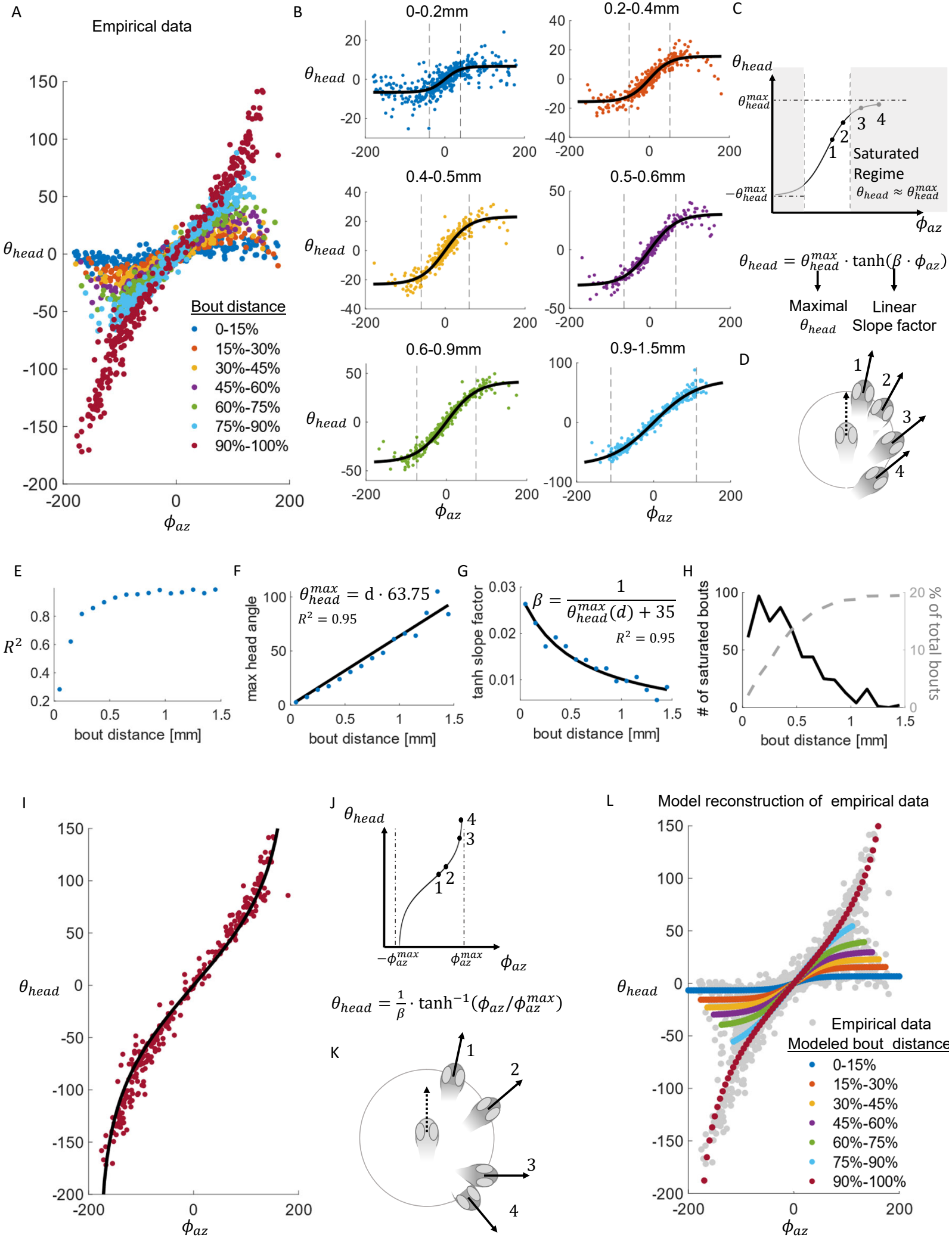
A
Empirical data
$\theta_{head}$
$\phi_{az}$
Bout distance
0-15%
15%-30%
30%-45%
45%-60%
60%-75%
75%-90%
90%-100%
B
0-0.2mm
0.2-0.4mm
0.4-0.5mm
0.5-0.6mm
0.6-0.9mm
0.9-1.5mm
C
$\theta_{head}^{max}$
$-\theta_{head}^{max}$
Saturated Regime
$\theta_{head} \approx \theta_{head}^{max}$
$\theta_{head} = \theta_{head}^{max} \cdot \tanh(\beta \cdot \phi_{az})$
Maximal $\theta_{head}$
Linear Slope factor
D
E
$R^2$
bout distance [mm]
F
$\theta_{head}^{max} = d \cdot 63.75$
$R^2 = 0.95$
max head angle
bout distance [mm]
G
$\beta = \frac{1}{\theta_{head}^{max}(d) + 35}$
$R^2 = 0.95$
tanh slope factor
bout distance [mm]
H
# of saturated bouts
% of total bouts
bout distance [mm]
I
$\theta_{head}$
$\phi_{az}$
J
$\theta_{head}$
$-\phi_{az}^{max}$
$\phi_{az}^{max}$
$\phi_{az}$
$\theta_{head} = \frac{1}{\beta} \cdot \tanh^{-1}(\phi_{az}/\phi_{az}^{max})$
K
L
Model reconstruction of empirical data
$\theta_{head}$
$\phi_{az}$
Empirical data
Modeled bout distance
0-15%
15%-30%
30%-45%
45%-60%
60%-75%
75%-90%
90%-100%