Zachary Cava

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EDUCATION

University of Washington
2010 – 2014

Seattle, Washington

- Dual Bachelors of Science, Computer Science and Mathematics

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PROFICIENCIES

Video Streaming

- HTTP-based streaming technologies: MPEG-DASH, HLS
- Video compression and transport: H.264, H.265, MPEG-2, MPEG-4 (ISOBMFF/CMAF)
- Content security and protection mechanisms: CENC, DRM Systems (PlayReady, Widevine, FairPlay)
- Device Players: Open-Source (Shaka, ExoPlayer), Third-Party Native (Tizen, LG, AVFoundation), In-House Custom
- Interleaved multi-asset single-buffer streaming presentation playout
- Programmatic dynamic ad insertion at scale for VOD and Live streams
- Playback quality-of-service (QoS) instrumentation and analytics

Programming Languages

- Proficient in: Javascript (ES2016/2017, Typescript), NodeJS
- Familiar with: Bash, C, C++, Java, Kotlin, Go, Python

EXPERIENCE

Disney Streaming
May 2021 - Current

Senior Principal Software Engineer, Architect (May 2021 – Current)

- Partner with cross-organization leadership to identify system domain overlap and gaps
- Establish and evangelize forward-looking media strategy for Disney Media and Entertainment Properties (Disney+, Hulu, ESPN+, Star+)
- Work across media engineering and adjacent organizational units to design unified data models and systems

Hulu
December 2014 – May 2021

Software Architect (July 2018 – May 2021)

- Design and oversee the video delivery and playback systems across all Hulu applications
- Focus on consistently enabling next generation video/audio features as well as latest content protection and ad delivery mechanisms via industry standard mediums
- Worked with device and software partners to ensure Hulu's needs and issues properly addressed
- External representative of Hulu video streaming technology in various standards groups

Senior Software Engineer, Living Room (December 2014 – July 2018)

- Build and maintain the Hulu at home experience on living room devices
- Designed and constructed an application engineering platform that underpinned multiple user facing applications and allowed for extensive code reuse across major product launches
- Later focus on improving general playback experience quality and normalizing playout of interleaved DASH video streams across varying device platforms

Software Engineer Intern, Living Room (Summer 2013/2014)

- Build and maintain the Hulu at home experience on living room devices
- Projects included both user-facing and core-level work, more information available upon request

UW CSE
January 2012 – December 2014

Introduction to Java Programming (142/143/143x) – Head TA 142/143x

- Primary responsibilities include teaching a section about Java concepts twice a week

Introduction to Web Programming (154) – Head TA

- Primary responsibilities include teaching a section about different web programming languages (HTML, CSS, PHP, MySQL, Javascript) and design paradigms
- Additional responsibilities included construct of testing homework frameworks and grading tools

INDUSTRY ACTIVITY

DASH Industry Forum   April 2018 – Current

- Representative of Hulu within DASH-IF Working Groups to evangelize mechanisms and technology we've utilized in DASH to build a world class ad-supported streaming product
- Active contributor to overall working group with specific focus on the Live and Ad Insertion task forces with a focus on making DASH simpler and more approachable to newcomers and evangelize industry leading concepts such as Server-Guided Ad Insertion
- Editor of the DASH-IF IOP v5.0 Part 5 on Ad Insertion

Motion Pictures Experts Group   April 2018

- Designed an extension to the DASH specification that allows for efficient and personalizable playout of live streams while maintaining cacheability
- Formally proposed mechanism back to MPEG-DASH committee on behalf of Hulu
- Mechanism accepted and standardized as part of MPEG-DASH 5th Edition

CTA WAVE   July 2019 – Current

- Representative of Hulu with CTA WAVE Working Groups to evangelize use cases and technology central to the Hulu products
- Chair and editor of the DASH-HLS Interoperability Specification which aims to provide interoperability constraints for content to be addressed in parallel by DASH and HLS manifests

PATENTS

Derivation and Application of Color Accents for Images in a Video Delivery System Interface   US 10,803,641 B2

- Worked closely with a head designer to design and implement a system for detecting accent colors in content artwork and delivering them efficiently as metadata to application clients
- System used to accent the new UI experience launched along-side the Live TV product

Differential Media Presentation Descriptions for Video Streaming   US 11,039,206 B2

- Designed and generalized an extension to manifest update mechanisms that allowed for efficient playout of live streams to a wide variety of devices while maintaining cacheability
- Technology foundational to innovative product experiences in the Hulu Live TV experience

Supplemental Content Insertion Using Differential Media Presentation Descriptions for Video Streaming   US 10,771,842 B2

- Utilized the differential media presentation description mechanism and innovative resolution mechanisms to create 1-1 personalized live streams without sacrificing cacheability of main content
- Technology powers the programmatic live dynamic ad insertion capabilities of the Hulu Live TV experience bringing personalized ad loads to millions of users across thousands of live streams