Choi Juheon

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EDUCATION

2025/02 -	**KAIST (Korea Advanced Institute of Science & Technology)**	Seoul, Korea
	MS - Major: AI (GPA 4.0/4.3) | Research Topic: Human–Robot Interaction through Smart Glasses	
2011/03 – 2013/02	**KOREA University**	Seoul, Korea
	Major: Mechanical Engineering (GPA: 4.06/4.5) **Top Graduate Student**	
2011/03 – 2013/02	**ChungBuk Science Highschool**	Cheong Ju, Korea
	1-year early graduation	

WORK EXPERIENCE

2022/10-2025/02	**Amazon Web Services Hi-Tech team - Solutions Architect**	Seoul, Korea

* Joined high-tech teams specializing in cameras, semiconductors, electric vehicle batteries, and smart home appliances to leverage extensive experience in IoT system construction and data analytics across various industries. Actively supported major enterprise clients such as LG Electronics, LG Energy Solutions, LG Chemicals, LG Innotek, and Hyundai Motors in designing cloud-based architectures focusing on IoT, AI, and analytics.

[Design AWS-based Cloud Architectures]
• **IoT**
 - Led data collection and AIoT system construction for Hyundai Motor, LG Electronics, LG Energy Solutions, LG Innotek, SK Bioscience, Samsung Heavy Industries, and SuperbAI, focusing on vehicles, ships, and factory facilities.
-> AWS Fleetwise and AWS IoT Core will be **introduced to 500,000 real-world vehicles** through PoC technology verification, real-time data acquisition system for **image sensor factory equipment has been improved by 10 times**, and data from multiple ships, electric vehicles, scooters, and bicycles are being collected based on AWS IoT.
• **Analytics**
- Improving LG Innotek's data lake and warehouse architecture (5 projects on data acquisition, management, and utilization)
->Awarded Rookie of the Quarter upon joining and **increased sales of AWS-based data analysis system by 100 % within a year**
- Created data lakes and data processing projects for LG Energy Solutions Control Tower, DataZone, battery replacement service (Koo Roo), and Energy Storage System (ESS).
• **AI/ML**
- LG Energy Solution: Helped build MLOps system for electric vehicle battery performance prediction and RAG system for report analysis using generative AI for lithium price prediction (Amazon Sagemaker, Amazon Bedrock-Cluade3)
• **Cloud**
- LG Innotek: Supported the architecture design and construction of a container-based business automation system (Amazon Elastic Container Server, CI/CD), improved supply chain management (SCM) performance at overseas factories using CDN, and built a super-capacity storage transfer system (30PB/year).
- LG Energy Solution: Built a hybrid cloud system (OutPosts) for overseas plants, and built cloud HPC (High Performance Computing) and VDI systems (Appstream, NiceDCV) for high-performance CAE.

[Advancing Organizational Capabilities & Platform Influences]
Delivered multiple talks and presentations to **customers and internal staff, 15 sessions, 300 total attendees**
- IoT standardization and AWS IoT services (GreenGrass, Digital Twin, FreeRTOS), Generative AI (what can we do with GPT4?), understanding data governance, CI/CD, understanding Fleet Management System (FMS), AWS Cloud sustainable architecture.

Leading AWS Summit Korea Main Demo
-2024 AWS Summit Main Demo: Generative AI-Powered Communication Robots, Connected Car Systems
-2023 AWS Summit Main Demo: Generative AI-powered imagery and IoT-controlled virtual gardens (2,016 visitors) link

2019/5- 2022/10	**SOCAR Connected Device Team IoT System Engineer**	Seoul, Korea

*Acquisition of technology startup **Polariant – Joins SOCAR as a founding member of Polariant** for advancement in IoT technology to be utilized in car-sharing service

[Architecting SOCAR's IoT System]
• **Established next-generation IoT Fleet Management System to enhance stability and long-term scalability**
 - **Designed IoT system** including configurations, specifications, communication methods, communication protocol
 - Communicated with multi-vendors to put system devices into production
 - Constructed 9 IoT devices for car-sharing service within 2 years to be installed in 11,000 new servicing fleets
   (FMS device, Power management device, Key control device, Router, Hi-pass, Fuel card reader, etc)
 - Reduced customer complaints by 73% compared to previous devices and decreased IoT operating costs by $3.34 million (30%)
 - Improved hardware vulnerabilities through reliability analysis, built IoT data-based hardware development process, and lessened hardware defect rate by 30%

[IoT device monitoring, diagnosis, and prescription system]
• **Automated IoT device & vehicle problem diagnosis system with statistical method** (AWS Lambda, Python, BigQuery)
 - Monitored 18,000 vehicles for 2 years, automatically discovered and troubleshoot more than 5500 IoT devices
 - Successfully <u>decreased customer complaints by 30% and IoT device downtime by 40%</u>

• **Built IoT data quality monitoring system** focusing on hardware/firmware update error (Bigquery, DataStudio)
- Detected firmware/hardware defects 8 times and troubleshoot 3500 vehicles through communication with subcontractors

