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Final Project Report
Group 4: Offloaders

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Team/Project Information

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Project Name: Memento

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Abstract

Memento is a photo-curation system designed to reduce decision fatigue and help users build a photo library centered on meaningful memories rather than storage management. Guided by literature on digital memory and a competitive analysis, we set two goals: (1) lower the perceived effort of photo curation and (2) support users in identifying and preserving sentimentally significant images. We conducted a research process including competitive analysis, semi-structured interviews with contextual inquiry, affinity-based analysis, multifidelity prototyping, RITE evaluations, and usability testing.

Our interviews revealed that users curate reactively, and experience the process as mentally demanding. They value photos primarily through personal stories, people, and events, even if they don't realize it. They are overwhelmed by ephemeral content and huge photo libraries. These findings directly informed key design choices, such as batch-based review, prompts oriented around meaning, and grouping of "noise," events, and people. RITE sessions demonstrated enthusiasm for features like "maybe" voting, automatic groups, and reflective prompts, while also uncovering confusion caused by inconsistent labels, unclear entry points, and overlapping curation modes. High-fidelity testing confirmed that the concept of meaningfulness resonated with users but remained difficult to operationalize without stronger guidance; participants appreciated reflective prompts but often overlooked them, and some struggled to understand the consequences of voting actions.

Across evaluation rounds, users consistently described the system as intuitive once they understood the flow, but required clearer onboarding, more transparent feedback, and simplified navigation. Our findings show that meaningful photo curation is viable and desirable when supported by structured guidance, small decision batches, and automation. We discuss limitations (including reliance on stock photos and Wizard-of-Oz interactions) and propose future work on personalizable AI prompting and more transparent meaning-based clustering. Together, these insights position Memento as a promising approach for turning overwhelming camera rolls into curated collections of emotionally resonant memories.

Introduction

Memento was started with the aim of finding an efficient way to curate photo libraries. It was initiated through a brain-storming session, where photo curation was unanimously discovered as a group to be something overwhelming and tedious. We did not have any specific flow in mind, but we did develop a general idea of the app being "content-aware" to differentiate it, and the potential use of AI to help determine which the user is likely to want to keep.

We decided to look at meaningfulness as a lens to view the development of this project through. A literature review found that photos are not merely pixels on a screen. They are portals. Viewing pictures from past experiences elicits memories and sensory details from then. See the literature review in the Appendix for specific studies.

A competitive analysis corroborated this and helped us etch a niche. We found that apps such as Google Photos and the native iOS photo App encourage users to buy cloud storage instead of curation. Apps such as SwipeWipe are engaging, using a swipe-based model, but they focus on merely reducing the storage of their photo library, instead of increasing its sentimental value. These apps may detect similar pictures and/or duplicates. They point out that users have 5 nearly identical photos of a car from a recent vacation. None of them help the user determine if even one picture of a random car would hold long-term sentimental value. With Memento, we want users to develop a library where every photo is a memory.

We crafted the following guidelines:

- Iteration: We knew our goals, even though we were not sure what an app that successfully completes this looks like. Through a process of iterative research and design, we would determine this.
- Collaboration: As our original brainstorming session proved, we are most successful when we bounce ideas off of each other. We were also evenly split between members who are primarily researchers and those who are primarily designers. While these groups will be the 'experts' of their respective domains, we still encouraged intergroup collaboration to foster mutual learning and idea exchange.

Goals

Goal 1: Reduce user decision fatigue during photo curation through prompting, AI powered suggestions, and gentle nudging.

Measure: Decrease of perceived effort through questionnaires during usability testing and user interviews.

Revisions or adjustments: We used observational data and explicit questions to determine this instead of a questionnaire..

Explain changes: "Decrease" would imply comparing it to something else, such as a user's typical curation process.

We did not have the resources or time to do this, and even if we did, our small sample sizes would render any comparison insignificant.

Goal 2: Empower users to create a photo gallery of meaningful photos

Measure: Sentiment of photo gallery (perhaps during a specific time period, event, or specific subject) before and after curation. This is done during usability testing.

Revisions or adjustments: We did this for the design interviews, asking the users if they are satisfied with the pictures they chose.

Explain changes: For usability testing, we had higher priorities. We also thought that testing the concept earlier would be better. Because keeping personal data of participants such as photos is problematic and requires IRB approval, we asked users to immerse themselves in a specific scenario and used stock/personal photos of team members.

