Algorithmic Walk
By Sanah Aulakh, Nerissa Chang Mason McBride

Rules

1. Always take desire paths
2. When choosing between left or right (no straight) always go left
3. Always take the path with different material
4. When taking stairs always take the ramp next
5. When reaching a dead end, spin around and think of a number and take that number of steps
6. Every time there's a new street as the decision, we jaywalk (since it's legal now)
7. Avoid parking lots
8. Visit churches every time
9. If we see wood, we will follow the wood
10. Follow the deer

Roles

Nerissa → map maker, videographer
Sanah → photographer, illustrator
Mason → notetaker, narrative-writer

Individual Summaries

Nerissa says, “The walk was beautiful. I’m glad we chose to do it in the morning where we did not have to encounter as much traffic and our rules easily guided us through and around. The algorithm was made up as we went, which brought some unexpected surprises like seeing deer, encountering strawberry creek, and listening to some hard working construction workers. Overall, it was peaceful and our algorithm had fun rules. It was difficult to get creative but we put all of our minds together to make some low-stake, trouble-solving guidelines.

As Tarleton Gillispie claimed that algorithms not only provide us the solution, it names the problem, meaning that an algorithm provides more than merely a way to solve a problem; it also contains a precise set of instructions or procedures for doing so. A series of clear stages or processes that can be used to solve a given problem or complete a certain activity make up an algorithm. As a result, when an algorithm is developed, it not only specifies the problem that needs to be addressed but also the precise steps that need to be followed to do so. This makes it easier to make sure the algorithm solves the problem accurately and consistently each time. Our walk got progressively easier as we created these rules, running into fewer problems because we had solutions for it!”

Sanah says, “Our group executed an algorithmic walk, where we created our own set of rules to determine our path. The purpose of our algorithmic walk was to challenge us to discover and create a path that we wouldn't have chosen if we were left to our own devices. We started by first brainstorming a list of starting locations to help create the first rule that would guide us on our walk. We agreed to meet at the Campanile at UC Berkeley and created our first rule,

