Why do we (still?) have so many program-iny languages?
(Why aren't we consolidating?)
PROJECT MANAGERS ARE VERY HAPPY TO REFACTOR THEIR WORKING SOURCE CODE TO IMPROVE ITS MAINTAINABILITY!
Challenges of automated performance optimization:

1) How to model the performance of computation in the context of compiler optimization?

2) How to model the propagation of introduced errors through an application?

3) How to make complex decisions about performance tuning without user interaction? (Similar to compiler optimization flag problems.)