Fondements de l'interaction Homme-Machine

Travaux Dirigés

http://wiki.lri.fr/hcimasters/fondamentals_of_hci_tutor.wiki

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What will we do?

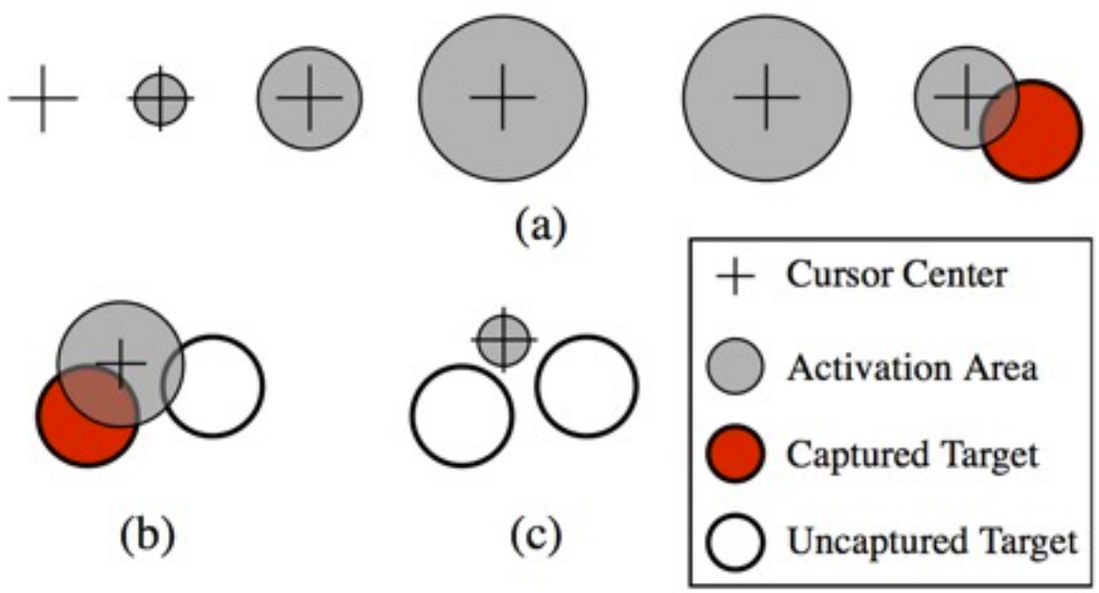
Retro-engineer a research article

- Choose and carefully read 1 (or 2) article(s)
- Implement the interaction techniques described in it (2 at least)
- Replicate (or design a variant of) the experiment described in it

Project#1: DynaSpot

Olivier Chapuis, Jean-Baptiste Labrune, and Emmanuel Pietriga. 2009. DynaSpot: speed-dependent area cursor. In Proceedings of the 27th international conference on Human factors in computing systems (CHI '09). ACM, New York, NY, USA, 1391-1400.

- Introduces a new technique, DynaSpot, to facilitate target acquisition in a 2D space. DynaSpot is an area cursor whose size depends on the cursor speed



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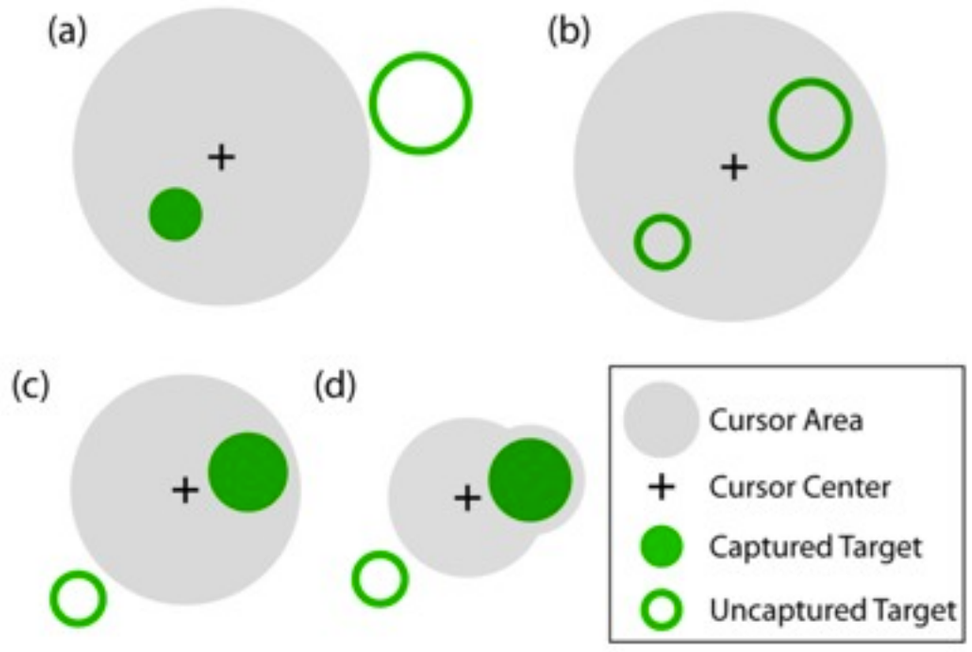
- Compares DynaSpot with *Bubble Cursor* on a 2D pointing task where more or less distractors are along the cursor trajectory



Project#1: DynaSpot

Project#1: DynaSpot

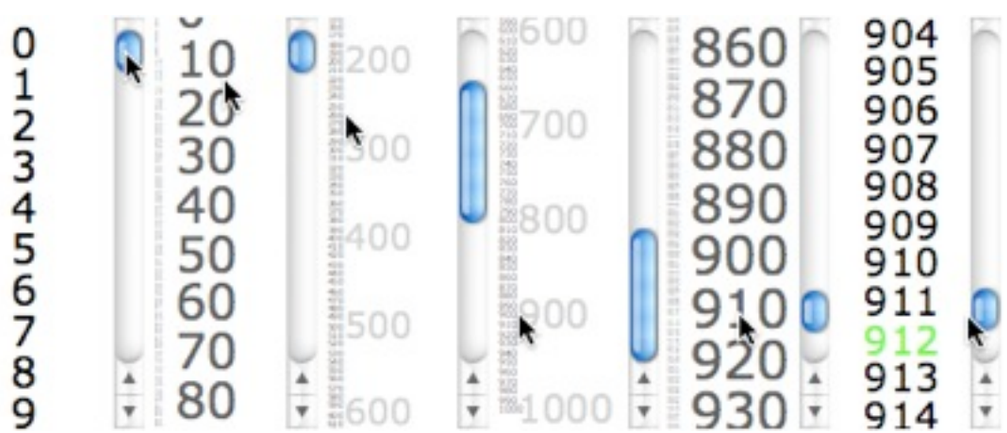
WORK TO DO

- Implement DynaSpot and Bubble Cursor
- Replicate the experiment DynaSpot VS. Bubble Cursor

Project#2: OrthoZoom

Caroline Appert and Jean-Daniel Fekete. 2006. OrthoZoom scroller: 1D multi-scale navigation. In Proceedings of the SIGCHI conference on Human Factors in computing systems (CHI '06), Rebecca Grinter, Thomas Rodden, Paul Aoki, Ed Cutrell, Robin Jeffries, and Gary Olson (Eds.). ACM, New York, NY, USA, 21-30.

- Introduces a new technique, OrhoZoom, to facilitate target acquisition in a 1D space. OrhoZoom allows the user to adjust the zoom factor through displacements



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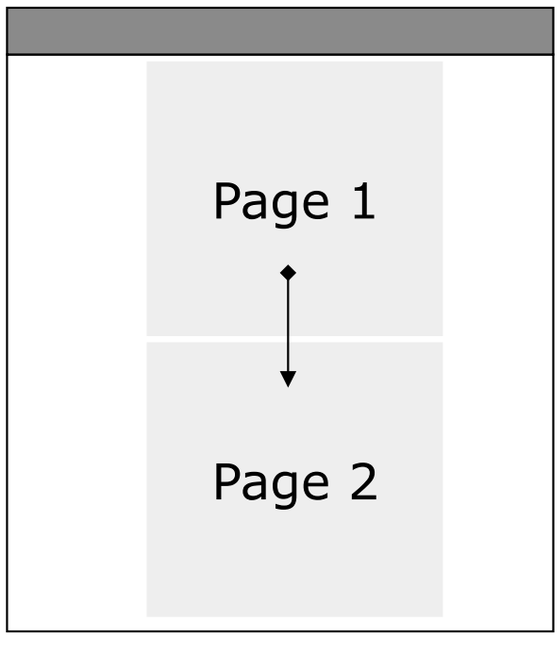
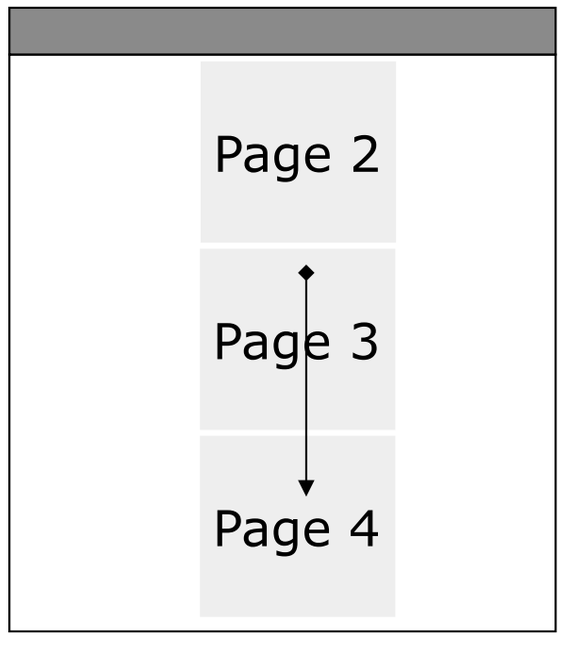
- Compares OrhoZoom with *Speed Dependent Automatic Zooming* on scrolling task in which target location is known.





