A Better Way For Product Exploration on Online Shopping Websites

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Research Question:

Current product exploration on online shopping websites occurs via the customer scrolling through a list interface. To replace this, we propose a visual interface which allows users to explore products in a different way. On the interface, products that are most similar are connected via lines, allowing users to explore both similar and different products with ease.
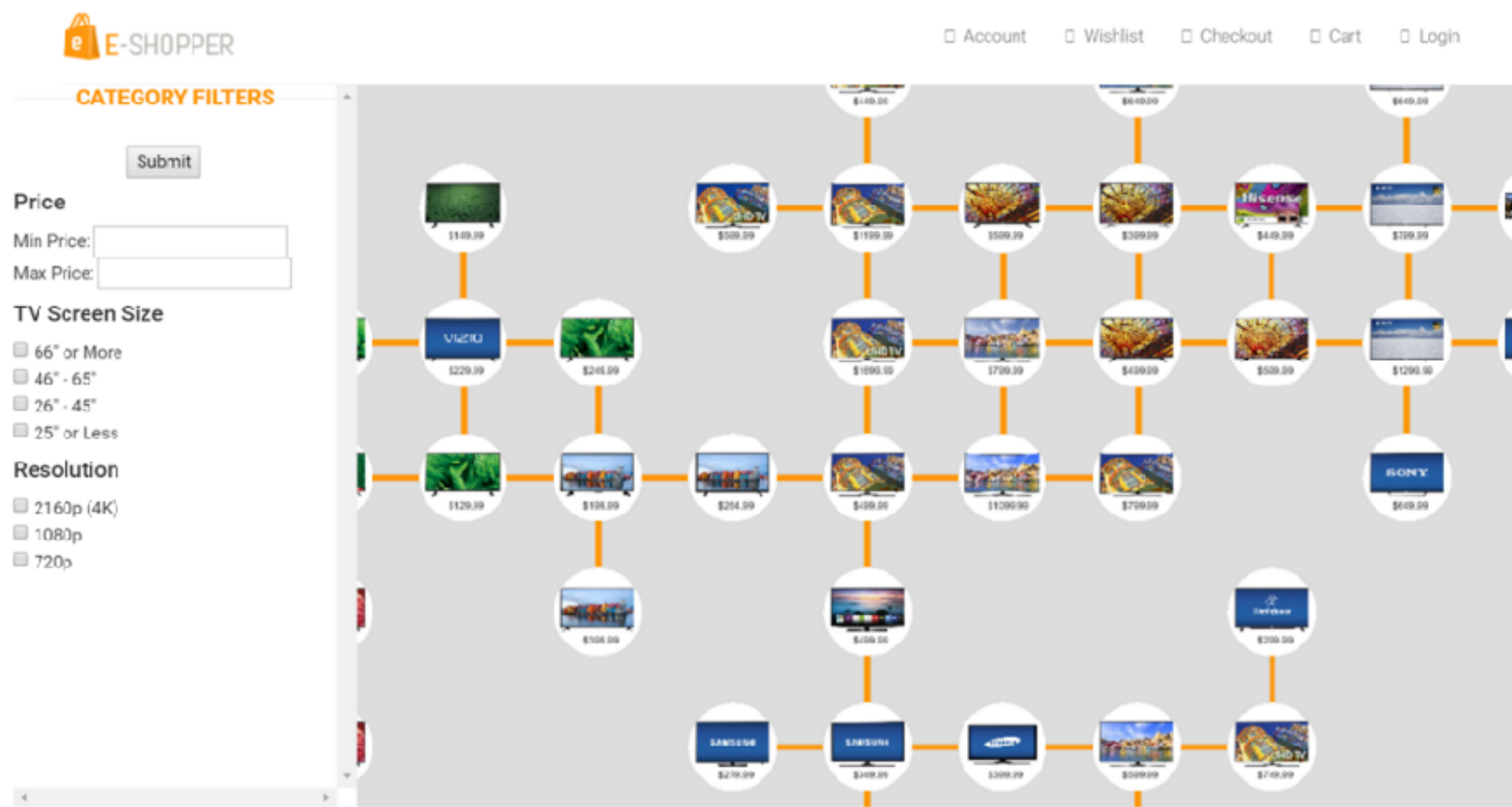

Figure 1. Visual interface for Product Exploration

Hypothesis:

