# Paper Summary & Critique

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| Paper Title | Estimating WebRTC Video QoE Metrics Without Using Application Headers |
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| Course | COMP 691 |
| Lecture | 6 |

## Summary

The authors present both a heuristic-based and an ML-based system to infer RTP-based video conferencing QoE metrics from passive observation in encrypted network conditions. It achieves this using only network-layer (IP/UDP) headers, and does so at a per-second granularity. The system was evaluated over three video-conferencing applications that use WebRTC: Microsoft Teams, Cisco Webex, and Google Meet.

## Strengths

- The system works at a fine time granularity of 1 second, meaning it can be used in real-time by internet service providers.
- Works (in theory) with all RTP-based VCAs.

## Weaknesses

- It is expensive to collect ground truth data under various network conditions to train the ML-based model effectively.
- The system is only evaluated against the network conditions of a two-person call. Commonly used functions of modern video-conferencing applications - such as screen sharing, disabling one's video and multi-party video-conferencing - are tricky to infer from just the IP/UDP headers.

## Applicability to Practice

If the system can be scaled effectively for model inference, then it could be a valuable tool to monitor VCA video QoE. However, model inference may potentially be expensive at scale.