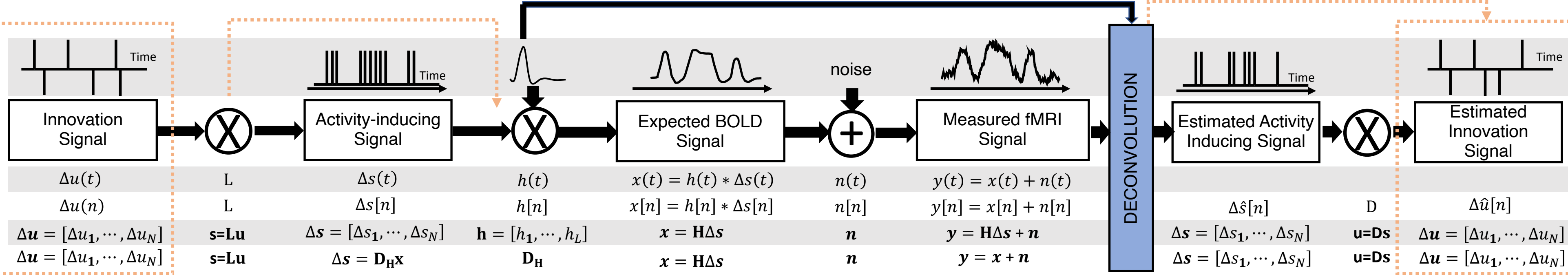
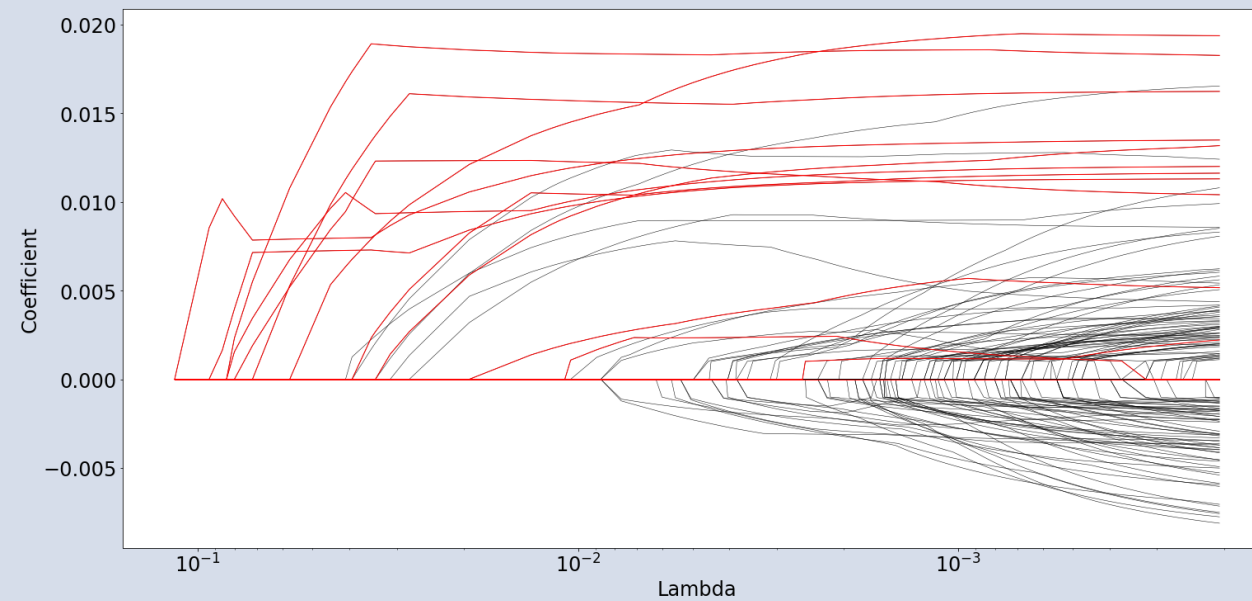


PFM
TA



Least Angle Regression (LARS)

1. Start with all coefficients \mathbf{s} equal to zero.
2. Find the predictor x most correlated with \mathbf{y} .
3. Increase the coefficient s_j in the direction of the sign of its correlation with \mathbf{y} . Take residuals $r = \mathbf{y} - \hat{\mathbf{y}}$ along the way. Stop when some other predictor x_k has as much correlation with r as x_j has.
4. Increase (s_j, s_k) in their joint least-squares direction, until some other predictor x_m has as much correlation with the residual r .
5. Increase (s_j, s_k, s_m) in their joint least-squares direction, until some other predictor x_n has as much correlation with the residual r .
6. Continue until all predictors are in the model.



Fast Iterative Shrinkage-Thresholding Algorithm (FISTA)

Inputs: λ, L, \mathbf{M} (measurements), $t_0 = 1$

Output: \mathbf{x}

Until convergence do:

$$1 \quad x_{k-1} = x_k$$

$$2 \quad z_k = f(y_k, \mathbf{M})$$

$$3 \quad x_k = \text{prox}_{L, \lambda, \Omega}(z_k)$$

$$4 \quad t_{k+1} = \frac{1 + \sqrt{1 + 4t_k^2}}{2}$$

$$5 \quad y_{k+1} = x_k + \left(\frac{t_k - 1}{t_{k+1}} \right) (x_k - x_{k-1})$$

