# CS Seminar

## Almost-Optimal Sublinear Additive Spanners

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## Abstract:

Graph spanners are lossy compression schemes that represent unweighted graph metrics in sub-quadratic space, say $O(n^{1+eps})$ bits. There is a trade-off between the sparsity parameter eps and the distance stretch function f of graph spanners, but the optimal trade-off has not been fully understood so far. In this paper, we study the setting where the stretch function f is sublinear additive, i.e. $f(d) = d + o(d)$. As our main result, we design new constructions of sublinear additive spanners with $O(n^{1 + 1.001/(2^{k+1}-1)})$ edges and stretch function $f = d + O(d^{1-1/k})$, for any constant $k \geq 2$. This improves upon previous constructions from [Chechik, 2013] & [Pettie, 2009], and almost matches the lower bound from [Abboud, Bodwin, Pettie, 2017].

Joint work with Zihan Tan (https://arxiv.org/abs/2303.12768), appeared in STOC 2023.

## About the Speaker:

Dr. Zhang Tianyi is a postdoctoral fellow at Tel Aviv University, supervised by Prof. Shay Solomon, and previously supervised by Prof. Shiri Chechik during 2021-2023. He received his PhD in computer science at Tsinghua University in 2021, advised by Prof. Ran Duan, and a BEng in computer science at Tsinghua University in 2016

All are welcome!
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