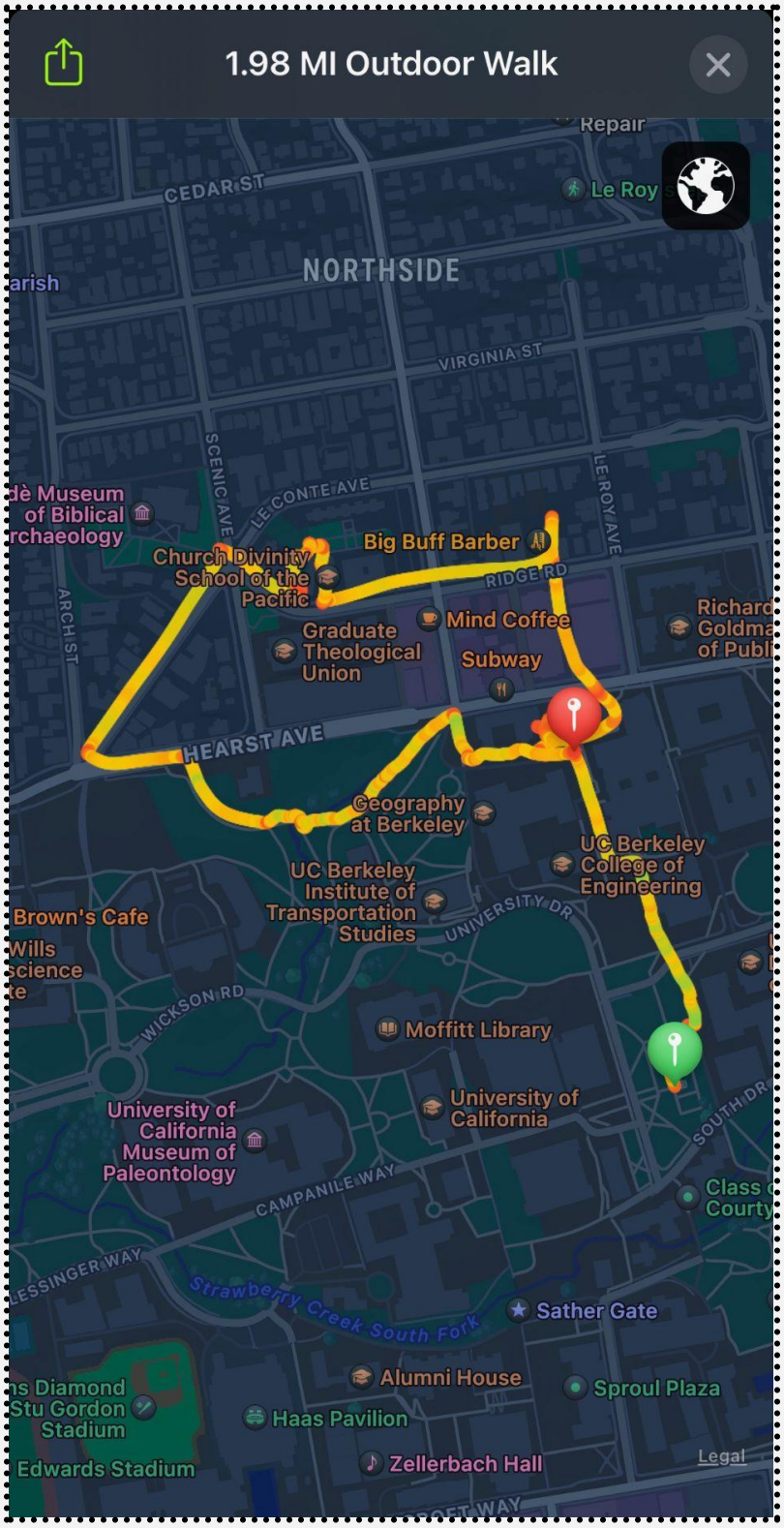
which was to always take desire paths, which are the paths that people make, rather than the constructed paved or designated paths. Taking these desired paths helped us to discover new paths that we may not have otherwise considered. Eventually, we were faced with the decision between left or right and decided to choose to always go left. While on our walk, we were able to step out of UC Berkeley's campus, so we were surrounded by buildings with unique characters that are not seen on campus. This led to us deciding to take the path with a different material, allowing us to become surrounded by nature. For example, if we saw wood, we followed it, or if we saw a sandy path rather than a concrete path, we would change our course to take the sandy path instead.

These rules helped us to discover new areas of the city and to appreciate the beauty of the environment around us. However, taking such a route led to obstacles such as stairs and dead ends. We decided when we encountered stairs on our path, we would take the ramp next to them instead. When reaching a dead end, we spun around, thought of a number, and took that number of steps in the direction determined by the number, which gave us a good laugh. The algorithmic walk was an engaging and enjoyable experience that allowed us to explore the city of Berkeley in ways we never thought of doing before. We were able to appreciate the beauty and uniqueness of the city in a different way and discovered hidden gems that we had never even known existed. The experience was made even better by spending time with fellow classmates, coming up with new rules, and overcoming obstacles together.

Mason says, "My intentions going into this algorithmic walk were to (1) have an enjoyable walk and (2) make it from campus to outside of campus using 1 algorithm. Both of these intentions were fulfilled and the algorithm we created was actually a robust, coherent, and general algorithm that I am confident can produce many enjoyable walks in the future. We also incorporated techniques used for the creation of computer algorithms into our real life algorithm. For example, our Roomba rule, where when we reach a dead end we spin and pick a random direction, is actually what a lot of algorithms do under uncertainty in essence. Another example: our algorithm is *almost* deterministic, that is, given the exact same situation as a previous one, our algorithm will make the exact same decisions as it did the previous time. This is desirable for computer algorithms so the human can be absolutely sure what the computer is doing. The *almost* is because our Roomba rule introduces randomness into the decision making, so a random decision can be made that is different from what it made a previous time it was in that same spot.

AND, I got to see deer and follow desire paths so it's a win-win for computers and nature. All in all, this was a great excuse to conduct an algorithmic walk and the fact we had to do this much documentation for it made me get even more out of it. I'm really interested in seeing the effects of using these exact same rules–no changes–and doing another walk and seeing what happens. I wonder how the average walk algorithm would fare in this circumstance."

