

# A Superlinearly Convergent First-Order Method for Nonsmooth Optimization

## **BIOGRAPHY**

Vasilis is an assistant professor of Electrical & Computer Engineering at the University of Washington and an affiliate faculty with the National Institute for Theory & Mathematics in Biology. He is broadly interested in developing numerical optimization methods for machine learning, signal processing and scientific computing. He holds a PhD in Operations Research & Information Engineering from Cornell University, where he was advised by Damek Davis, and was recognized as a Rising Star in Computational and Data Sciences by the Oden Institute at UT Austin in 2022. Prior to joining UW, he was an AI & Science postdoctoral scholar with the Data Science Institute at the University of Chicago.



## **ABSTRACT**

Nonsmooth optimization problems appear throughout machine learning and signal processing. However, standard first-order methods for nonsmooth optimization can be slow for "poorly conditioned" problems. In this talk, I will present a locally accelerated first-order method --- inspired by Newton's method --- that achieves superlinear convergence near solutions for a broad family of problems, as well as a variant that achieves exponential acceleration for problems with convex-composite structure.