Executive Summary

Throughout this project, I have attempted to minimize the browsing time of Netflix users through finding the optimal configuration of factors that significantly influence the browsing time. During each additional phase of this project, I utilized information from prior phases and experiments.

In Phase 1 : Factor Screening, I first attempted to use a 2^{3-1} fractional factorial design to determine which factors significantly influence the response. However, due to confounding caused by aliasing, I decided to sacrifice efficiency for accuracy and use the 2^3 factorial design. Through my experiments, I found that the factors that significantly influence the browsing time are preview length and match score.

In Phase 2 : Method of Steepest Descent, I wanted to move from the initial region of experimentation towards the vicinity of the optimum. Through my experiments, I found that the optimal browsing time was somewhere in the vicinity of 90 seconds for preview length, and 70 for match score. I also sacrificed some efficiency for accuracy in this phase, by taking some extra steps in Steepest Descent, in order to be more certain of my results.

In Phase 3: Response Optimization, I decided to use a central composite design to fit a full second order response surface model in order to identify the optimum. I chose my high and low factor levels based on a spherical design, since the estimate of the response surface at each condition would be equally precise. After fitting the full second order response surface and plotting the contour plots, I found that the optimum browsing time was when preview length was 70 seconds, and match score was 77%. In addition, the estimated browsing time at the optimum was 11.53 seconds.

Thus, I came to the conclusion that Netflix should utilize preview lengths of 70 seconds and match scores of 77% in order to minimize the browsing time by users.