**Seminar: Interactive Analytics**

**Footbased Activity Recognition for Dashboards**

Possible use cases (contexts) for an IMU attached to the foot:

A. An alternative to conventional mice
B. Efficient navigation within the dashboard
C. Controlling a presentation

Below we give a set of movement patterns, and a possible application (or mapping) in the contexts above. Ideally, these should not be set in concrete. The user should have the ability to remap them as they please.

All presented definitions are examples and can change on later stages of development, if the sensors are ill suited to record and process these activities.

## 01. FORWARD SLIDE



**In context A:** Moving the cursor upwards. The more displaced the foot is, the faster the mouse moves.
**In context B:** Scroll page upwards.
**In context C:** -

## 02. BACKWARD SLIDE



**In context A:** Moving the cursor downwards. The more displaced the foot is, the faster the mouse moves.
**In context B:** Scroll page downwards.
**In context C:** -

## 03. TOE RAISE

**In context A:** Left click. See movement patterns “forward / backward slide with raised toe” for a possible way of implementing drag and drop functionality.

**In context B:** Zooming in.

**In context C:** Zooming in.

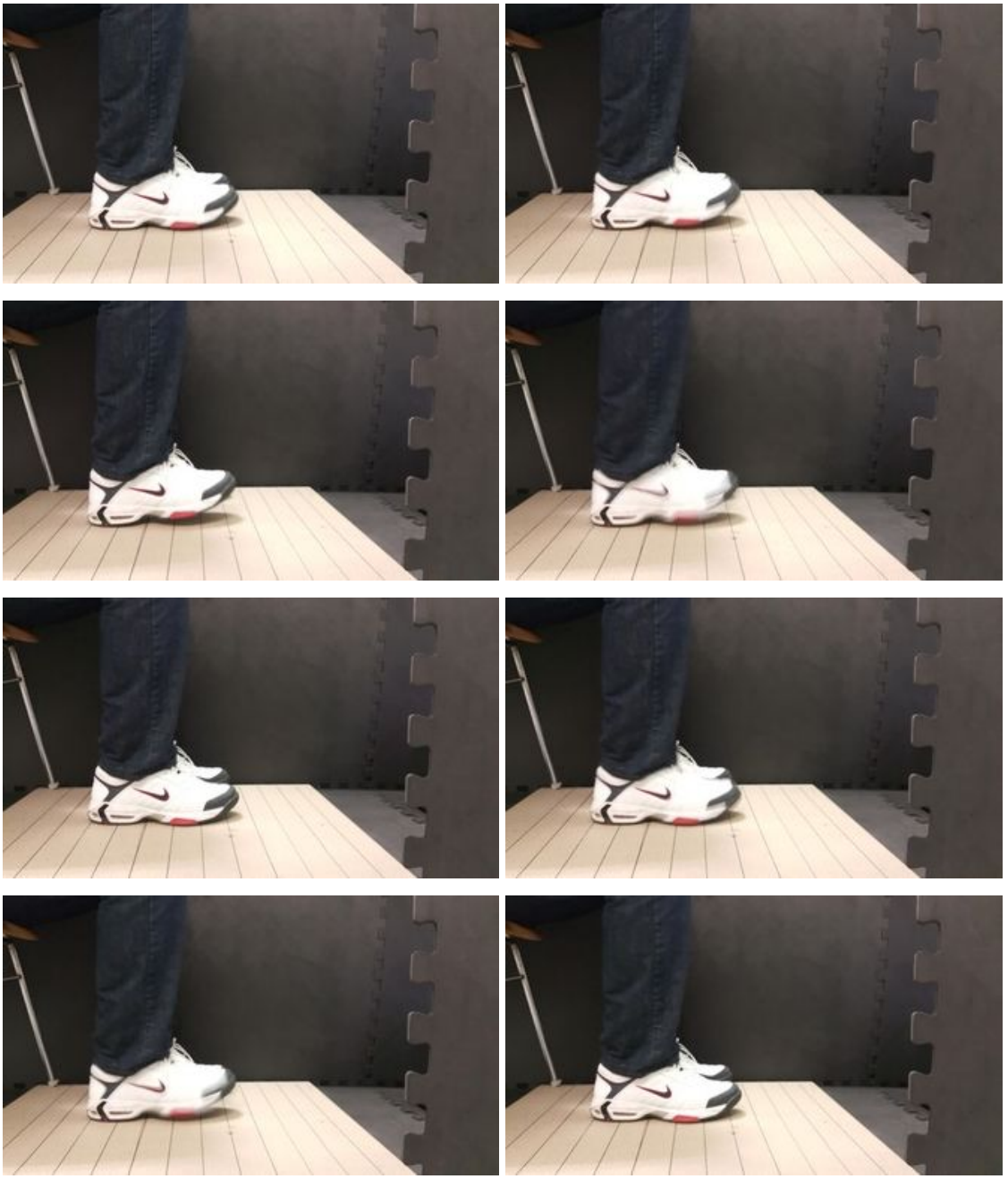
## 04. HEEL RAISE

**In context A:** Right click.
**In context B:** Zooming out.
**In context C:** Zooming out.

## 05. FULL RAISE

**In context A:** Middle click.
**In context B:** Confirm current action. (Click the submit button, for instance.)
**In context C:**

