



LEHIGH
UNIVERSITY

Institute for Data,
Intelligent Systems, and
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From Optimization Algorithms to Dynamical Systems and Back

Recently, there has been an increasing interest in using tools from dynamical systems to analyze the behavior of simple optimization algorithms such as gradient descent and accelerated variants. This talk will present differential equations that model the continuous limit of the sequence of iterates generated by the alternating direction method of multipliers, as well as an accelerated variant. We employ the direct method of Lyapunov to analyze the stability of critical points of the dynamical systems and to obtain associated convergence rates.