1145-94-2671 **Russell G. Impagliazzo*** (rusell@cs.ucsd.edu), 4175-158 Porte de Merano, San Diego, CA 92122. *Connections between learning, pseudo-randomness, and regularity.* Preliminary report.

Boosting is a technique from machine learning theory with many applications. In this talk, we will sketch how to use boosting arguments to provide a unified framework that can be used to derive consequences to additive combinatorics, graph theory, computational complexity, cryptography, and even back to machine learning. By using this common framework, these results are easy to generalize, and by using different boosting algorithms, variations suitable for a given domain can be obtained. We will describe this general framework, and then show how it implies a variety of generic regularity lemmas that imply the Frieze-Kannan Weak Regularity Lemma, Szemeredi Regularity Lemma for graphs, and versions of the same for sparse graphs. These both reproduce known results, and in some cases, give quantitative improvements. We will then sketch other applications of generic regularity to additive combinatorics, computational complexity, cryptography, and machine learning. (Received September 25, 2018)