We evaluated the new interface through a user study. We predicted that our interface would be more useful to users because it allows a customer to explore both similar and different options, giving them a better idea of what they have available. A customer is also able to use the structure of the products on the interface to help them shop.
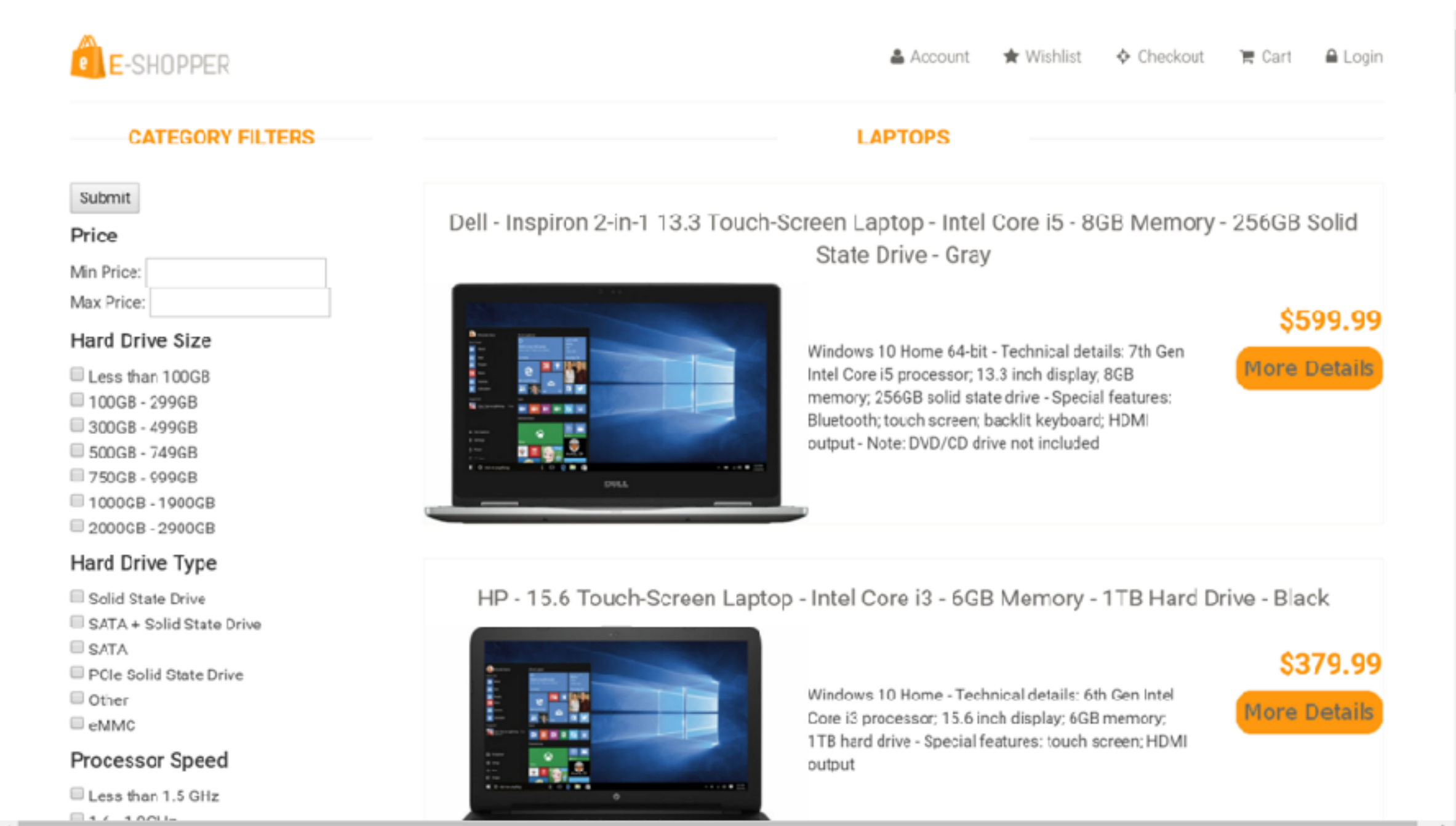

Figure 2. Generic Traditional Interface to be used in study

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Placing Algorithm Pseudo-Code:

1. Place Product1 on the canvas and put it in a Queue(F)
2. While F is not empty
3.     Pop 1st product(p) in Queue off
4.     If spot to the right of p is not taken
5.         Find Product(a) to go in that spot, place a in spot on canvas, and push a on to F
6.     If spot to the left of p is not taken
7.         Find Product(b) to go in that spot, place b in spot on canvas, and push b on to F
8.     If spot below p is not taken
9.         Find Product(c) to go in that spot, place c in spot on canvas, and push c on to F
10.    If spot above p is not taken
11.        Find Product(d) to go in that spot, place d in spot on canvas, and push d on to F
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Figure 3. Pseudocode describing how the placing algorithm works.

Interface Construction:

