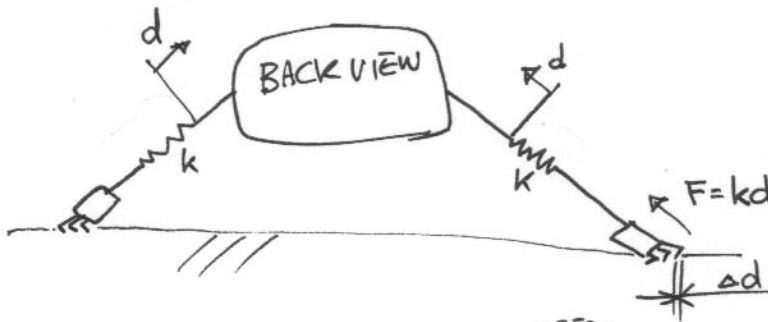


Foot grounding location

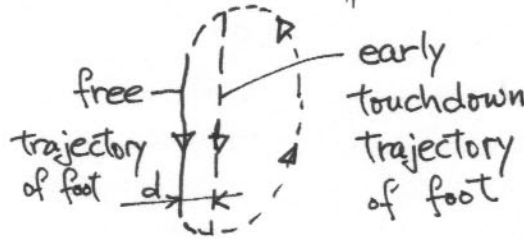


$\Delta d$  = claw dig-in distance (known)

$d + \Delta d$  = Touchdown offset

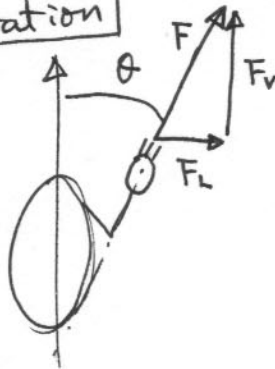
$k$  = leg stiffness (known)

$F = kd$  = force

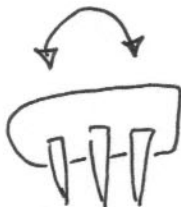


- ① Determine value of  $F$  for stability.
- ② Calculate  $d = F/k$ .
- ③ Touchdown distance =  $d + \Delta d$ .

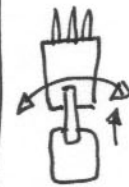
Foot orientation



The foot orientation angle can be determined by determining the ratio of vertical and lateral forces ( $F_v$  &  $F_L$ ) such that  $\tan \theta = \frac{F_L}{F_v}$ .



Roll axis compliance  
 ... Depends on surface roughness  
 ... Also body motion relative to surface



Ankle compliance (RAW)

Low in bending, but high buckling resistance when pushed



Impact velocity

High enough to dig in  
 Low enough to prevent skipping