The collision happen after the car in front stopped

$$\frac{v_1^2 - v_0^2}{2a_0} + v_1 t_r - l = \frac{v_2^2 - v_0^2}{2a_1} \quad (1)$$

$$\frac{v_2 - v_0}{a_1} = t \quad (2)$$

$$\frac{v_1 - v_0}{a_0} = t - t_r \quad (3)$$

The collision happen before the car in front stopped

$$v_2 t_r + \frac{v_2^2}{2a_2} - l = \frac{v_1^2}{2a_1} \quad (4)$$