Map


1.98 MI Outdoor Walk
Repair
Le Roy
CEDAR ST
NORTHSIDE
VIRGINIA ST
SCENIC AVE
LE CONTE AVE
LE ROY AVE
RIDGE RD
ARCH ST
Big Buff Barber
Church Divinity School of the Pacific
Graduate Theological Union
Mind Coffee
Subway
HEARST AVE
Geography at Berkeley
UC Berkeley College of Engineering
UC Berkeley Institute of Transportation Studies
UNIVERSITY DR
Brown's Cafe
WICKSON RD
Moffitt Library
University of California
University of California Museum of Paleontology
SOUTH DR
CAMPANILE WAY
Strawberry Creek South Fork
Sather Gate
Alumni House
Sproul Plaza
Haas Pavilion
Zellerbach Hall
Edwards Stadium
Legal

Illustration

Highlight Reel

Click to play.

https://youtu.be/Monc7iGEMzY

when you walking.

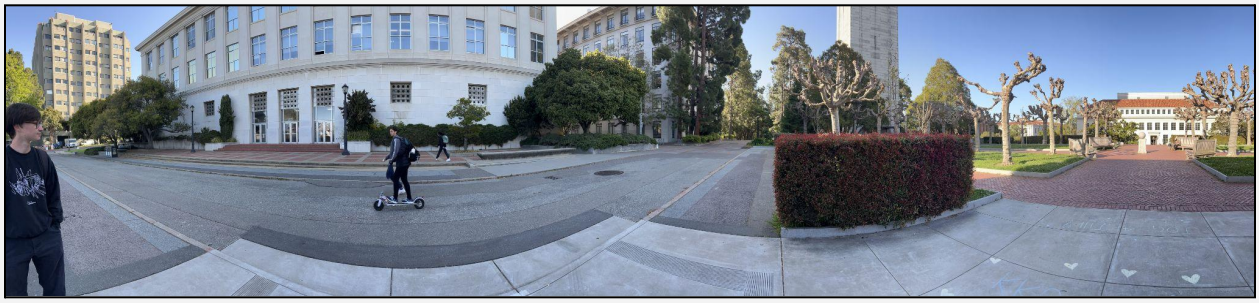
Narrative

📍 The Campanile

🚶 We started our walk with three possible paths to choose from.
#1 → The origin of our walk algorithm was the predetermined rule: “**Always take desire paths**,” so we took the rightmost path through the field of grass.

- I (Mason) chose this rule because I desired to start this walk on campus but somehow make it out naturally, and I had a hypothesis that many others desired this too.

@Physics-Astronomy Library



✋This is where we had to make our first new rule. There were no desire paths and the only option we were given was a choice between going left or right.

- #2 → Nerissa created the (later determined as “genius”) rule to **always choose “left” in a left-right situation.**

📍 Kresge Engineering Library

⛵We arrived at our next decision point, and it was smooth sailing because our algorithm could handle this situation without creating a new rule. We went left, up a ramp, deep into the northside engineering school’s encampment.

📍 Yali's Café

🚨NEW RULE ALERT.

There are gonna be situations in life where the two options you have are not between “left” or “right.” In this case, we had to decide between going “left” or going “straight” up the stairs.

- #3 → The third rule added to the ruleset was to **take the path that changes material**. I think changing material has the highest change of creating an interesting walk, algorithmically.
- #4 → I was worried that if we took stairs, there would need to be a rule that counterbalances the altitude change, so this rule came with a corollary rule: **always take the ramp next to the stairs as the next path**.

Once we reached our first dead end, we realized the algorithm needed a protocol on how to handle situations like this.

#5 → Nerissa’s idea was the same that the Roomba algorithm uses to get out of dead ends: **spin in a circle and randomly choose the next direction to go.** Eventually, randomness will escape us from a dead end. We finally ended up escaping this area full

of dead ends and limited paths and headed past where we started this tangent to the street that borders the northernmost part of campus.

