


recitation 03 (optional 6.86x notes)

You do not need to read these notes at all to get an A in this course; conversely, you may not cite these notes when solving homework or exams.

Recitation will have more coding practice and much less detail than these notes. We'll skip whole sections of these notes during recitation. Footprints —  — in these notes indicate roughly which points we will linger on during recitation. Each footprint represents perhaps three to seven minutes of recitation time.

C. linear models: getting bang for your buck

selecting models that generalize

*All human beings have three lives: public, private, and
secret.*
— gabriel garcia marquez

GRID/RANDOM SEARCH —

SELECTING PRIOR STRENGTH —

RULES OF THUMB — dimension generalization bound margin generalization bound

OVERFITTING ON A VALIDATION SET —

ideas in optimization

premature optimization is the root of all evil
— donald knuth

*Where is the tension? Every good theorem should have
tension between hypothesis and conclusion.*
— dennis sullivan

LOCAL MINIMA —

IMPLICIT REGULARIZATION —

LEARNING RATE SCHEDULE —

LEARNING RATES AS DOT PRODUCTS —

kernels enrich approximations

FEATURES AS PRE-PROCESSING —

ABSTRACTING TO DOT PRODUCTS —

KERNELIZED PERCEPTRON AND SVM —

KERNELIZED LOGISTIC REGRESSION —

... animals are divided into (a) those belonging to the emperor; (b) embalmed ones; (c) trained ones; (d) suckling pigs; (e) mermaids; (f) fabled ones; (g) stray dogs; (h) those included in this classification; (i) those that tremble as if they were mad; (j) innumerable ones; (k) those drawn with a very fine camel hair brush; (l) et cetera; (m) those that have just broken the vase; and (n) those that from afar look like flies.
— jorge luis borges