[Education of IoT system]
• **Initiated education on the IoT system** to relevant departments within the company and carried out presentations
(cumulative 70 people, 7 times)
• **Led education regarding IoT system and device maintenance** for subcontractors (accumulated 12 times, 50 people)
- Advised maintenance 7 IoT devices maintenance project
• **Coached IoT-related data analysis** company-wide (BigQuery, MySQL, MongoDB)

[IoT system-based solution]
• **Devised Dash Cam System** for **AI-based driver evaluation**
- Designed Dashcam system for driving pattern analysis to reduce car accidents. The system will be adopted to service in 2022
- Defined data collection model and communication protocol
- Created driving skill evaluation model for each driver through AI dashcam data (Python, MySQL, Scikit-learn)
- <u>Granted with patent (Driver evaluation system using ADAS) and applicated international patent</u>

• **Led communication line matching of fleets based on IoT system data**
- Succeeded in cutting down <u>communication expenses by $590,000 per year</u>
- Launched communication line monitoring system, rematched 38,641 lines and terminated unused lines (Python, BigQuery)

• **Structured preemptive vehicle anomaly detection system with IoT data**
- <u>Prevented 20% in customer's flawed vehicle experience</u>
- Implemented an early detection model for vehicle abnormalities such as battery and tire pressure failure
(Python, MySQL, BigQuery)

2016/7-2019/7	**Polariant (M&A with SOCAR) Principle Engineer**	Seoul, Korea

Tech Start-up on indoor positioning system to substitute GPS ([article link](#))
• **<u>Acquired by mobility unicorn company SOCAR (</u>[article link](#)<u>)</u>**
• Pre-Series A Investment - NAVER, Actor Bae Yong-jun, Blue Point Partners, Np Equity Partner
• **Invented world-first technology** to calculate the relative position of a sensor with lower cost, less computation and high
precision compared to lidar and UWB utilizing polarized lights
[Indoor robot and vehicle positioning system (Sensors and Lights, [video link](#))]
- Sold product to <u>Amazon Lab126</u> (US)
- Conducted <u>joint project with Hyundai Autoever, Canon, and Naver Labs</u>
• **Headed design and manufacturing of polarized light and sensor hardware**
- PCB circuit design (photodiode receiver, LED power supply)
- 3D modeling (Inventor) and 3D printer use of polarized LED lighting design (heat dissipation and equipment)

• **Invented data acquisition robot for position modeling (7M size)**
- Created a 7-DOF robot system to collect large amounts of data according to various positions of lights and sensors
(Robot system design, robot control using python, core sensor calibration method design)
- Successfully simulated 100 times larger space than the actual experimental situation to obtain virtual position data
- The data improved the positioning model accuracy by more than 50%
[The world's first 6-DOF mobile VR controller using polarization ([VR device video link](#))]
• Upgraded 3 DOF mobile VR controller (imu sensor-based) to 6 DOF using polarized lighting
- Awarded with <u>best paper honor from ACM VRST2019</u>, the most prestigious VR International Conference
• Designed VR controller hardware - PCB circuit design (photodiode receiver, LED power supply) and mechanism design
• Devised a data collection robot for VR controller positioning model (1.5m size)
* Despite active discussion with renowned VR companies such as oculus and htc VIVE, made a decision to pivot to indoor robot
sensors due to the shrinking VR market

AWARD HISTORY

2019/11	**ACM VRST 2019 2019**	**Best Paper Award- Runner-up**
	POL360: A Universal Mobile VR Motion Controller using Polarized Light	
2016/06	**Challenge KU Startup**	**Grand Prize**
	Team Lead, Smart Stroller Brake	
2016/05	**2016 ICT Convergence Project Contest**	**First Prize**
	Supernumerary Robotic Finger	
2015/10	**International Capstone Design Fair**	**Bronze Prize**
	Team Lead, Vehicle horn display system for the hearing impaired	
2013/03 -2017/02	**Samsung Dream Scholarship Foundation**	**4-year full scholarship**
2012/08	**The 34h National Student Science Invention Contest**	**Gold Award (Ministry of Education, Science and Technology Award)**
	Spatial perception improvement game using light and acrylic box	
2011/07	**The 33th National Student Science Invention Contest**	**Gold Award (Ministry of Education, Science and Technology Award)**
	Self-inflating life tube	
2011/05	**Invention scholarship student**	

PAPER & PATENTS

2025	State Your Intention to Steer Your Attention: An AI Assistant for Intentional Digital Living	ACM CHI2026
2019/11	POL360: A Universal Mobile VR Motion Controller using Polarized Light	ACM VRST2019
2016/07	Applications of Supernumerary Robotic Limbs to Construction Works: Case Studies	I.A.A.R.C
2021/11	METHOD AND APPARATUS FOR EVALUATING DRIVER USING ADAS	Korea Patent 1023236920000
2018/02	PUMP ASSEMBLY	Korea Patent 1018281500000
2013/07	Self-inflating life tube	Korea Patent 1018281500000
2012/03	Ballpoint pen with interchangeable ballpoint nibs	Korea Patent 1011331450000

SKILLS

Computer Skills	• AWS, BIGQUERY(GCP)- advanced level • C, Python – Intermediate level • Microsoft Excel, PowerPoint, Words – advanced level