Project#2: OrthoZoom

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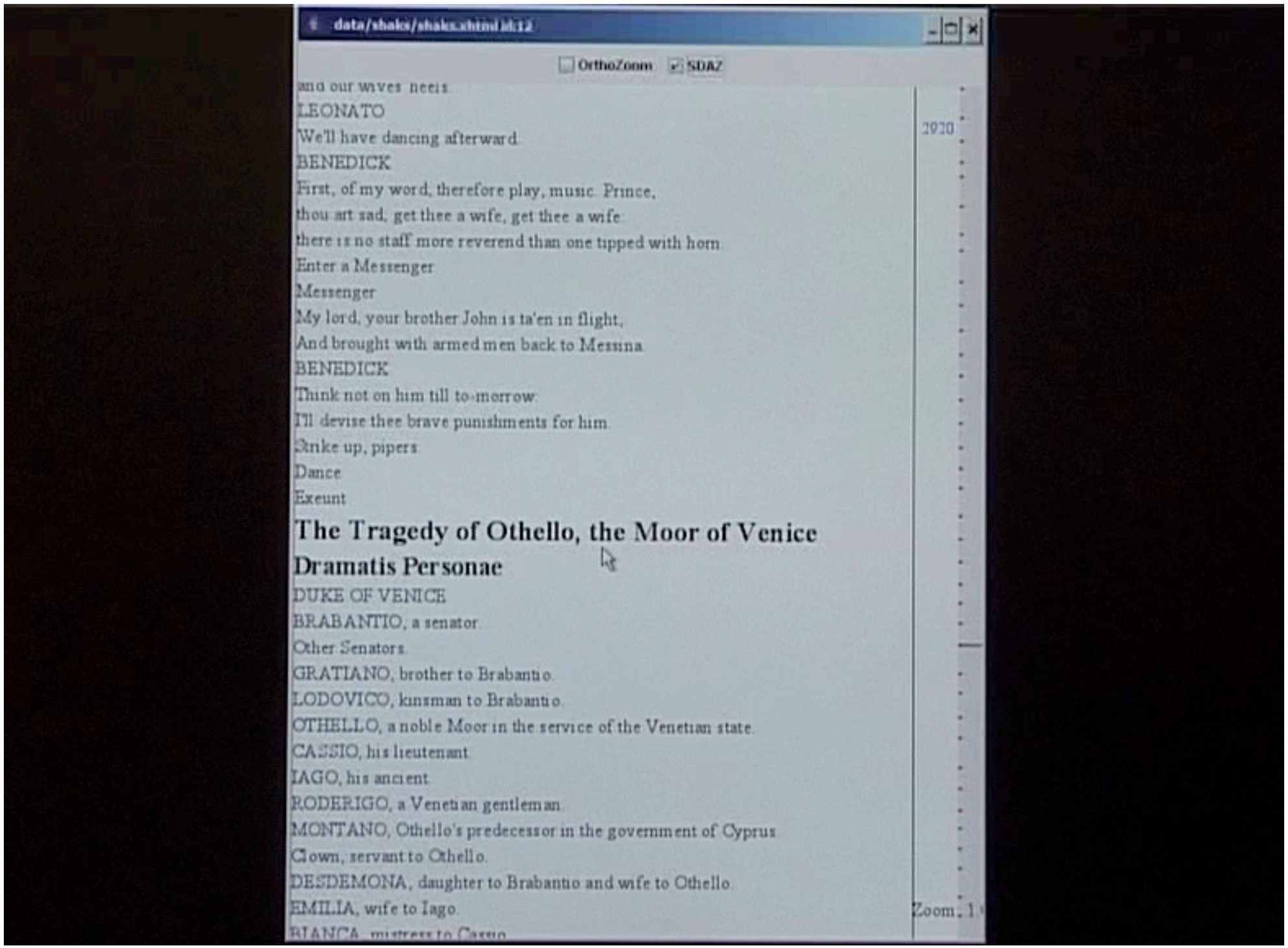

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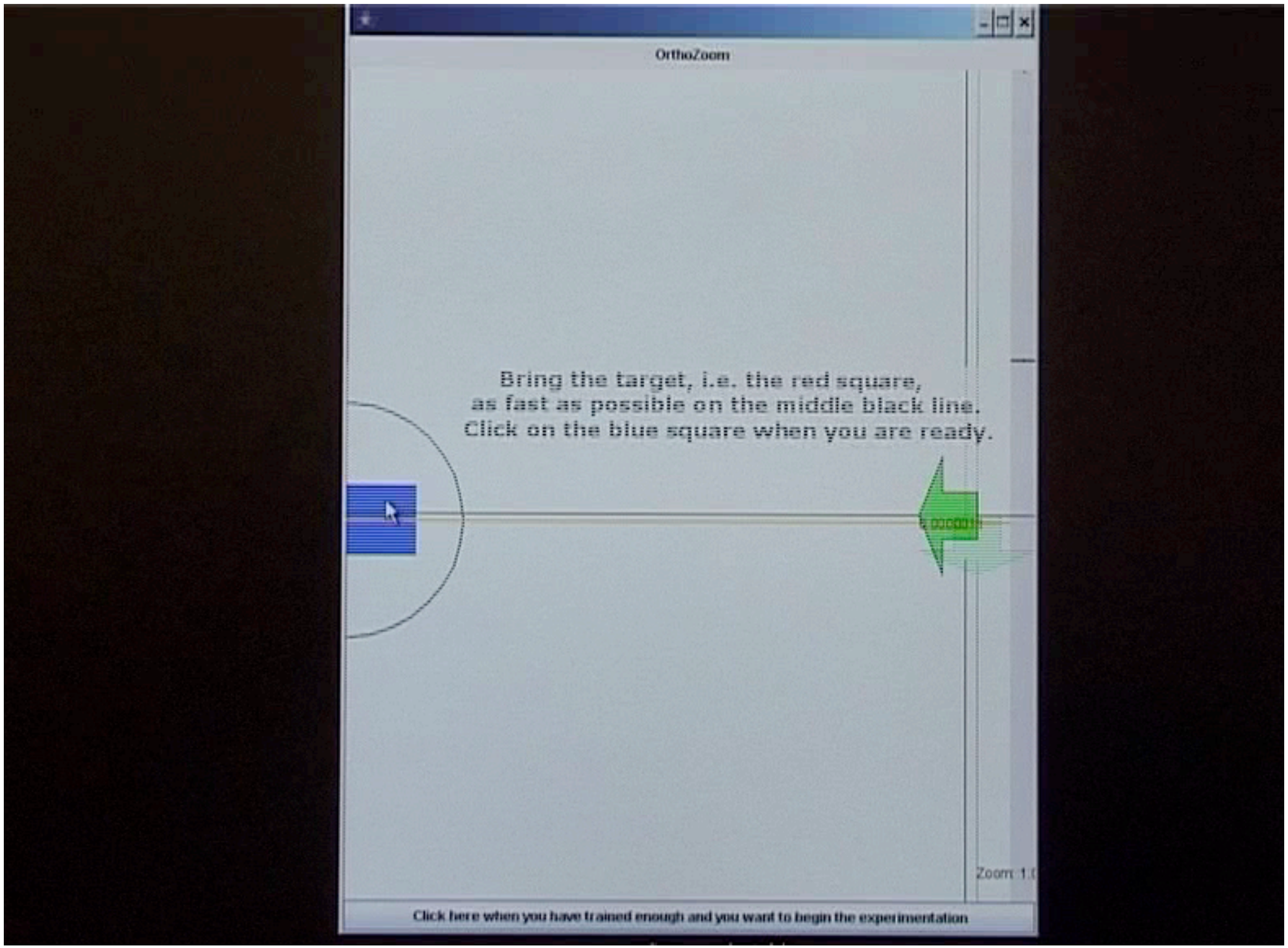


