Analyzing and Mitigating Microbursts in Datacenter Networks

محمد حسینی

پژوهشکده علوم کامپیوتر، پژوهشگاه دانش‌های بنیادی (IPM)

Abstract

Microbursts are short-lived, high-intensity bursts of traffic that can cause severe congestion and packet loss in datacenter networks. They are difficult to detect and mitigate, and they can severely impact the performance and reliability of network applications. Despite numerous proposed mitigation approaches, microbursts remain a challenging problem.

This talk begins with an overview of the nature and origin of microbursts, followed by a discussion about how they impact network performance. We then briefly review existing works on monitoring and mitigating microbursts. We argue that the insufficient understanding of microbursts is the main reason for the low efficiency of existing microburst mitigation solutions. Hence, the talk continues with the presentation of "BurstVision," our comprehensive tool for measuring and characterizing microbursts. We present the results of our analysis, which shows that microburst characteristics significantly vary across different datacenter applications. We discuss how these different characteristics can affect the performance of various microburst mitigation solutions. Our findings highlight the importance of considering the type and characteristics of microbursts in traffic when adopting a microburst mitigation solution in datacenters. The final section of the talk outlines our new approach to microburst mitigation, which is still in the preliminary stages of development.

Biography

Mohammad Hosseini is a Postdoctoral Researcher at the School of Computer Science, Institute for Research in Fundamental Sciences (IPM). He received his PhD from the Sharif University of Technology in 2019. His research interests include computer and datacenter networking.

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