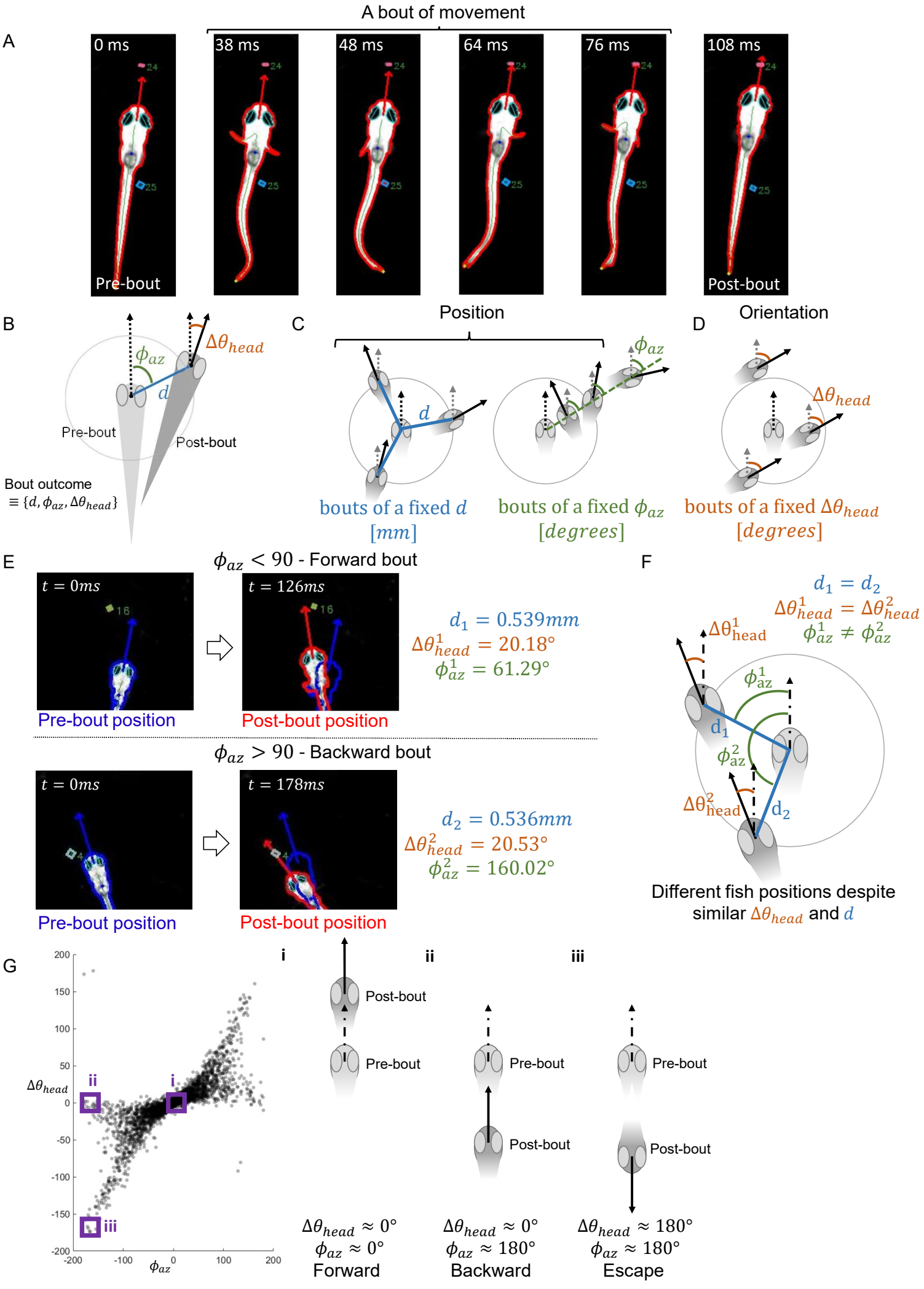
A
A bout of movement
0 ms
38 ms
48 ms
64 ms
76 ms
108 ms
Pre-bout
Post-bout
B
ϕ_{az}
$\Delta\theta_{head}$
d
Pre-bout
Post-bout
Bout outcome
$\equiv \{d, \phi_{az}, \Delta\theta_{head}\}$
C
Position
d
ϕ_{az}
bouts of a fixed d $[mm]$
bouts of a fixed ϕ_{az} $[degrees]$
D
Orientation
$\Delta\theta_{head}$
bouts of a fixed $\Delta\theta_{head}$ $[degrees]$
E
$\phi_{az} < 90$ - Forward bout
$t = 0ms$
$t = 126ms$
Pre-bout position
Post-bout position
$d_1 = 0.539mm$
$\Delta\theta^1_{head} = 20.18°$
$\phi^1_{az} = 61.29°$
$\phi_{az} > 90$ - Backward bout
$t = 0ms$
$t = 178ms$
Pre-bout position
Post-bout position
$d_2 = 0.536mm$
$\Delta\theta^2_{head} = 20.53°$
$\phi^2_{az} = 160.02°$
F
$d_1 = d_2$
$\Delta\theta^1_{head} = \Delta\theta^2_{head}$
$\phi^1_{az} \neq \phi^2_{az}$
$\Delta\theta^1_{head}$
ϕ^1_{az}
d_1
ϕ^2_{az}
$\Delta\theta^2_{head}$
d_2
Different fish positions despite similar $\Delta\theta_{head}$ and d
G
$\Delta\theta_{head}$
ϕ_{az}
200
150
100
50
0
-50
-100
-150
-200
-200
-100
0
100
200
i
ii
iii
Post-bout
Pre-bout
$\Delta\theta_{head} \approx 0°$
$\phi_{az} \approx 0°$
Forward
$\Delta\theta_{head} \approx 0°$
$\phi_{az} \approx 180°$
Backward
$\Delta\theta_{head} \approx 180°$
$\phi_{az} \approx 180°$
Escape