

The IEEE Long Island (LI) Signal Processing Society (SPS) Presents the Following Distinguished Lecture:

**Co-Design of Algorithms and Architectures for Machine Learning Inference
at the Edge for Video Analytics**

Monday the 30th of October 2023 @ 6:00 PM EST

Abstract:

Video analytics involves processing video content in real-time, extracting metadata, sending out alerts, and delivering actionable intelligence insights to security staff or other systems. Video analytics products apply artificial intelligence to cameras to recognize temporal and spatial events. Video analytics are needed in various end applications such as quality inspection, industrial process automation, and workplace security. It is crucial to have video analytics performed at the edge on the multiple streams from on-premises cameras to make automated predictions with high accuracy and low latency. This talk explains the co-design of hardware friendly algorithms and corresponding domain specific accelerator architectures for machine learning inference at the edge for video analytics.

Distinguished Lecturer:



Dr. Kiran Gunnam is an innovative technology leader with vision and passion who effectively connects with individuals and groups. His breakthrough contributions are in the areas of advanced error correction systems, storage-class memory systems, and computer

vision-based localization & navigation systems. He has helped drive organizations to become industry leaders through ground-breaking technologies. He has 86 issued US patents and 100+ patent applications/invention disclosures on algorithms, architectures, and real-time low-cost implementations for computing, storage, computer vision and AI systems. He is the lead inventor/sole inventor for 90% of them. His patented work has been already incorporated in more than 3 billion data storage, Wi-Fi and 5G chips as of 2020 and is set to continue to be incorporated in more than 500 million chips per year. Dr. Gunnam is also a key contributor to the precise localization and navigation technology

commercialized for autonomous aerial refueling and space docking applications. His recent patent-pending inventions on low-complexity simultaneous localization and mapping (SLAM) and 3D convolutional neural network (CNN) for object detection, tracking, and classification are commercialized for LiDAR+ camera-based perception for autonomous driving and robotic systems. His more recent inventions on machine learning accelerators have ~2x savings vs the state of the art.

Dr. Gunnam has been involved with the IEEE standards association (SA) since 2013. He is a member of IEEE Computer Society's Microprocessors Standards Committee and is the Chair of IEEE P3109 Standards Working Group for Arithmetic for Machine Learning. He is also the Chair of IEEE CASS Standard Activities Subdivision (SASD). He is also a member of the Board of Governors of the IEEE Circuits and Systems Society (CASS) for 2021-2022.

Dr. Gunnam served as IEEE Distinguished Speaker and Plenary Speaker for 30+ events and international conferences and more than 4000 attendees benefited from his talks. Dr. Gunnam also served as a lead Instructor for machine learning and deep learning workshops organized by ACM in collaboration with IEEE and ValleyML from 2018 to 2020.

Dr. Kiran Gunnam is a recipient of the ValleyML Distinguished Technical Achievement Award for long-lasting contributions to architectures and algorithms of real-time signal processing, communication, and machine learning systems that enabled ubiquitous computing.

Logistics:

Where: Virtual Meeting

When: 30th of October 2023 @ 6:00pm-7:00pm

Register: <https://events.vtools.ieee.org/m/369906>

DL Coordinators (signal@ieee.li):

Mr. Mesecher, Vice Chair, SPS, IEEE LI Section

Dr. Donaldson, Chair, SPS, IEEE LI Section