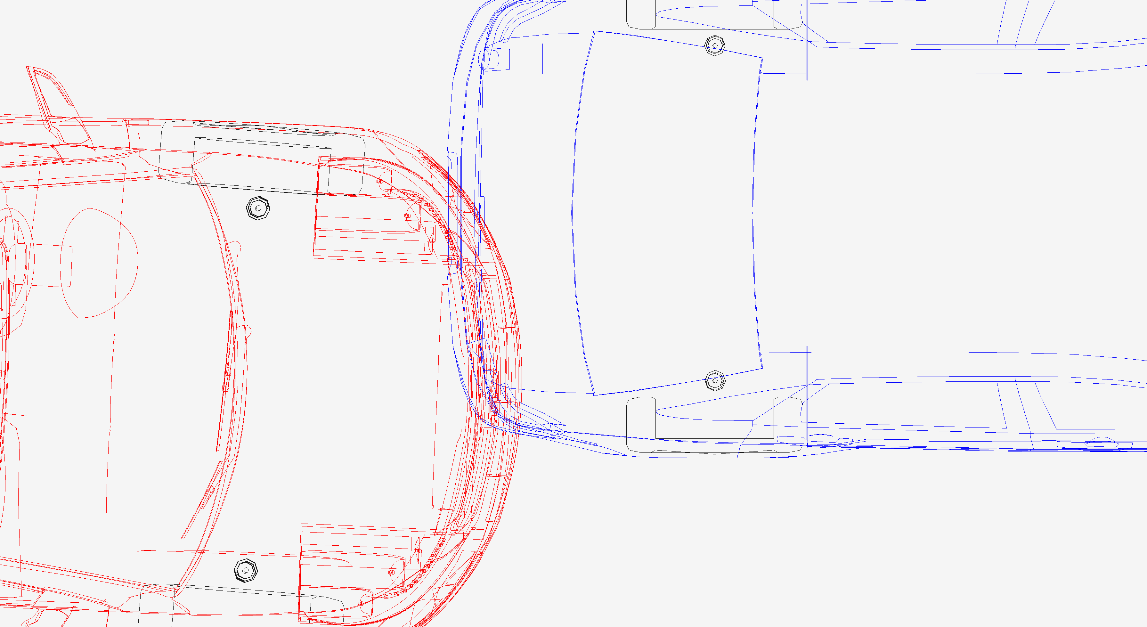
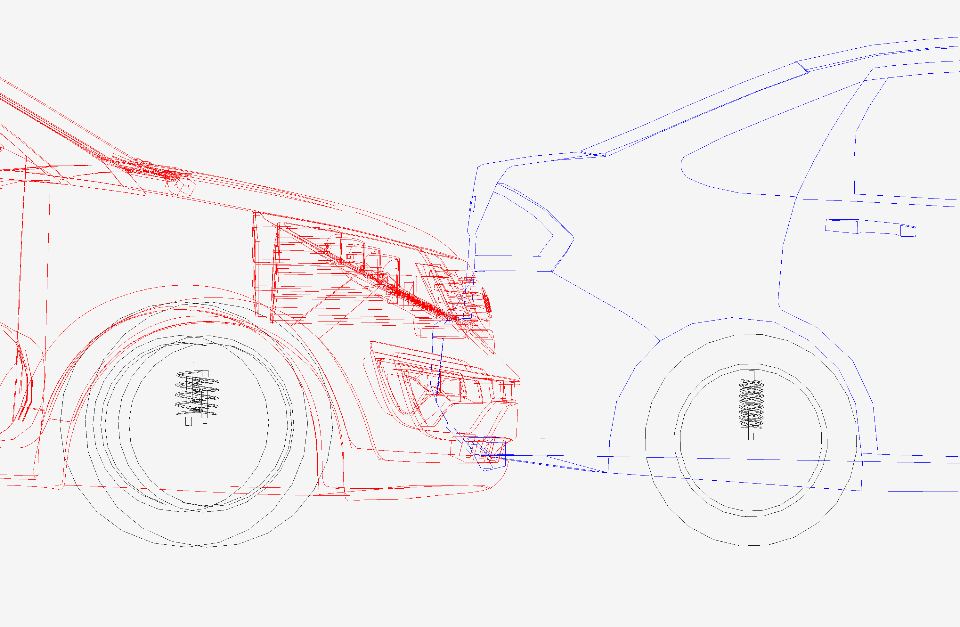
Deformation in the Ford extends into the trunk space and includes induced damage to the rear doors. The Kia sustained deformation back to the radiator supports and induced damage back to the front door frame. A widely used crash simulation program[[1]](#footnote-1) is capable of modeling deformation and depth of penetration or maximum engagement during a collision. By overlapping the damage between scale models of the Kia and the Ford as observed in the photos, I can model the subject crash to determine a closing speed estimate, which will in turn, estimate an approximate speed change or delta V imparted to the Ford in the crash by using a momentum, energy and restitution (MER) analysis, and then matching these results to the physical and other evidence.

Mr. Bond thought he was going 45 mph when the crash occurred. A closing speed of 20 mph from the Kia would have resulted in a delta V in the Ford of approximately 12.9 mph, with a peak vehicle acceleration for the impact of approximately 9.4 g. Deformation (overlap or depth of penetration) between the Kia and the Ford is shown below and is fairly consistent with what is observed in the photos. Delta V in the Kia is approximately 11 mph which is consistent with a non-airbag deployment.



**Simulated 20 mph closing speed depth of penetration (overlap or maximum engagement) fairly consistent with photos. Mr. Bond’s Ford is the vehicle on the right in blue.**

1. Virtual Crash 5, vCrash America Inc. [↑](#footnote-ref-1)