Project#2: OrthoZoom

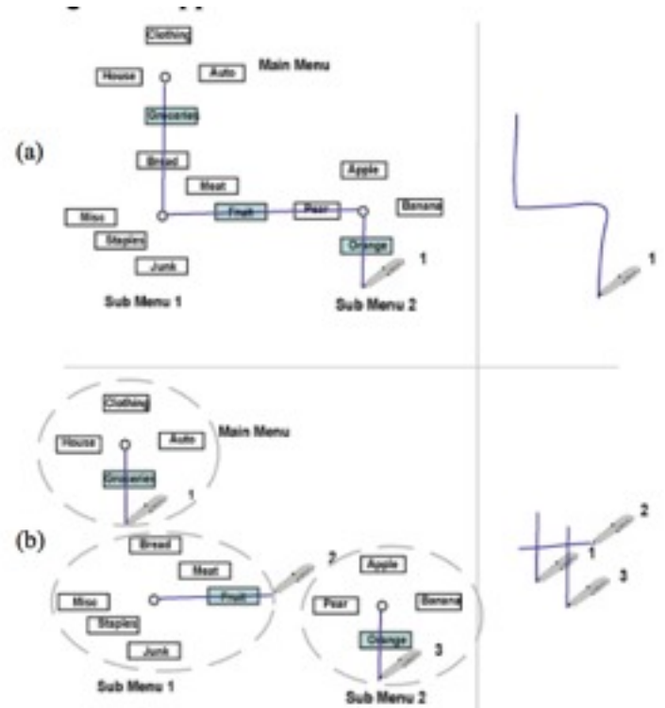
WORK TO DO

- Implement OrthoZoom and Speed Dependant Automatic Zooming
- Replicate the OrthoZoom VS. SDAZ experiment

Project#3: Simple marks

Shengdong Zhao and Ravin Balakrishnan. 2004. Simple vs. compound mark hierarchical marking menus. In Proceedings of the 17th annual ACM symposium on User interface software and technology (UIST '04).

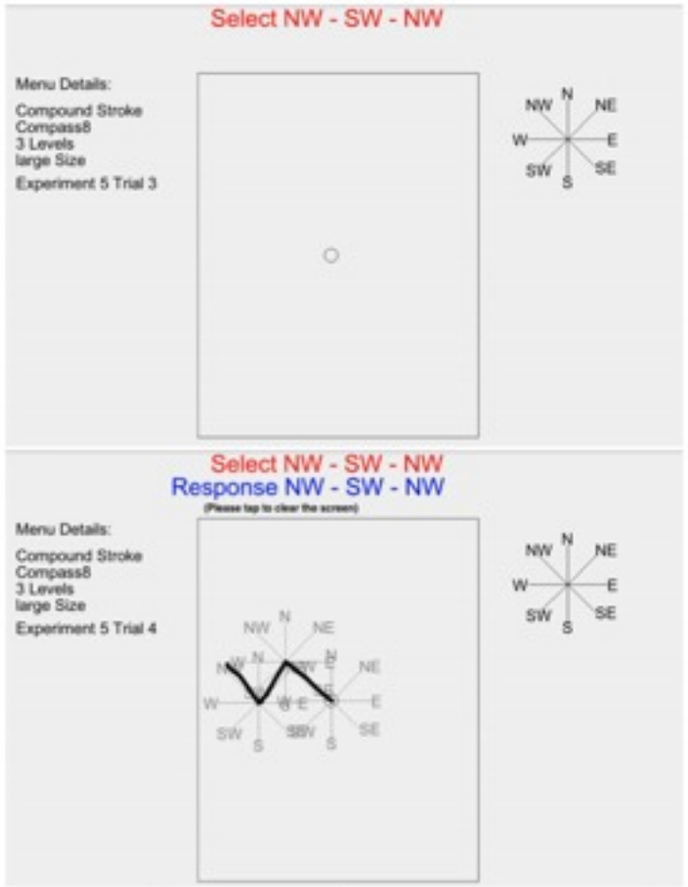
- Introduces a new way of navigating in hierarchical marking menus. Uses simple marks instead of a compound mark.



Project#3: Simple marks

Shengdong Zhao and Ravin Balakrishnan. 2004. Simple vs. compound mark hierarchical marking menus. In Proceedings of the 17th annual ACM symposium on User interface software and technology (UIST '04).

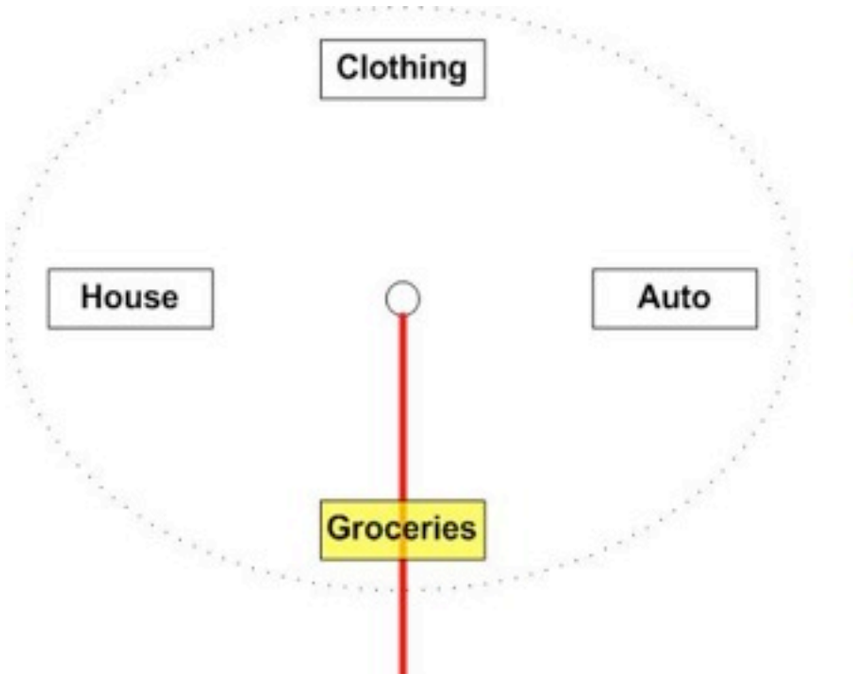
- Compares simple marks with compound marks for an item selection task (expert)



