Rosemary Koikara

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Summary

A Software Engineer with over 4 years of experience in backend development, specializing in building distributed systems and GPU-optimized solutions. My expertise spans various languages and technologies, including C++, Python, Docker, with a strong foundation in AI and cryptography. I have a proven track record of driving innovation in complex environments, leading projects that enhance system performance, scalability, and efficiency. I thrive in collaborative settings and am eager to leverage my skills to make a substantial impact.

Education

- **Kyungpook National University** — Daegu, South Korea
  Ph.D. in Information Security — *Sep. 2015 – Feb. 2021*
- **Christ Deemed to be University** — Bengaluru, India
  MTech in Computer Science and Engineering; GPA: 3.51 — *May 2013 – Apr. 2015*
- **Assam Don Bosco University** — Assam, India
  BTech in Computer Science and Engineering; GPA: 8.57/10.0) — *Aug. 2009 – June. 2013*

Experience

- **Pintel Co. Ltd.** — Seoul, South Korea
  AI Researcher and Developer - Team Lead — *Dec. 2020 - Present*
  - **GStreamer Framework for AI based Video Analysis**: Led the design and implementation of custom GStreamer plugins for real-time object detection and video analytics, achieving a 30% improvement in tracking accuracy and significantly enhancing the AI analytics SDK.
  - **International Project Leadership**: Directed a multinational project between the UK and South Korea to develop an AI-driven accident prevention system, enhancing video classification capabilities by 25%, and successfully managing patent applications.
  - **Innovation in Motion Detection - AVC/HEVC Integration**: Spearheaded research into AVC/HEVC integration, developing a motion detection system that increased detection precision for traffic events by 20%. Achieved key patents, reinforcing our market leadership.
  - **Traffic Management Solutions**: Developed advanced incident detection systems, contributing to a major project that enhanced urban traffic safety. My work supported the launch of a new company branch in the UK and led to multiple US and Korean patents.
- **Kyungpook National University** — Daegu, South Korea
  Research Assistant — *Sep. 2015 - Dec. 2021*
  - **Technological Innovations**: Played a crucial role in a team that secured patents for advanced technologies in automatic number plate recognition and video watermarking, leveraging C++, Python, and computer vision techniques.
  - **Blockchain Security Research**: Pioneered blockchain applications for information security, resulting in innovative software registration methods that bolstered data protection efforts.
  - **Cryptographic Solutions**: Developed a cryptographic key manufacturing module for multi-party communication systems, establishing a secure communication framework and enhancing data privacy.
  - **Government Project Contributions**: Actively contributed to government-funded projects focusing on image watermarking and video copyright software, driving significant advancements in public and private sector security.

Honors

- **SAC'16 Student research competition by ACM and Microsoft**: Received the first place for independent student research paper, "A 3D-Cellular Automata based Pseudo-random Number Generator".

Research Papers

- **Concurrency and Computation: Practice and Experience**: Publicly verifiable threshold secret sharing based on three-dimensional-cellular automata 2021
- **Handbook of Research on Machine and Deep Learning Applications for Cyber Security**: A 3D-Cellular Automata-Based Publicly-Verifiable Threshold Secret Sharing 2020
- **Proceedings of the International Conference on Security and Management (SAM)**: Multilevel Threshold Secret Image Sharing based on the Chinese Remainder Theorem 2016
- **SAC'16 Proceedings of the 31st Annual ACM Sympposium on Applied Computing**: A 3D-cellular automata based pseudo-random number generator:Student Research Abstract ACM New York, 2016
- **Int'l Conf. Security and Management, SAM'15**: Block-DCT Based Secret Image Sharing over GF(2^8) 2015
- **Advanced Computer and Communication Engineering technology, Lecture Notes in Electrical Engineering**: A Novel distributed Image Steganography Method Based on Block-DCT Springer, 2015

Skills

- **Programming Languages**: C++, Cuda C++, Python, Rust, Java
- **Frameworks/Technologies**: GStreamer, FFMPEG, OpenCV, CUDA, TensorFlow, Pytorch, WebRTC, NVIDIA DeepStream
- **Specializations**: Video Coding (AVC, HEVC), Computer Vision, Deep Learning, Theoretical Cryptography, Blockchain Technology
- **DevOps Tools**: Kubernetes, Docker