📍 Etcheverry Hall

In a completely *natural* homage to author Joyce Carol Oates, the left side of this panoramic photo is Where We Are Going and the right side of this photo is Where We Have Been. The point is we made it out of campus, completely algorithmically. Then, a new rule was created.

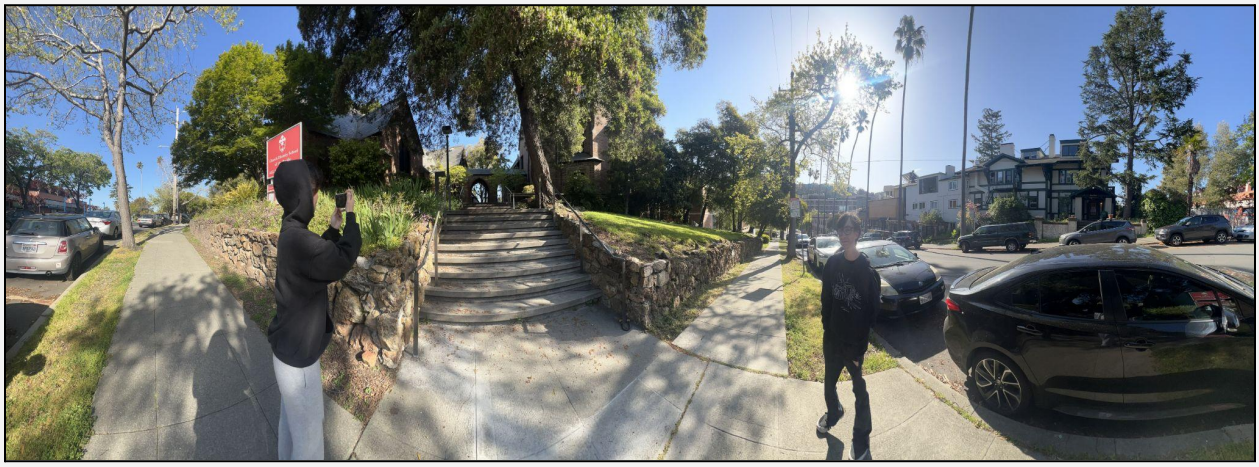
- #6→ **Always cross a new street.** There was also a relevancy factor to this rule decision, since jaywalking is now legal in California.

(cont.)

🚸 Pretty standard stuff. Right side is where we are coming from and the left side of this photo is where we are going. We ended up crossing two streets in a row, which is bound to happen sometimes with our algorithm.

This photo is actually visible on the left side of the previous photo. But this is a good example of the robustness of our walk algorithm. We are technically supposed to (and we did) take this path because it is a change of material, but it is also a dead end. Eventually, with our robust Roomba algorithm, we would naturally escape and return to street.

Dead end.



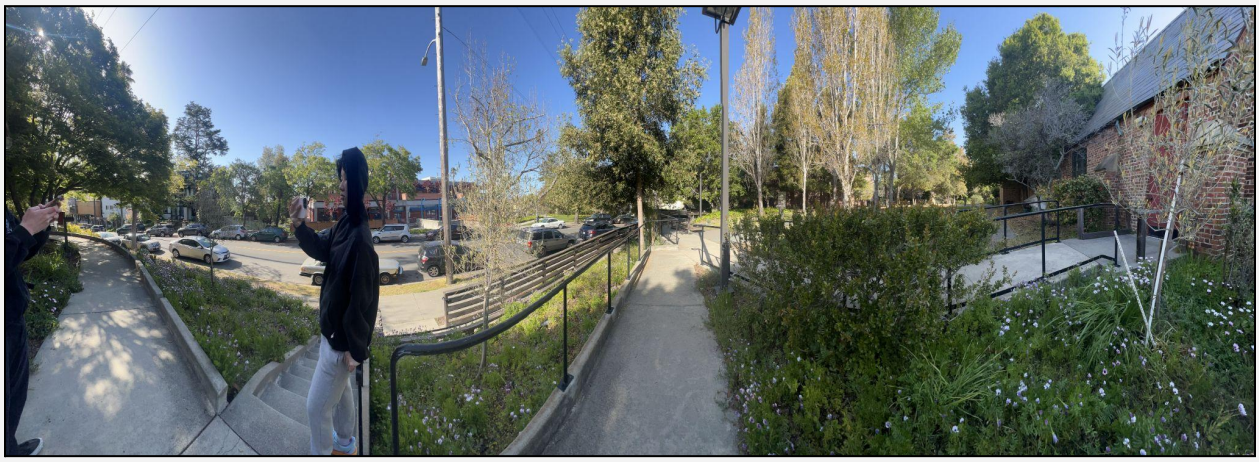
⛪ At this point we were passing by interesting things on our path, like this random church shown above. So we added another rule to the algorithm to increase the possibility of interesting circumstances.