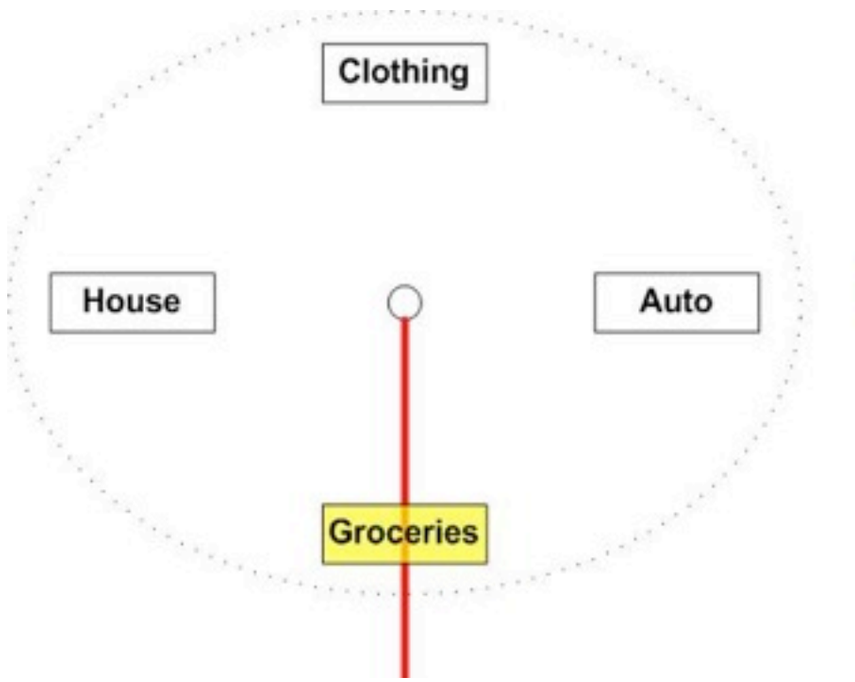
Project#3: Simple marks

- What follows is an excerpt from Shengdong Zhao's talk at UIST

Compound Mark Technique



Compound Mark Technique



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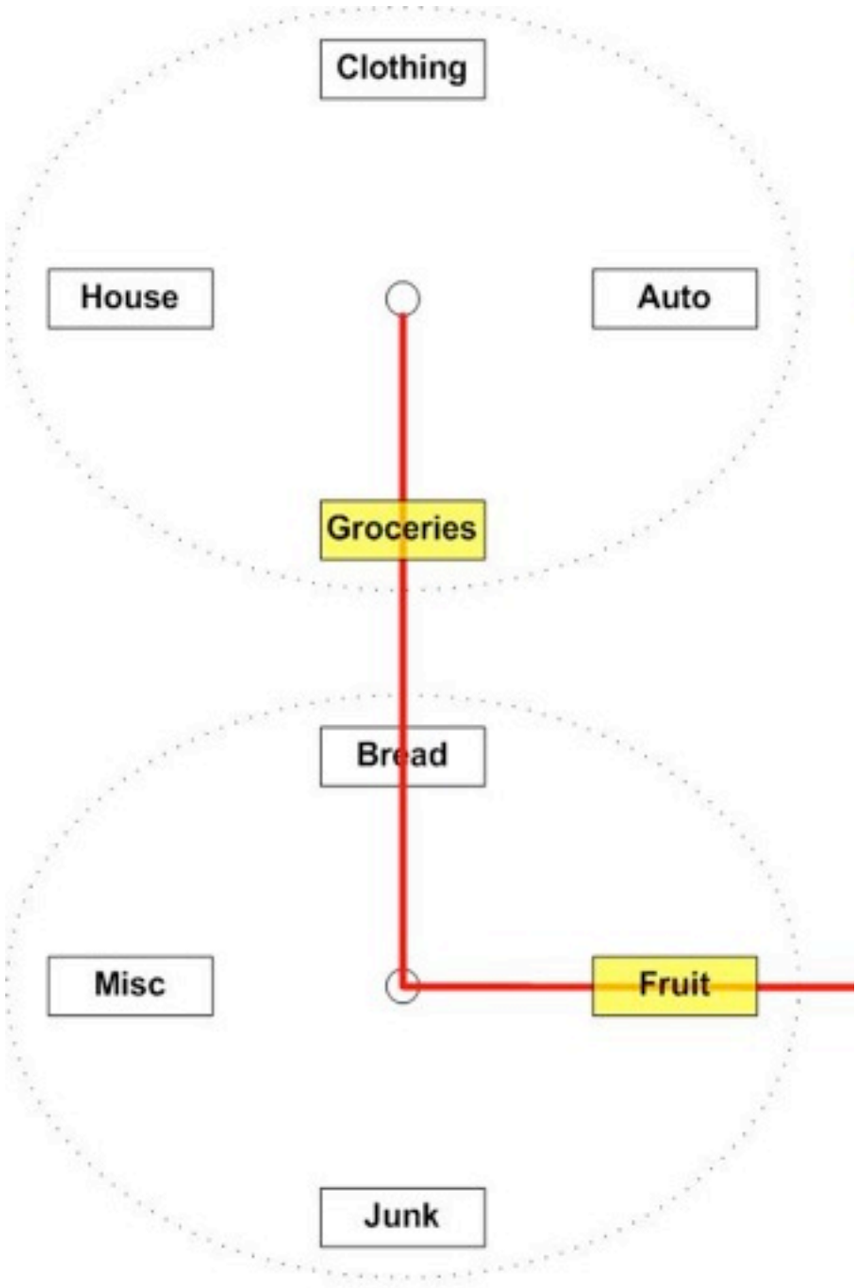

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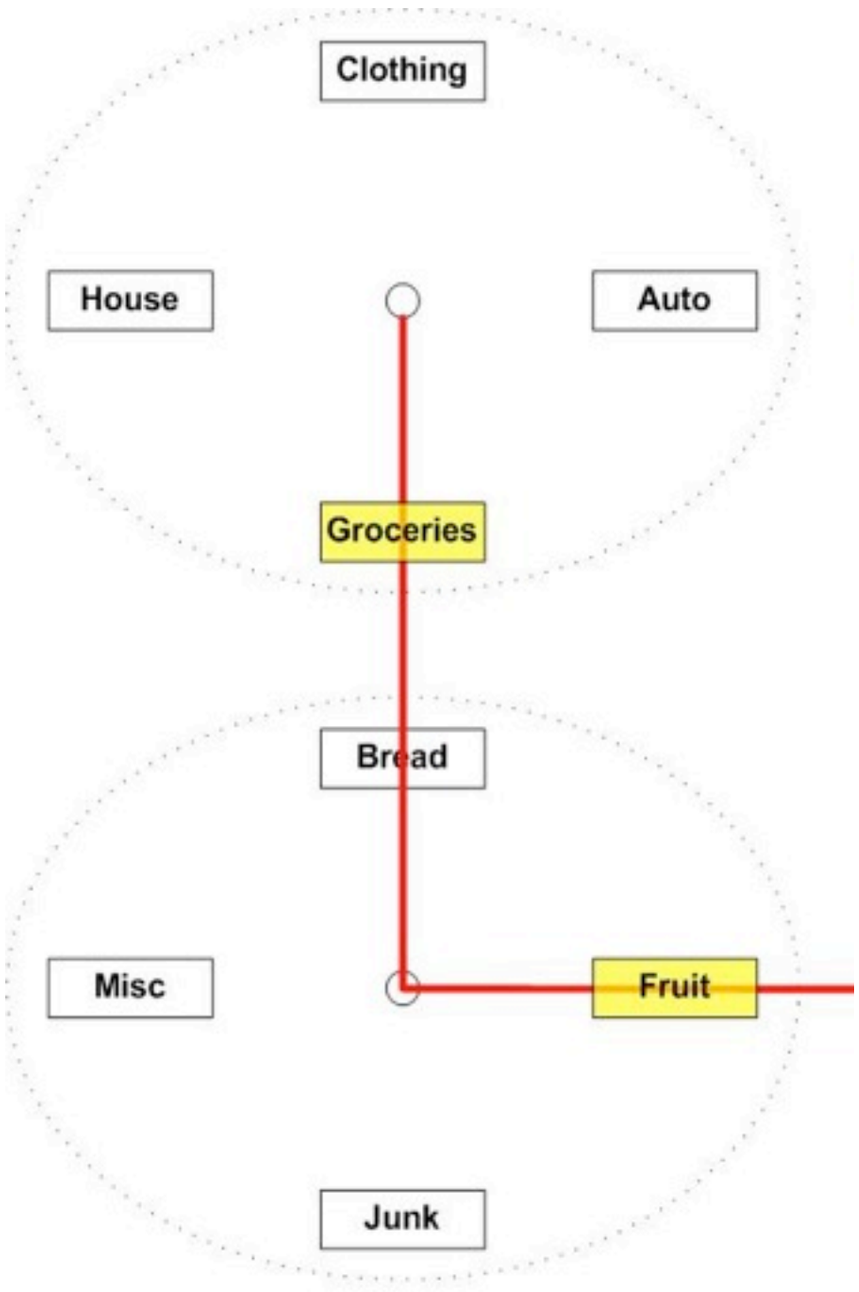

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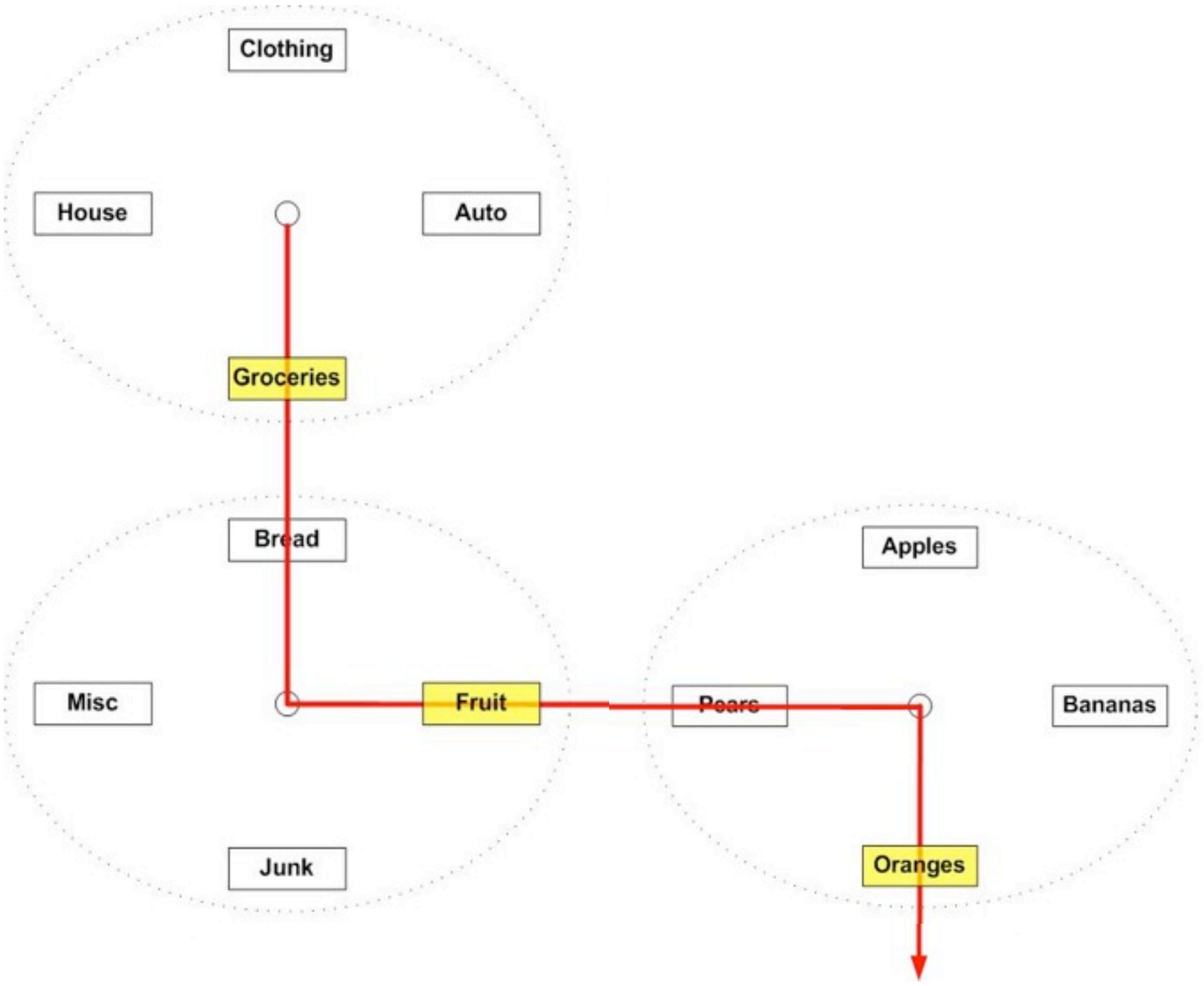