## 06. TOE DOUBLE TAP



**In context A:** Double (left) click.
**In context B:** Reset zoom.
**In context C:** Reset zoom.

## 07. HEEL FIRST FULL RAISE

**In context A:**

**In context B:** Go to next window. (Conventional shortcut: ALT+Tab)

**In context C:**

## 08. TOE FIRST FULL RAISE

**In context A:**

**In context B:** Go to previous window. (Conventional shortcut: ALT+SHIFT+Tab)

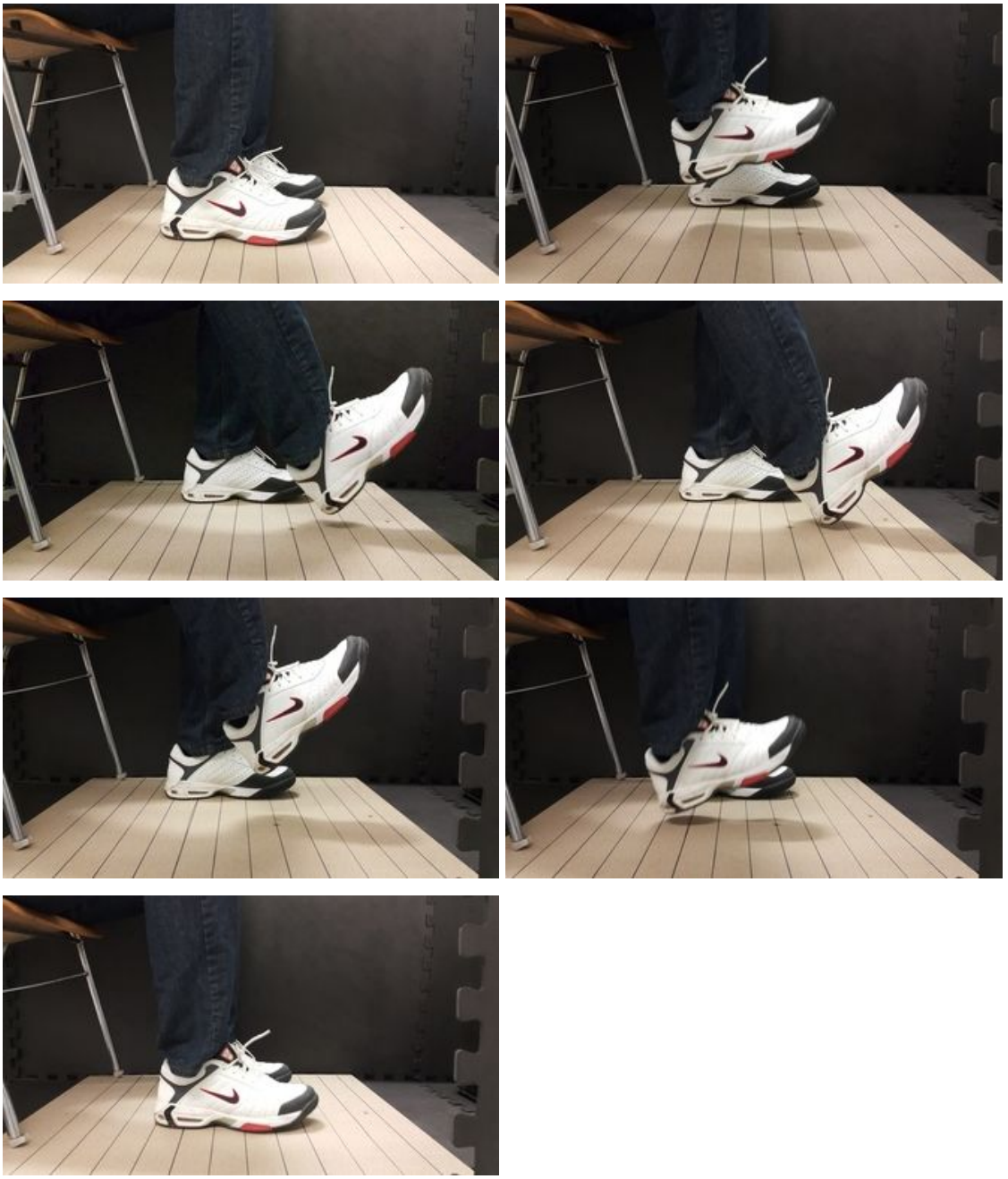
**In context C:**

## 09. TOE RAISE WITH BUTTON

A simple electrical switch under the non-sensor foot can double the number of recognized intentions with minimal additional complexity. “Toe Raise With Button” aims to exemplify the concept by augmenting “Toe Raise” with a push button.

As with conventional modifier keys, the pedal may be used for slight modifications on their non-pedal counterparts. For instance,
**In context A:** If the user requires finer control on the cursor movement, they might use the pedal.
**In context B:** The pedal might change the direction of navigation, similar to what SHIFT does on conventional systems
**In context C:** Combined with the action to move forward / backward, the pedal may serve as fast forward / rewind.

## 10. VIRTUAL CLUTCH PEDAL



**In context A:**

**In context B:**

**In context C:**

## 11. SUPINATION

**In context A:** Scrolling the page to the right.
**In context B:** As the right arrow key, in order not to leave the home row when typing.
**In context C:**

## 12. PRONATION



**In context A:** Scrolling the page to the left.
**In context B:** As the left arrow key, in order not to leave the home row when typing.
**In context C:**

## 13. FORWARD SLIDE WITH RAISED TOE

**In context A:** Drag and drop.

