$$TP = \frac{\sqrt{{nm_1}^2 + (1 - |c|)^2 {nm_2}^2}}{2}$$

The idea is that only $1 - |c|$ of the metric nm_2 is independent of the first metric nm_1 so we add only the independent portion to the total sum. This way we won't have a TP value that's inflated by a lot of correlation that's redundant. (Imagine adding 10 metrics but 8 of them are all correlated so the total is too heavily weighted by the 8 that are correlated.)

So for a whole list of normalized metrics the Trading Performance metric looks like:

$$TP = \frac{\sqrt{{nm_1}^2 + \sum_{i=2}^{N}(1 - |c_i|)^2 {nm_i}^2}}{N}$$

Where we choose to compare each metric (for the correlations) to nm_1. We choose metric 1 to orient the vector space, but we can choose anything as metric 1 and we'll get the same results.

So what are these correlations? These are calculated using standard statistical correlation formulas across a timeseries of outcomes for each metric over a series of day. c_i is the correlation coefficient for nm_i compared to nm_1. The idea is to discover correlations between metrics so we don't "double count" things when we tally-up the total Trading Performance metric.

So the next work is the write–down a list of metrics and learn how to normalize them, then we can run back-tests to get data on each metric and then calculate correlation coefficients for the above formula.

NOTE: It's tempting to throw away the vector-space idea and simply add normalized metrics weighted with correlation coefficients, such as:

$$TP = \frac{nm_1 + \sum_{i=2}^{N}(1 - |c_i|) nm_i}{N}$$

But if we do this then we risk adding negative quantities if they arise in the metric definitions. It's probably better to use the geometric vector-space approach so we never add positive and negative quantities by accident or have to change the design of the TP metric and have incompatible values over time.

I'm also thinking of a slightly different vector sum approach using correlations but I'll add that in a couple more days – maybe the above is enough for now.