Democratizing Video Analytics – The quest for the holy trinity of low latency, low cost, and high accuracy

Video cameras are pervasively deployed for security and smart city scenarios – there is a camera for every eight people in the US! Large-scale video processing is a grand challenge of systems that enable AI. This talk will describe the recent technical advancements of Project Rocket (http://aka.ms/rocket), that takes up this challenge to democratize video analytics: enable anyone with a camera to benefit from video analytics. The first half of the talk will focus on resource management of video processing pipelines. We focus on the key characteristic of video analytics – resource-accuracy tradeoff with multi-dimensional configurations. We’ll present an intelligent profiler that adaptively picks the best configuration without incurring a prohibitive search cost, by leveraging spatial and temporal correlations among the videos. The second part of the talk will move to analyzing stored videos by enabling interactive and low-cost queries of the form, “find me all frames with object X”. The key to our solution is an approximate index that trades off ingestion cost on live videos against the latency at query time. Project Rocket has been powering our work on traffic video analytics at the City of Bellevue, WA (see https://www.youtube.com/watch?v=rTAOwvU6Yj8) as well as other cities worldwide.