

Content Steering: Leveraging the Computing Continuum to Support Adaptive Video Streaming

Short Course Proposal - SBRC 2024

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Abstract:

Video streaming has become one of the most used Internet applications nowadays, with numerous leading technology companies competing for dominance in a market valued in the billions. The delivery of high-quality streaming services necessitates strategic utilization of computing resources near end-users, with emerging technologies like 6G and edge-cloud continuum infrastructures being explored to meet these growing demands. These technologies promise to enable rapid, reliable data transfer for large data volumes, with the edge-cloud continuum facilitating service placement mobility from central cloud data centers to edge devices near users. However, managing seamless service mobility and precise computing resource allocation for quality service remains complex. The zero-touch network concept, eliminating the need for manual network configuration, is becoming popular in this context. Specifically, in video streaming, the integration of the Content Steering architecture from the Dynamic Adaptive Streaming over HTTP (DASH) protocol with container orchestrator technologies could allow for autonomous video streaming service placement across the continuum, reducing human involvement and optimizing computing resource use. Our short course provides a hands-on experience with the latest technology in this domain, teaching participants about cutting-edge architectures and tools for creating and managing adaptive video streaming applications using the latest content steering architecture introduced in the DASH protocol. Participants will build a small edge-cloud virtual and local testbed to explore request steering strategies for video content across the computing continuum. The course also addresses current challenges and future research opportunities in this evolving field.