Estimating HRF and covariance structure

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Estimating HRF and amplitudes

- Use one block at a time
- Code the twelve stimuli as 1-12, the "null" signal as 13, and the 6 "calibration" signals as 14-19
- Transform stimuli assignments to a matrix S, dimension of S is $T \times K$, T is the time of time points, K the number of stimuli types

Estimating HRF and amplitudes

Transform estimated or assumed HRF $h = (h_1, \dots, h_{30})$ to matrix H(h). Dimension of H(h) is $T \times T$

$$h = egin{bmatrix} h_1 \ h_2 \ h_3 \ h_4 \ h_5 \ dots \end{bmatrix}
ightarrow H(h) = egin{bmatrix} h_1 & 0 & 0 & \cdots \ h_2 & h_1 & 0 & \cdots \ h_3 & h_2 & h_1 & \cdots \ h_4 & h_3 & h_2 & \cdots \ h_5 & h_4 & h_3 & \cdots \ dots & dots & dots & dots & dots \end{matrix}$$

Estimating HRF and amplitudes

Estimate the stimuli-specific amplitudes $\alpha = (\alpha_1, \dots, \alpha_K)$ by fitting the model