



ΔΙΑΛΕΞΗ

**" Similarity caching and network-friendly recommendations:
Increasing the efficiency of content delivery systems
by leveraging user or application flexibility"**

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Περίληψη – Abstract

Caching has been successfully applied in several communication and computing systems, and is quickly gaining ground for mobile systems (multi-access edge computing, MEC). Nevertheless, the huge increase and volatility of data demand, and the small size of edge caches, limit the gains from caching in MEC. In this context, similarity caching (SC) and network-friendly recommendations (NFR) have been recently proposed to increase the caching efficiency. In similarity caching a request for an object A that is not in the cache can be (partially) satisfied by a similar stored object B, potentially with some loss in (user/application) utility. SC can find applications in several areas, from distributed machine learning systems to multimedia content delivery. Network-friendly recommendations build on the concept of SC, and leverage the recommendation systems that are an integral part of popular content/video services (e.g., YouTube, Netflix, Spotify) to recommend to the user content that can be efficiently delivered (e.g., stored at an edge cache). This leads to a win-win situation, where the user enjoys content in high quality and/or with low latency, and the network decreases its costs and load. In this talk, there will be presented some recent studies on SC and NFR problems, where we model content delivery settings, analyze the caching performance, formulate the involved optimization problems and design efficient caching and recommendation algorithms. Our results on real-world datasets demonstrate that SC and NFR can lead to significant gains (up to one order of magnitude) in caching efficiency and network costs. Moreover, we test the performance of NFR algorithms in real experimental setups, through measurements on the YouTube video service and involvement of real users. Our findings provide experimental evidence for the feasibility and benefits of NFR, as well as the extra gains NFR can bring for the user experience.

[Pavlos Sermpezis](https://datalab.csd.auth.gr/) is a postdoctoral researcher at Datalab (<https://datalab.csd.auth.gr/>) at the Informatics Dept., Aristotle University of Thessaloniki, Greece, and before that he was a postdoctoral researcher at the Institute of Computer Science of the Foundation for Research and Technology - Hellas (FORTH), Heraklion, Greece. He received his PhD in computer science and networks from EURECOM, Sophia-Antipolis, France (2015), and a diploma in

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More information can be found in his personal webpage <https://sites.google.com/site/pavlossermpezis/>.

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