-configurable slogans, leveraging DALL-E/Flux.

Impact: 3x campaign creative throughput; real-time design in 10+ languages.

Contribution: 100%

- **SlideAssist – AI PowerPoint Content Assistant**

Problem: Time-consuming manual navigation and comprehension of large slide decks.

Solution: Vision-Language Model enabling direct Q&A on slide text, charts, and objects with minimal memory footprint.

Impact: Improved accessibility, better answer generation from images as well and knowledge transfer.

Contribution: 100%

- **Table to Excel – Advanced Table Extraction from Images**

Problem: Automated extraction of structured tables from noisy and distorted images.

Solution: Combined advanced detection, cell segmentation, Image processing and OCR for editable Excel output.

Impact: 93%+ cell accuracy for noisy scans, 10x manual entry speed.

Contribution: 100%

- **Chart2Excel – Chart Image to Structured Data Converter**

Problem: Manual digitization of visual chart data is slow and error-prone.

Solution: Extracted axes labels/data points from charts/graphs with multi-model OCR and pattern recognition, automating storage in Excel.

Impact: 90%+ automated data recovery for enterprise reports.

Contribution: 100%



Research Innovation & Applied Science

- **BlockNet – Multilingual Block Diagram Analysis (ACL 2024)**

Problem: Block diagrams are hard to digitize and summarize for technical and multilingual content.

Solution: Created the BD-EnKo dataset, devised the BlockSplit OCR algorithm, and engineered transformer-based local-global understanding systems.

Impact: 92% summary accuracy, 70% workflow speed-up for technical teams, adopted by global research labs.

Published: ACL 2024; widely cited in diagram understanding literature.

Contribution: 100%

- **MekBot – Bilingual CAD/CAE Engineering Assistant**

Problem: Language and workflow barriers in global engineering/design teams.

Solution: Developed a bilingual (English/Korean) agent for CAD/CAE workflow Q&A, document analysis, and real-time Slack integration.

Impact: 35% reduction in design cycle time; 50% onboarding speed-up for new engineers.

Contribution: 100%

- **Semantic Segmentation on Cityscapes**

Problem: Robust urban scene segmentation for self-driving and smart city applications.

Solution: Benchmarked SegNet, U-Net, and FCN, optimized post-processing pipelines for production.

Impact: State-of-art pixel-level segmentation, notably improved small-object accuracy.

Contribution: 100%



Technical Skills

- *Programming:* Python, Java, C++, ElectronJS, JS, FastAPI, Docker, PyTorch, TensorFlow, OpenCV

- *NLP/LLM*: T5, Llama, Qwen, DeepSeek, Gemma, HuggingFace Transformers, Prompt Engineering
- *Computer Vision/OCR*: Tesseract, EasyOCR, PaddleOCR, YOLO, VLMs, Flux, DALL-E, OCR post-processing
- *Deployment*: Docker, GCP, RESTful API, JWT, AES Encryption
- *Frontend/Collab*: Electron, Streamlit, Gradio, Slack API



Awards, Publications & Impact

- 🏆 1st Place: Intel AI PC Innovation Challenge (2024) – LayGen
- 🥈 2nd Place: AI Grand Challenge (2023) – Chart2Excel + Chart QA
- Conferences: ACL 2024, AACL-IJCNLP 2022 (block diagram understanding, fusion pipelines)
- Patents: AI Document Structures (10-2024-0132123), Diagram Summarization (10-2024-0101342)



Professional Impact Statement

I deliver transformative automation by bridging fundamental AI research with scalable product engineering. My portfolio illustrates a proven ability to own systems end-to-end—from research concept to enterprise deployment—and deliver tangible operational, security, and efficiency gains for organizations worldwide.