自駕車被期望能解決道路安全上的問題，然而在目前的實際道路測試中自駕車過於保守的駕駛行為，反而導致與人類駕駛發生碰撞機率上升。在這個自駕車與非自駕車共享道路的過渡時期，若無法解決自駕車與人類駕駛行為上的差異，將無法保證道路安全，甚而影響自駕車發展。因此，本研究模擬並分析三種不同的駕駛行為:現實中駕駛常會因為環境及其他用路人行為而有不同的決策，此決策會依駕駛風格而異。更進一步，影響駕駛風格的主要因素之一，便是對於風險的承受度。因為容易量化且直觀，評估此風險的方法眾多。其中被廣泛使用的策略為機率風險法，它是透過機率分佈計算車輛發生碰撞的可能性。而指數分佈模型便是評估碰撞機率風險的主要手段之一。此模型是透過駕駛與障礙物距離呈指數關係來評估風險。因此，本研究便是基於指數分佈模型分析駕駛碰撞風險，並以最佳化模擬駕駛基於碰撞風險進行決策的行為。此外，透過改變不同駕駛可接受的風險應用於三種不同駕駛行為包括跟車、超車及、無保護左轉彎進行不同駕駛風格的分析。

Autonomous vehicles are expected to be able to solve traffic accident problems. However, during actual road test, the overly cautious driving behavior of autonomous vehicles has led to an increased probability of collisions with human drivers. In the transition period this day, which autonomous vehicles and non-autonomous vehicles are sharing roads, provided the driving behavior difference between autonomous vehicles and humans can not be resolved, the safety of road might not be guaranteed. Moreover, this would probably influent the progress of autonomous vehicles. In the reality, drivers usually make different decisions according to the environment and other road users. Plenty of method has been used to evaluate this collision risk. One of the strategies which has been widely used is probabilistic risk assessment. This method calculates the likelihood of vehicle collision through probability distributions.