![Myelin Foundry logo](Myelin Foundry - Everything AI, Anything Creative)

ONE OF INDIA'S LEADING UGC CONTENT PROVIDERS

FOVEA STREAM CASE STUDY

Transforming video through intelligence on the edge

SUMMARY

CHALLENGE

- Rapidly increasing data costs and high variability in content quality available to end user
- Difficult to maintain quality of experience to viewers in terms of content quality and rebuffering

SOLUTION

Myelin's product **Fovea Stream** enabled mitigating the above challenges by:

- Quality enhancement from SD to HD. This simplified the input streaming ladder, thereby reducing CDN streaming costs and improved quality for lower resolutions at the edge in real-time
- Optimized bitrate ladder implied lesser switching at constrained user bandwidth and lower rebuffering

BENEFIT

- Reduced average bitrate up to 46% per user, reducing overall streaming costs
- Improved average perceptual quality (7 to 15 points VMAF improvement depending on video characteristics)
- Reduced rebuffering and other QoE issues for the end user

Challenges of a growing OTT platform for short-video user generated content

The mobile streaming market is rapidly growing and began a sudden explosion with the onset of Covid-19. As the cloud infrastructure expanded over the years, new content providers to cater to increasing video demands of the end users started streaming content

Myelin worked with one of these providers in the space of short form video. The increasing subscribers to their app, both to produce and consume content, rapidly increased challenges. Owing to the variability in cell phones and conditions used by content creators or initial video quality for content, which was reproduced, the video quality varied significantly within each video. Therefore, the end user also faced challenges of high and unpredictable mobile data consumption. Additionally, India having connectivity challenges especially for remote audience added to higher video re-buffering and reduced quality of experience

The company turned to Myelin Foundry for the marquee product – Fovea Stream, to reduce the streaming variability, per user data usage costs and to provide superior quality of experience, both from video quality and the rebuffering stand-point. Myelin engaged for a pilot with a certain set of the customers' audience to do an assessment of our offering. The results and benefits indicate the benefits received and extrapolate to the subsequent production deployment.

BUSINESS PRIORITIES

- Minimal customization to the existing video player app
- Reduced cost of CDN (content distribution network) streaming

STREAMING PRIORITIES

- Reduced average bitrate
- Reduced rebuffering and other QoE issues for the end user

VIEWER EXPERIENCE

- Improved average perceptual quality
- Cost saving on streaming SD content while viewing HD output on end-user device

Fovea Stream was deployed with minimal customization to the existing video player app

The current customer app has a unique architecture of the player, which is built over the basic open source exoplayer.

Fovea Stream is a seamless integrable AAR file that sits in the flow of the existing player. With minor modifications to the existing code, the product sits on the end-user devices and performs video quality improvement in real-time, without any latency and insignificant impact on the mobile resources. The AI models get auto downloaded from the cloud when the app is loaded the first time. Additionally, future model updates are done remotely from the cloud and no re-integration activities are required.

In order to display the value to the customer, we extensively tested the player APK with embedded Fovea stream and displayed results to the customer. The app is tested for performance, quality, and health related parameters such as – avg. bitrate reduction, rebuffering ratio, startup-times, VMAF* perceptual quality, additional battery drain, additional temperature changes and other functionality sanity checks

Fovea Stream is agnostic to the player codec (video or audio) and the type of content as it performs upscaling of the video in context, content, and device aware manner. The performance assessment was done for wide variety of videos by the customer.

*VMAF is a perceptual video quality assessment algorithm developed by Netflix.

- It is widely adopted in the video streaming industry for video quality assessment
- By keeping the source quality at 100, it compares another video perceptually & provides a score on 1-100 scale

More info on VMAF

Fovea Stream successfully displayed

46%

average bitrate saving per user with

7 - 15

points VMAF improvement depending on video characteristics, and

significant

reduction in rebuffering and video startup times

OUTCOMES

By reducing the bitrates streamed to the end user, the product displayed a huge reduction of 46% per user at the edge.

This means that instead of streaming HD quality from the server, the customer is able to stream only SD while ensuring the end-user views an HD output. As CDNs charge OTT platforms on a per GB streaming cost regime, the lower bitrates of streaming per user translate into huge savings (ideally equivalent to % saving per user depending on the distribution of viewership across the ladder).

Additionally, lower set of rungs in the ladder provided lesser switching between them in areas of low network, and hence a lower rebuffering and faster start times. The quality testing metric VMAF quantified the perceptual quality improvement that was visible to the user

About Myelin Foundry

Myelin Foundry is a deep tech product start-up transforming viewer experience though Artificial Intelligence on video, voice, and sensor data, for consumer edge devices. Founded in January 2019, the company has deep expertise in real-time video enhancement on mobile phones, laptops and living-room devices

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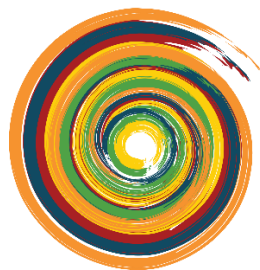2nd Floor, Siddapura, Whitefield,
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