

Dear Editor:

Please find attached to this letter for your kind review our manuscript entitled “UDAB-ViS: User Driven Adaptable Bandwidth Video System”. The authors of this report are Mr. Dustin Wright (San Diego State University) and Professor Yusuf Ozturk (San Diego State University).

In this study we have addressed the issue of video scaling over communication channels with uncertain and rapidly changing channel conditions. In addition, we have examined the problem of having a diverse group of users who have different preferences when it comes to how video should be presented.

In our approach, we have created an end to end system involving a client application and video server. As the user interacts with the system, we develop a profile of the user by employing supervised learning. With this profile, the system is able to determine how the user would scale the encoding parameters, making these decisions as the channel conditions change. Our experiments show that the system can accurately make scaling decisions when sufficiently trained.

The closest prior research upon which our study improves is presented by Luca De Cicco, Saverio Mascolo, and Vittorio Palmisano in their paper “Feedback Control for Adaptive Live Video Streaming”<sup>1</sup>. The system presented by De Cicco employs a proportional-integral controller at the server to alter the bitrate of the video. Our research improves upon this in that encoding parameter selection is made based on what the user desires, allowing for finer control of video presentation with the user’s preferences being the priority.

To our knowledge, no other solution has been presented in which users are profiled and video scaling decisions are made based on their profile. Our system is novel in that we have integrated machine learning with multimedia communication in order to present video in a format that each user finds pleasing while still keeping video bandwidth within channel constraints.

This paper has not been published elsewhere. In addition, it has not been submitted to any other journal, and will not until a decision has been made by Elsevier ComCom.

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Thank you very much for your time and consideration. We look forward to hearing from you.

Sincerely,  
Dustin Wright  
San Diego State University

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<sup>1</sup> L. De Cicco, S. Mascolo, V. Palmisano, Feedback control for adaptive live video streaming, in: Proceedings of the second annual ACM conference on Multimedia systems, ACM, 2011, pp. 145–156.