In page 6 of the lecture, the denominators $1 + S$ and $1 - S$ are said to imply that the bonding orbital is more bonding than the antibonding orbital is more antibonding. While the latter conclusion is correct, but this logic is not correct; these denominators do not logically imply this conclusion.

In page 7 of the video lecture, the normalized eigenvectors were incorrect (they have been corrected in the powerpoint file). Correctly they are

$$\begin{pmatrix} c_A \\ c_B \end{pmatrix} = \begin{pmatrix} \frac{1}{\sqrt{2+2S}} \\ \frac{1}{\sqrt{2+2S}} \end{pmatrix}, \qquad \begin{pmatrix} c_A \\ c_B \end{pmatrix} = \begin{pmatrix} \frac{1}{\sqrt{2-2S}} \\ \frac{-1}{\sqrt{2-2S}} \end{pmatrix}. \tag{1}$$