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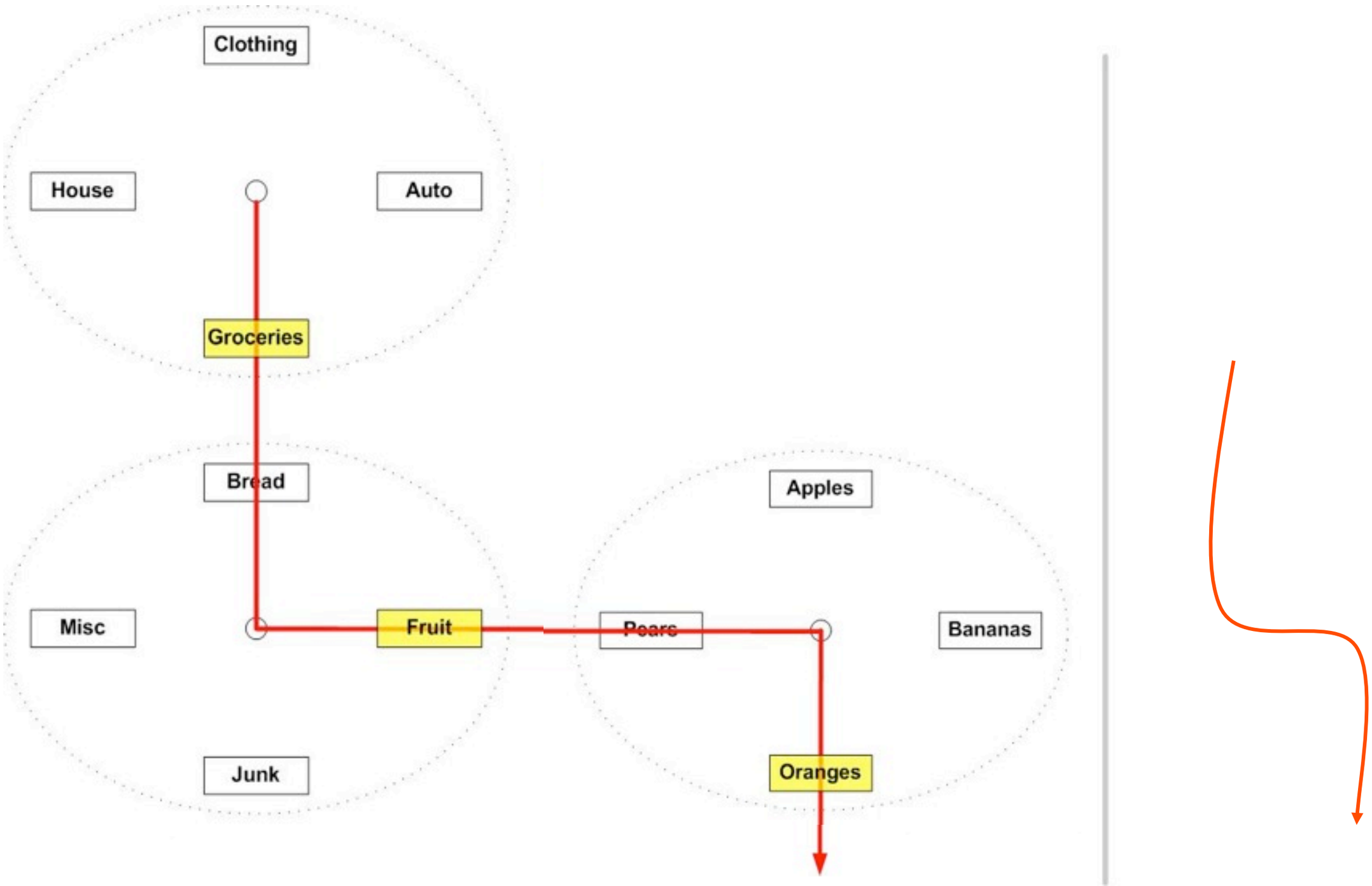
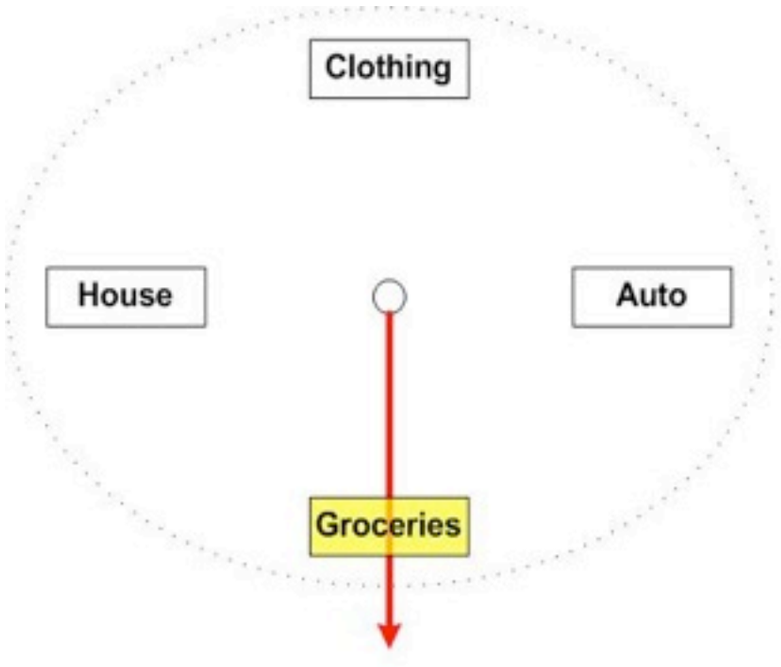


Simple Mark Technique



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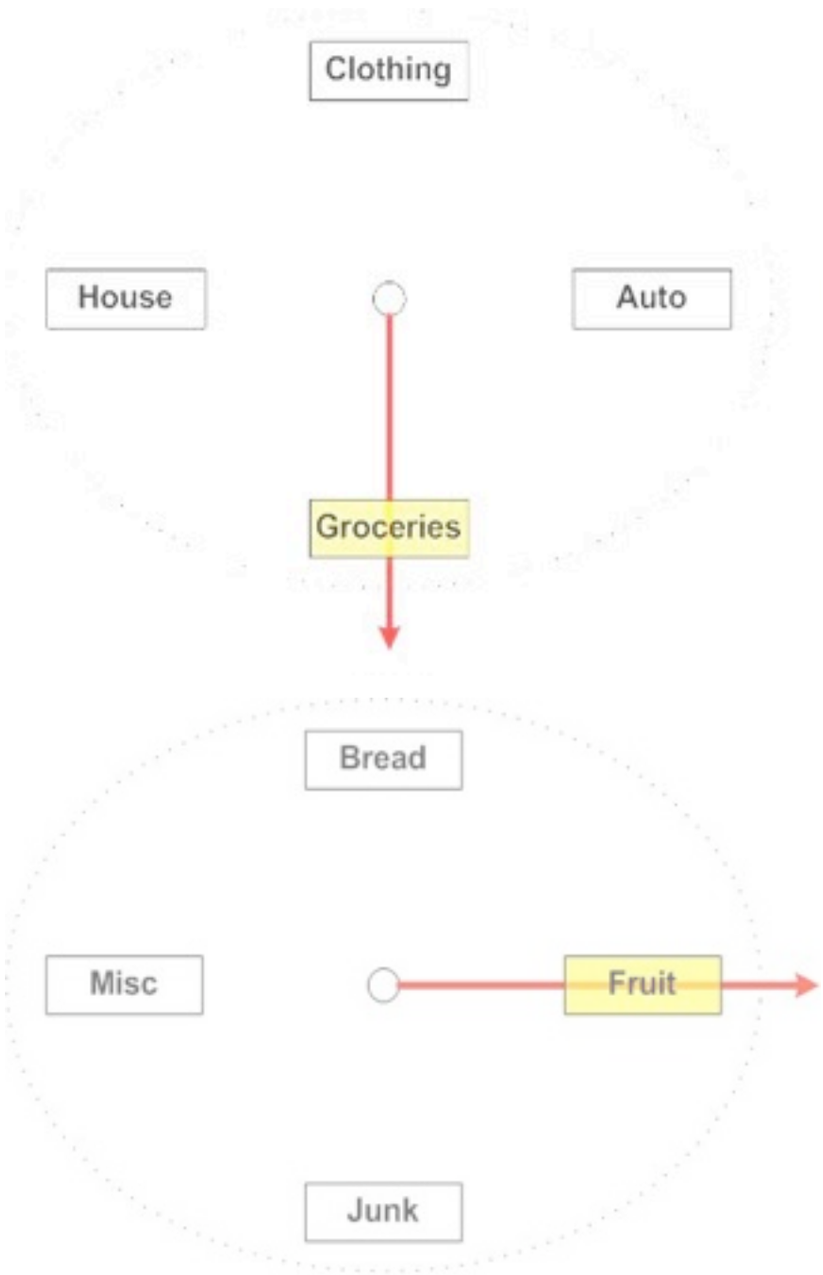