**In context B:**

**In context C:**

## 14. BACKWARD SLIDE WITH RAISED TOE

**In context A:** Drag and drop.
**In context B:**
**In context C:**

## 15. BACKWARD SLIDE WITH RAISED HEEL





**In context A:**

**In context B:**

**In context C:**

## 16. FORWARD SLIDE WITH RAISED HEEL

**In context A:**

**In context B:**

**In context C:**

## 17. PIVOT ON TOE, OUTWARDS

**In context A:**

**In context B:**

**In context C:**

## 18. PIVOT ON TOE, INWARDS

**In context A:**

**In context B:**

**In context C:**

## 19. PIVOT ON HEEL, INWARDS

**In context A:**

**In context B:** Swipe left.

**In context C:**

## 20. PIVOT ON HEEL, OUTWARDS

**In context A:**

**In context B:** Swipe right.

**In context C:**

## 21. SWEEP OUTWARDS

**In context A:**

**In context B:**

**In context C:**

## 22. OUTWARD SLIDE

**In context A:**

**In context B:**

**In context C:**

## 23. INWARD SLIDE

**In context A:**

**In context B:**

**In context C:**

## 24. TOE CLICK WITH SENSOR FOOT



**In context A:** Go to previous tab. (Conventional shortcut: CTRL+SHIFT+Tab)
**In context B:**
**In context C:**

## 25. HEEL CLICK WITH SENSOR FOOT

**In context A:**

**In context B:**

**In context C:**

## 26. TOE CLICK ON SENSOR FOOT



**In context A:** Go to next tab. (Conventional shortcut: CTRL+Tab)
**In context B:**
**In context C:**

## 27. HEEL CLICK ON SENSOR FOOT



**In context A:**

**In context B:** Go to next window.

**In context C:**

## 28. FULL CLICK WITH SENSOR FOOT



**In context A:**

**In context B:**

**In context C:**

## 29. FULL CLICK ON SENSOR FOOT



**In context A:**
**In context B:** Close
**In context C:**