

Seungdong Yoa

CONTACT INFORMATION

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RESEARCH INTERESTS

Large Language Models (LLMs) & Foundation models
Machine Learning and Computer Vision
LLM Quantization & LLM Reliability (Hallucination Detection)
Multi-Agent Systems & Anomaly Detection

EDUCATION

Korea University, Seoul, Korea

M.S. in Computer Science and Engineering Sep 2019 – Feb 2022
GPA: 4.02 / 4.5 — Advisor: Hyunwoo J. Kim, Ph.D

Korea University, Seoul, Korea

B.S. in Computer Science and Engineering (Major) Mar 2010 – Feb 2017
B.A. in Business Administration (Minor)
The National Scholarship for Science and Engineering (Full Merit-based)

PUBLICATIONS

1. **Seungdong Yoa**, Ye Seul Sim, Suhee Yoon, Sanghyu Yoon, Dongmin Kim, Soonyoung Lee, Bumsoo Kim, Junhyun Lee, “Efficient Multi-Agent Reasoning via Confidence-Guided Adaptive Debate.”, *International Conference on Machine Learning (ICML)*, 2026.
2. **Seungdong Yoa**, Sanghyu Yoon, Suhee Yoon, Dongmin Kim, Ye Seul Sim, Junhyun Lee, Woohyung Lim, “From Static Benchmarks to Dynamic Protocol: Agent-Centric Text Anomaly Detection for Evaluating LLM Reasoning.”, *International Conference on Learning Representations (ICLR)*, 2026.
3. **Seungdong Yoa**, Seungjun Lee, Hyeseung Cho, Bumsoo Kim, Woohyung Lim, “ImagePiece: Content-aware Re-tokenization for Efficient Image Recognition.”, *AAAI Conference on Artificial Intelligence (AAAI)*, 2025.
4. **Seungdong Yoa**, S. Lee, C. Kim, H. J. Kim, “Self-Supervised Learning for Anomaly Detection With Dynamic Local Augmentation.”, *IEEE Access*, 2021.
5. **Seungdong Yoa**, J. Park, H. J. Kim, “Learning Non-Parametric Surrogate Losses With Correlated Gradients.”, *IEEE Access*, 2021.
6. **Seungdong Yoa**, M. Jeon, Y. Oh, H. J. Kim, “Learning to Balance Local Losses via Meta-Learning.”, *IEEE Access*, 2021.

EMPLOYMENT & EXPERIENCE

LG AI Research, Seoul, Korea
AI Research Scientist

2022 – Present

- **Agent-driven Dynamic Workflows (AnoX)**: Developed an AI agent platform orchestrating anomaly detection workflows dynamically using the Model Context Protocol (MCP), decoupling agents from tools for zero-code extensibility.
- **LLM Reasoning & Multi-Agent Systems**: Designed ATAD, a multi-agent benchmark protocol for evaluating LLM reasoning in text anomaly detection (**ICLR 2026**).
- **LLM Reliability & Hallucination Detection**: Addressed numerical hallucination in Business Intelligence using agent-based token efficiency and a semantic-aware validation system.

- **Efficient LLM Reasoning (LASE):** Proposed a leader-centric multi-agent debate framework triggering interaction only in non-neutral regimes. Achieved multi-agent-level reasoning accuracy at near single-agent token cost (**ICML 2026**).
- **Semantic-aware LLM Quantization:** Engineered an agent-guided INT4 PTQ framework. Preserved domain-critical knowledge, outperforming the zero-shot accuracy of dense FP16 models with zero inference overhead.
- **Efficient Vision Models:** Authored “ImagePiece,” a re-tokenization framework achieving SOTA efficiency in ViTs ($1.5\times$ faster, $+0.39\%$ accuracy), topping lightweight leaderboards (**AAAI 2025**).
- **Industrial AI Optimization:** Deployed the ‘Hero LensAA’ project by applying Tab-Transformer and domain-specific regression adjustments, reducing overkill from 99% to near 0% on test sets. Awarded the **2024 LG Award**.

Hyundai Motor Group AIRS Company, Seoul, Korea July 2021 – Sep 2021
AI Researcher Intern

- Developed Anomaly Detection algorithms for Smart Factory quality control via self-supervised learning.

Korea University (M.S.), Seoul, Korea Sep 2019 – Feb 2022
Graduate Research Assistant

- Led a joint AI project with Samsung Electronics, developing real-time human-object interaction and anomaly detection algorithms for industrial drone monitoring systems.

Shinsegae E-commerce SSG.COM, Seoul, Korea Feb 2017 – Jun 2019
Software Engineer

- Engineered an OAuth 2.0 server and a scalable integration platform for AI speakers (Google Home, Naver Clova), and developed a customer service chatbot (CS Talk).

HONORS AND AWARDS

LG Award (2024): The most prestigious honor across all LG Group affiliates. Recognized for major contributions and successful commercial deployment in the Hero LensAA project.

AI Grand Challenge 2nd Place (Jan 2020): Awarded **\$0.6M USD** research grant for AI problem-solving excellence.

National Scholarship for Science and Engineering (Full Merit-based, Top-tier academic performance), Korea

EXTRACURRICULAR ACTIVITIES

Future Entrepreneurs’ Society (FES) Sep 2014 – Dec 2015
Leading Member / HR Manager

- Designed manufacturing startup business models and led business strategy seminars in collaboration with top tech companies (Google Korea, Kakao).

Student Council Mar 2010 – Dec 2011
General / Planning Manager

- Organized large-scale student activities and managed the council budget.

PATENT

Wet type vacuum cleaner
 - Registration number/date: 1010156040000 / 2011.02.10

Wet type air cleaner
- Registration number/date: 1009762030000 / 2010.08.10

ADDITIONAL
INFORMATION

Skills: Python, PyTorch, SQL, Next.js, Java, Spring Framework, $\text{\LaTeX}$.

Clubs & Communities: FES Business Strategy Club, Korea Student Aid Foundation (KOSAF), KUBA, Student Council, Soccer Club.