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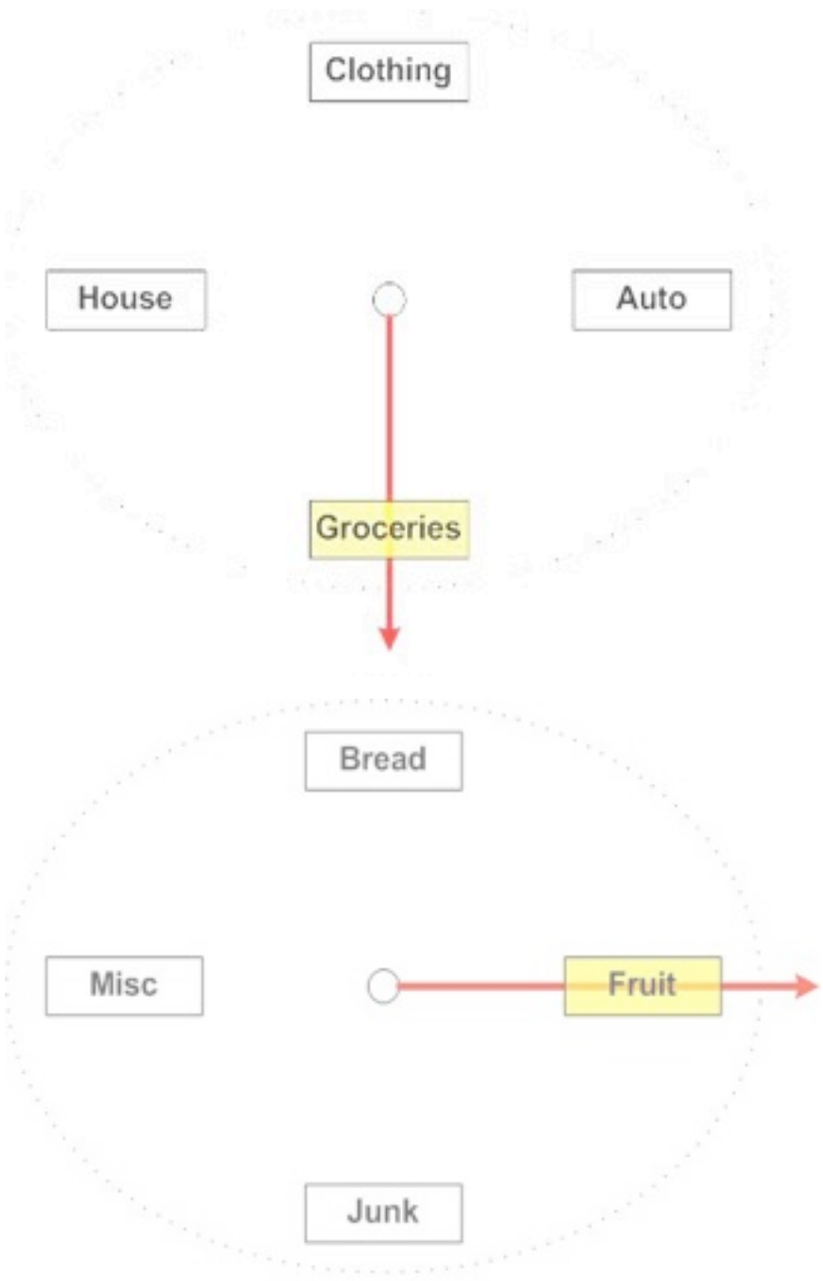

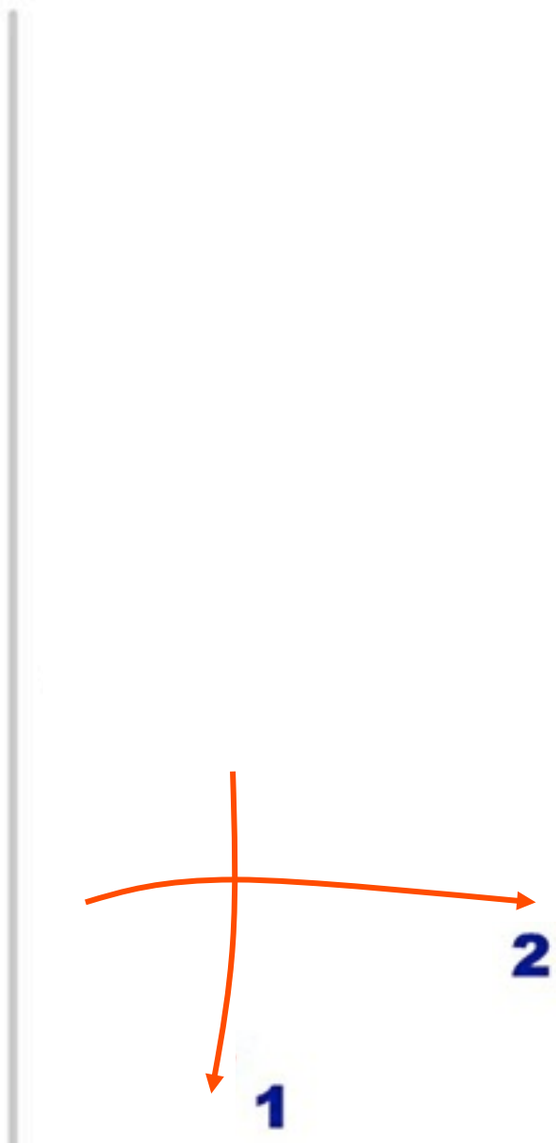

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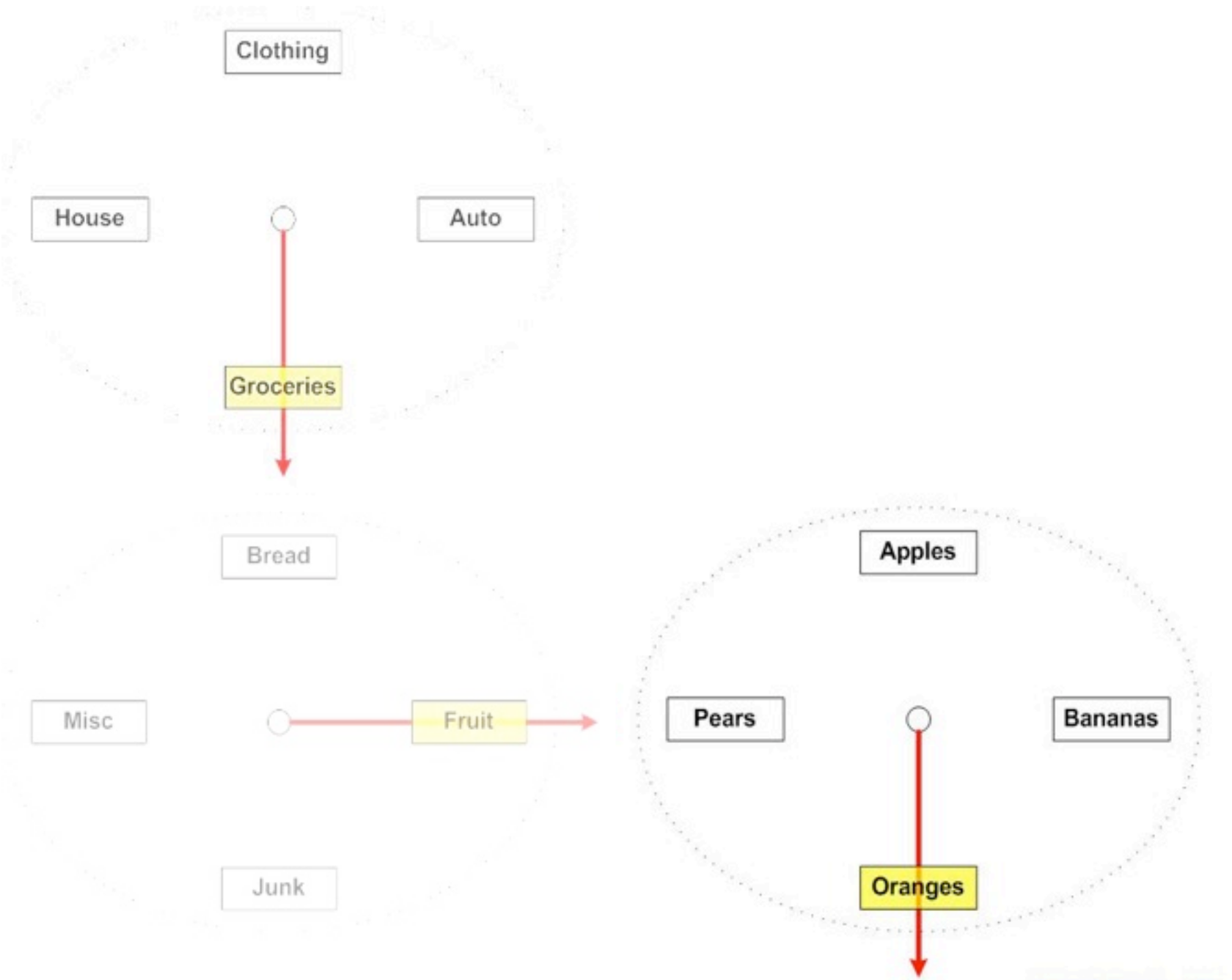