- #8 → **Visit churches every time.** For America, this is a pretty general heuristic.

🦌 hype.

and the lord giveth!!! We just followed our current iteration of the algorithm as we traversed through the

church grounds and came across the most beautiful moment of the whole walk.



🪵 Something of note about our algorithm is that it sometimes takes us into these situations off the "main path," and we mosey about inside this alternative area, yet we always make it back outside to a main path. I can't exactly pin that property of the algorithm to one specific rule, it is probably something emergent from the total concoction of all our rules. Anyways, a two part rule was agreed upon. The first rule took us down the stairs and the second rule took us right.
We couldn't exactly go straight because it wasn't a new street but it wasn't exactly a left-right scenario either.

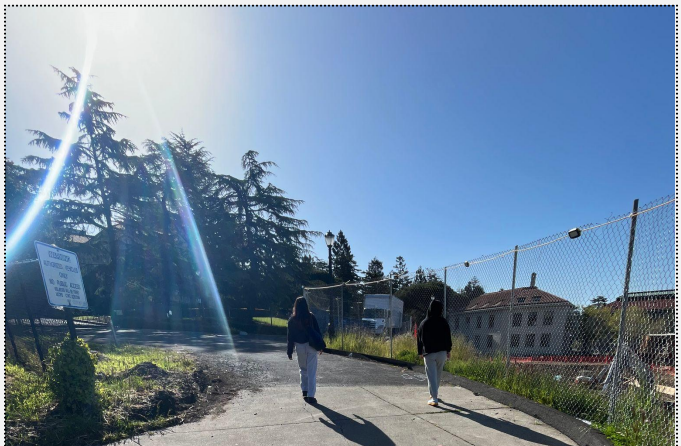
- #9 → **If we see wood, we will follow the wood.** This was a rule Sanah came up with and I (Mason) really liked it. It added a completely novel dimension to our walk algorithm protocol. If our walk continued much longer than this, I would lean towards adding new rules of this caliber.

💃As a complete surprise, as we followed the wood the deer we saw in the church earlier were running down the street to the left of us! This called for a spontaneous (final) new rule.

- #10 → Follow the deer. Need I say more?

😭 We reached the end of the street and the deer ran off somewhere. The rest of the walk was contained in all algorithmic rules determined above. We crossed the street and then were faced with a left-right situation–to which we went left.

(cont.)



we then went to the path that changed ground material. this somehow led us right to the chancellor's house/estate.

i had a fleeting wonder whether the uc berkeley chancellors, across generations, planned for this to be the case. this could be a sign of some deep evil the mantle of chancellor possesses. is she destroying people's park so she can "terraform" the area into a robust system where all algorithmic walks lead to her estate from there as well? much to think about. save people's park though…
-mason

🏁When we reached this area of campus again, we figured this was a natural conclusion to our algorithmic walk. Every decision we would make from this point would lead us on the exact same path we already traversed, which is a testament to our walk algorithm having a deterministic property–which is a desirable property for computer algorithms to have. It was a fun walk.

👊Conclusions → It was actually mega clutch to have the rule to always take left in left-right situations because it caused us to walk in circles. If we were going left right right left left right left right left left we might just end up going straight forever. And then it would suck to walk home after that.

- This made the algorithmic walk self-contained in a way, which made it possible for coherent walks even if we translated this algorithm to a completely different environment.