We used a metric of Euclidean distance to measure how similar products are. Once we had that metric, the most important part of the interface is the algorithm for placing products. It starts by placing a product on the canvas. Then the 4 spaces around that product are filled with similar products. Then the open spaces around those products are filled with similar products. In the end we should get a display like the one in Figure 4. It shows products that are connected which are more similar than products that are further apart. The orange connection indicates that the similarity is l
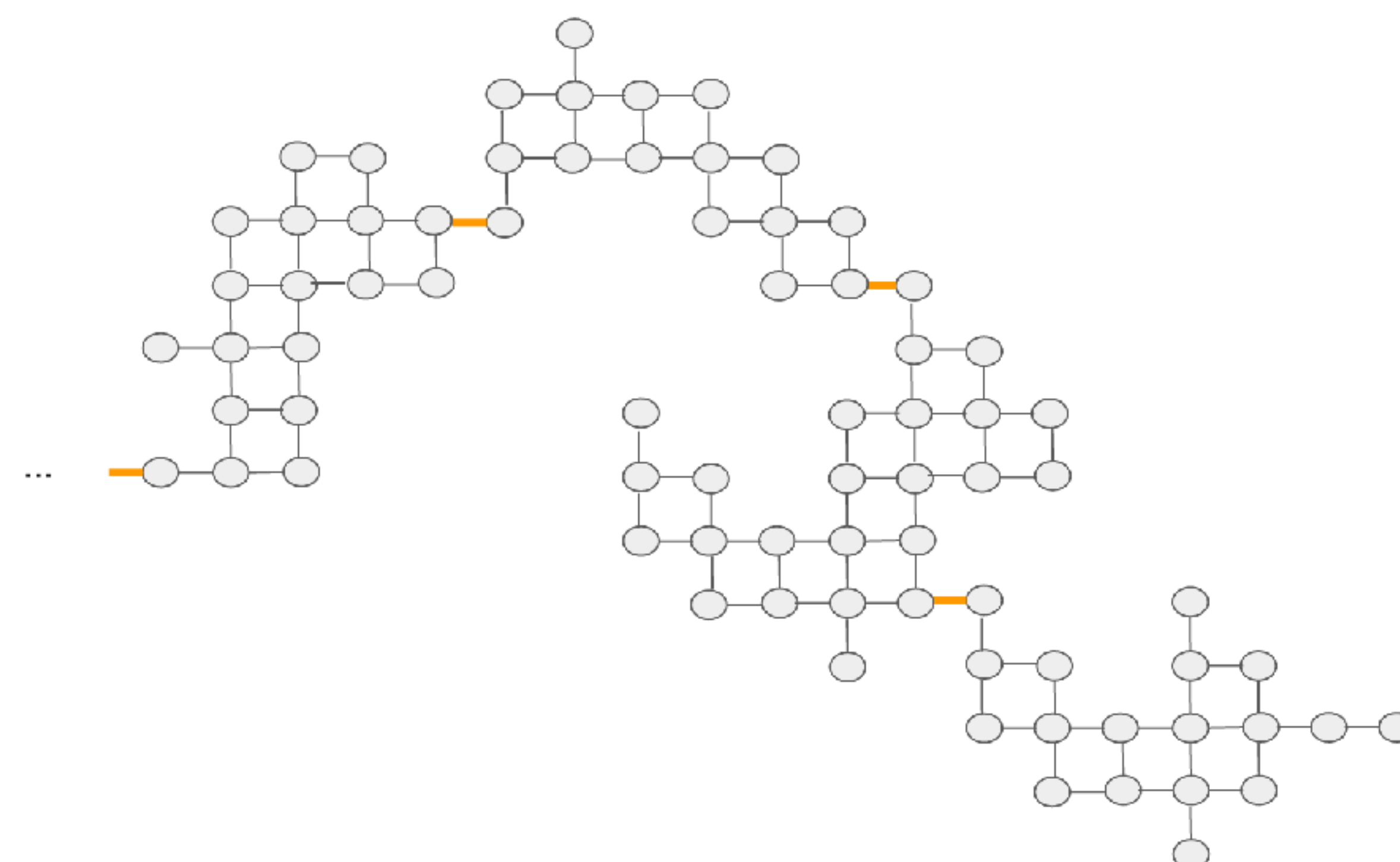

Figure 4. Shows the interface structure resulting from placing.

User Study:

To find out if our interface is better than the list interface for the task of shopping, we conducted a user study. Participants performed shopping tasks using implementations of our interface, and a generic list. Data was collected in hopes of giving an indication of which interface allows for users to explore more efficiently.

	Task 1	Task 2	Task 3	Task 4
List	1:03	0:35	0:40	0:53
	1:10	3:20	2:16	4:00
	4:40	13:54	4:24	8:50
	14:25	4:54	4:25	3:16
	12:09	3:14	5:37	4:44
	6:23	4:58	2:56	4:05
Average =	7:45	6:04	3:55	4:59
Visual	0:54	1:10	1:10	0:50
	3:04	3:56	2:15	2:03
	7:46	3:57	4:47	3:10
	4:12	5:39	3:52	3:40
	2:26	7:28	2:15	3:00
	3:05	3:56	4:40	4:57
Average =	4:06	4:59	3:33	3:22

Figure 5. User Study Results.

Results and Conclusion:

The results are displayed in Figure 5. Despite the average time of a task for our interface being lower than that of the list, we are convinced that too many validity threats affected our results to say anything conclusively. However, the study did return valuable feedback about the usability problems of our new interface. Participants overwhelmingly enjoyed using the list interface to our own. The most common reasons for this were they did not know how to use our interface properly and they were confused as to how similarity was actually being displayed in the interface.

References

[1] Patrick Riehmann, Jens Opolka, and Bernd Froehlich. The product explorer: Decision making with ease. In Proceedings of the International Working Conference on Advanced Visual Interfaces, AVI '12, pages 423-432, New York, NY, USA, 2012. ACM.