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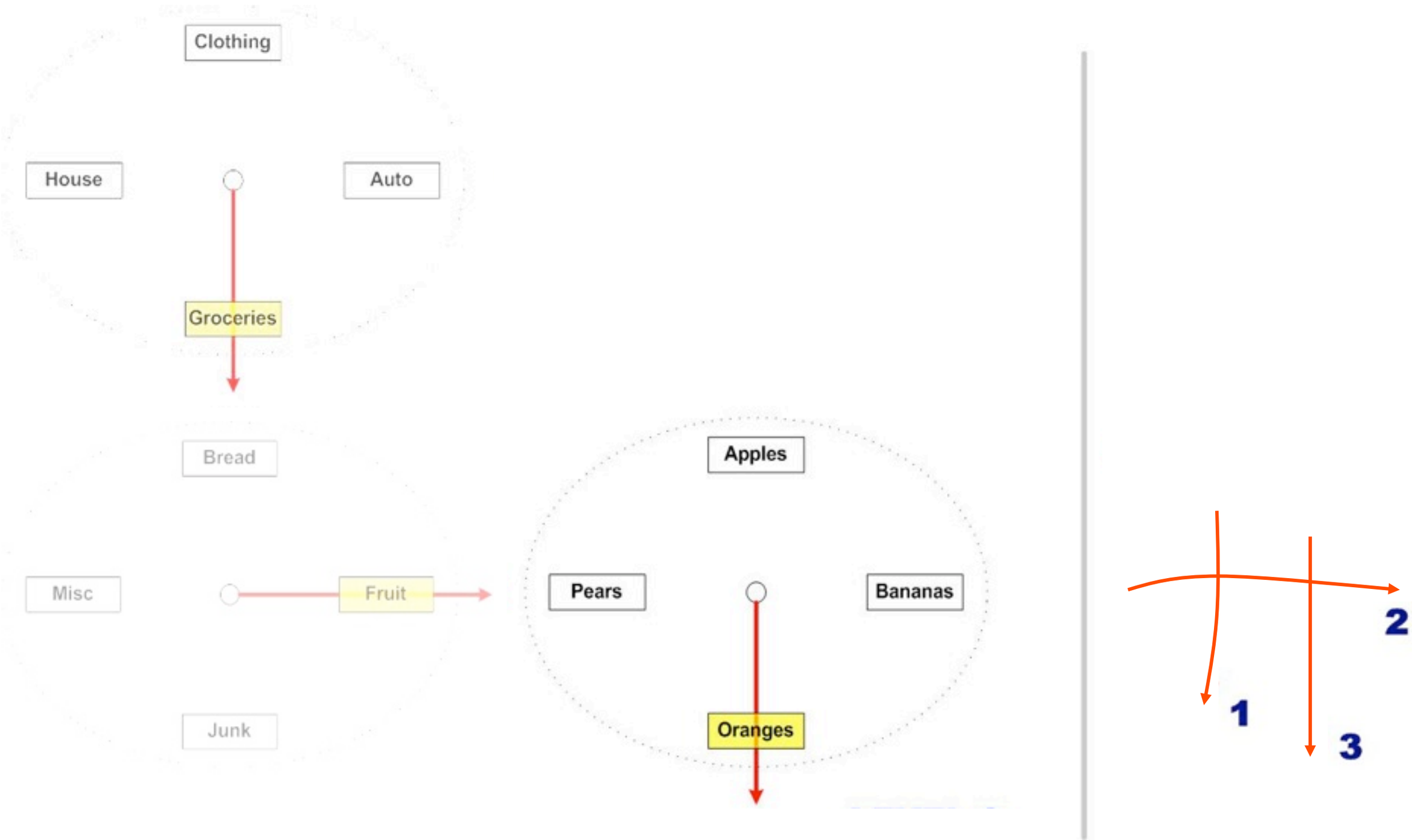
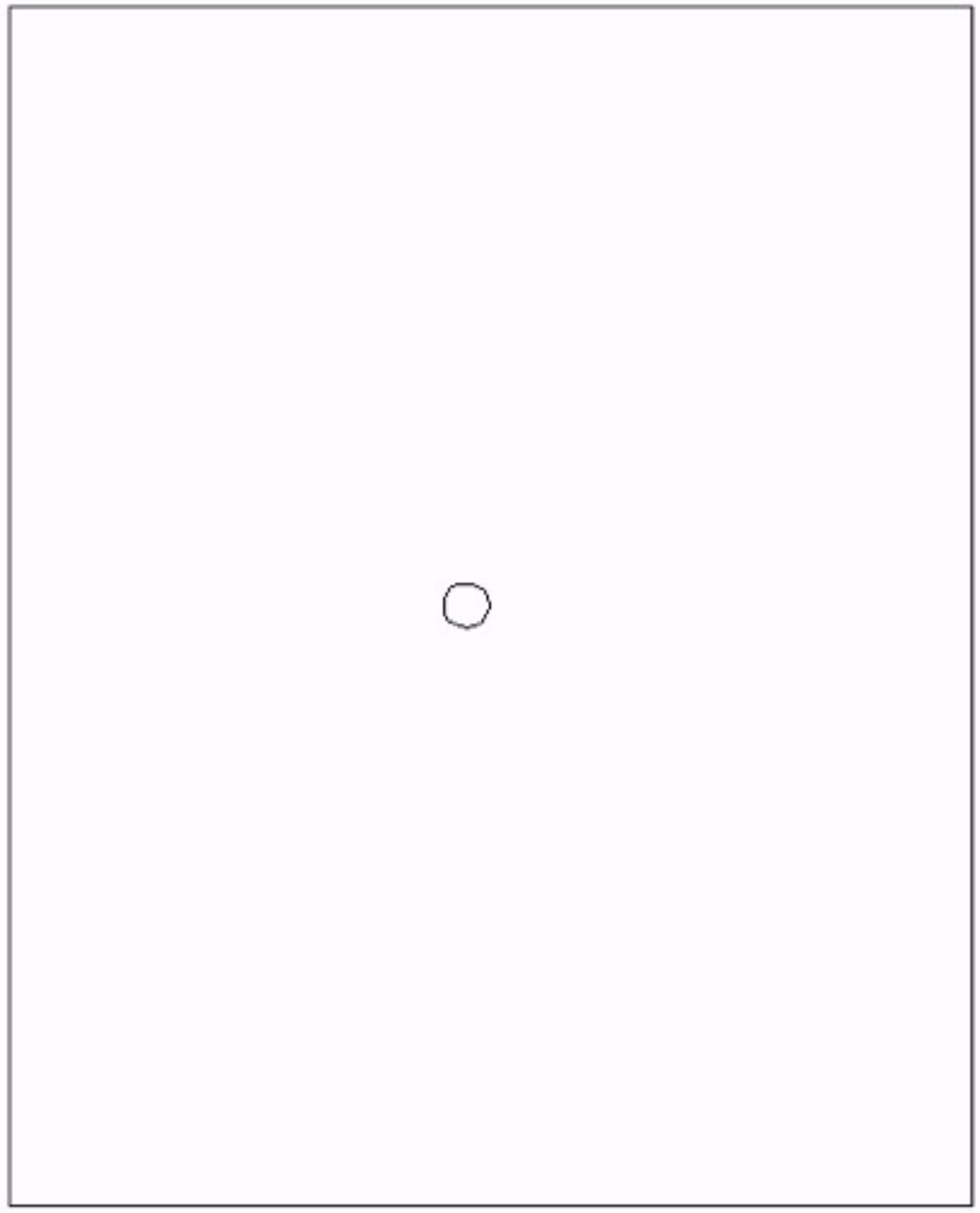


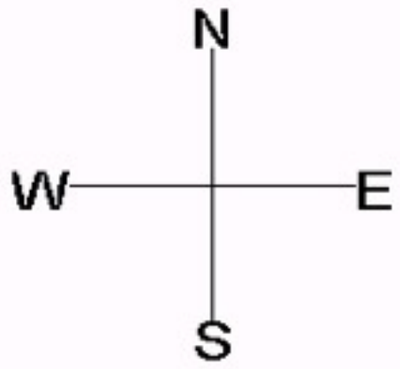
Place your pen in the circle to start:

Menu Details:

Compound Stroke
Compass4
2 Levels
large Size

Experiment 2 Trial 1





Project#3: Simple marks

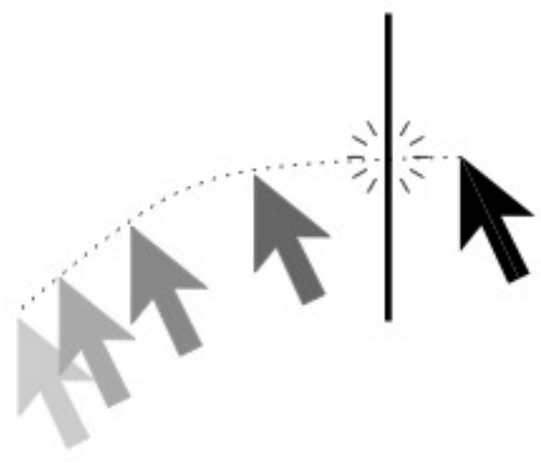
WORK TO DO

- Implement Simple and Compound marks navigation techniques for marking menus
- Replicate the Simple VS. Compound experiment

Project#4: Crossing

Johnny Accot and Shumin Zhai. 2002. More than dotting the i's --- foundations for crossing-based interfaces. In Proceedings of the SIGCHI conference on Human factors in computing systems: Changing our world, changing ourselves (CHI '02). ACM, New York, NY, USA, 73-80.

- Proposes to activate interactive graphical components by crossing them



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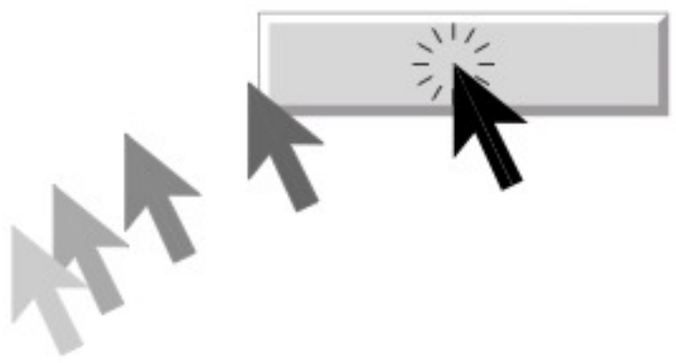
- Compares crossing activation with *pointing* activation. Proposes a law to model crossing tasks.



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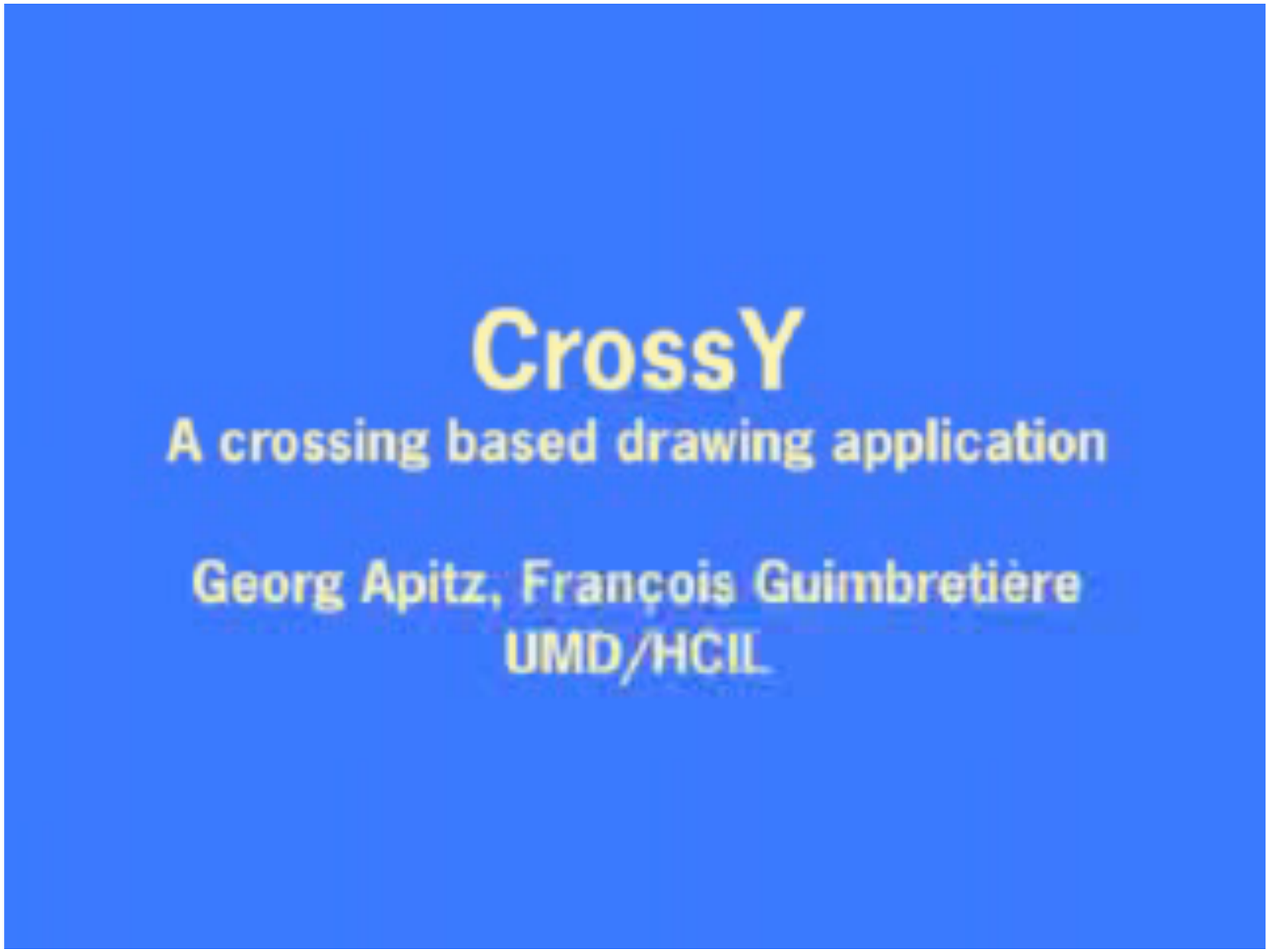

Project#4: Crossing

WORK TO DO

- Pick 1 or 2 cross-based widgets in the CrossY interface and implement them.
- Replicate the Crossing VS. Pointing experiment

Project#5: Gesture Recognition

Yang Li. 2010. Protractor: a fast and accurate gesture recognizer. In Proceedings of the 28th international conference on Human factors in computing systems (CHI '10). ACM, New York, NY, USA, 2169-2172.

- Introduces a new gesture recognizer, Protractor. It computes the angular distance between an input gesture and a set of template gestures so as to output the closest template gesture.

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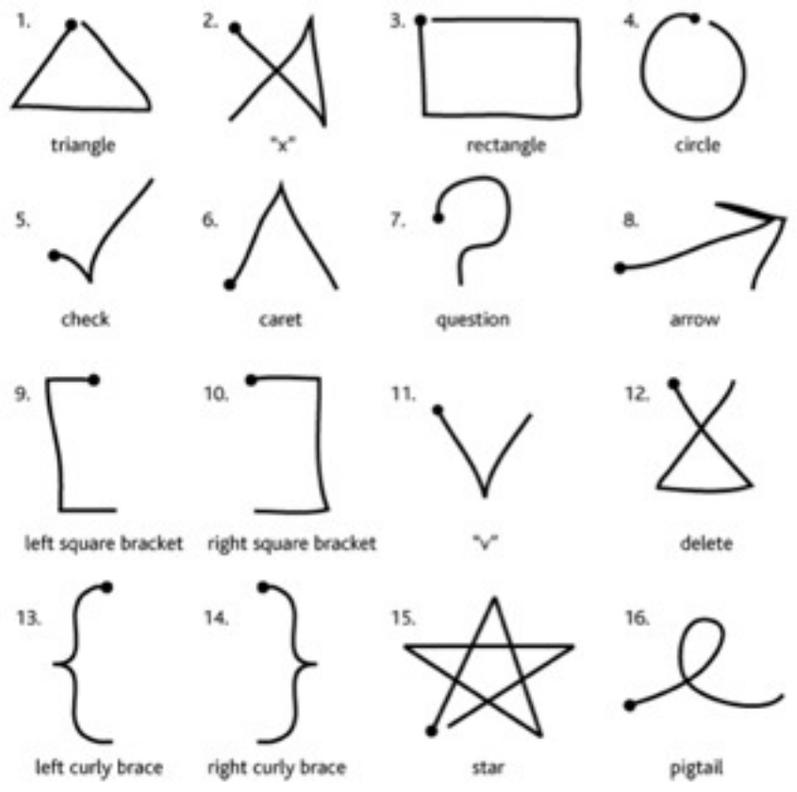
Yang Li. 2010. Protractor: a fast and accurate gesture recognizer. In Proceedings of the 28th international conference on Human factors in computing systems (CHI '10). ACM, New York, NY, USA, 2169-2172.

- Compares recognition rate of Protractor with recognition rate of $1 recognizer.



Project#5: Gesture Recognition

WORK TO DO

- Implement the $1 and Protractor gesture recognizers and design 2 gesture vocabularies {$vocabulary_1$, $vocabulary_2$}
- Collect gestures so as to compute recognition rates under 6 conditions: {$1, Protractor} x {ink, no ink} x {$vocabulary_1$, $vocabulary_2$}