Methods

Method 1: Literature Review

Goal (contribution to project): Through the literature review, we were able to support the project by finding research about decision fatigue, photo curation processes, and psychology on digital decluttering. We used literature to see what gaps we want to address in our own research process. Additionally, it helped explain why some competitors' methods may not work for users.

Revisions or adjustments: We did not make any changes to this approach

Explain changes: N/A

Detailed Method Description: We found various research papers related to decision fatigue, photo curation processes, and the psychology on digital decluttering. We also found some research related to using the swipe method for photo curation and why it doesn't work. Additionally, we found research that voting is found as less cumbersome than deleting, so we were able to use both of those insights when we were ideating and beginning prototyping. To source research, we utilized the DePaul Library to access publications.

Method 2: Competitive Analysis

Goal (contribution to project): We clarified how we can differentiate our product and outlined the methods that don't work well for the users in the current market

Revisions or adjustments: We did not make any changes to this approach

Explain changes: N/A

Detailed Method Description: We had a few competitors that we considered - Apple Photos, Google Photos, SwipeWipe, Clean My Phone, and Remo. To find the competitors, we looked at the app store and looked for articles that outlined various photo curation apps. From the competitors, we took note of what features they had, what model they used (e.g., swiping), and what they marketed. From there, we developed our brand differentiation to help market Memento as a different application that emphasizes keeping meaningful photos and less on just reducing storage (or buying more storage).

Method 3: Semi-Structured User Interviews

Goal (contribution to project): Through this format of interviews, we were able to cover the main questions we had while allowing us to probe further based on the comments users made. From the interviews, we learned more about current photo curation practices, emotions behind their photo gallery, triggers for curation, and trust in AI for aiding the process.

Revisions or adjustments: We added a contextual inquiry as part of the interview

Explain changes: We decided to add a contextual inquiry because it allowed us to have the users look through their own photos live, which would uncover more information than just asking questions

Detailed Method Description: We conducted a total of 7 interviews with participants ranging from 25 to 32 years old. We chose to recruit through word of mouth because we had not set up the participant pool yet. All interviews were conducted online over Zoom with one team member moderating and the other taking notes. We asked a few warmup questions to learn about their general photo-taking habits. Then, we dove deeper and asked about triggers for organizing photos, as well as their organization methods. After the questions, we conducted the contextual inquiry, where we asked users to find about 10-20 photos to look through, and we asked them to explain which ones were meaningful and why. We also asked them to walk through how they would go about organizing the set of photos. We ended with a question about features in an ideal app and concluded with demographic questions.

Method 4: Interview Analysis - Affinity Diagramming via FigJam

Goal (contribution to project): We organized information from the interview and gathered insights to use for design implications

Revisions or adjustments: We removed interview coding via [Atlas.ti](#) and instead used the interview notes for analysis

Explain changes: Due to the large time commitment coding would entail, we decided to use the notes the team member took from the interview to analyze the findings.

Detailed Method Description: After listening to the recording from the interview and adding any final notes, we completed affinity diagramming in FigJam. We added notes from all the participants and grouped them into themes. From there, we compiled a document with insights written out. We then used that document to create a persona and start thinking about prototyping.

Method 5: Multifidelity Prototyping - Sketching and Figma

Goal (contribution to project): Allowed us to ideate quickly through low-fi sketches and then translate our stronger concepts into higher-fidelity, interactive screens. Sketching helped us explore multiple layout variations and interaction patterns without committing to detailed design work.

Revisions or adjustments: We didn't make any changes to this plan.

Explain changes: N/A

Detailed Method Description: We began with sketching out individual screen sketches using pen and paper to explore various ideas/flows. After identifying common patterns across sketches, we recreated these sketches in Figma at low-fidelity. These prototypes included grayscale layouts, simple buttons to validate structure and flow without focusing on visual styling. After testing and refining navigation, we made the final high-fidelity prototype in Figma using consistent icons, styling, and components to conduct Round 2 of usability testing. This approach ensured that the ideas were vetted early and efficiently before finalizing the design interface.

Method 6: Design Interview - RITE Method

Goal (contribution to project): The RITE method supported our first round of evaluation by helping us test two concepts and also quickly identify usability issues. This allowed us to adjust flows, labels, and button text/placement early, reducing rework later in the design process.

Revisions or adjustments: No major revisions were made to the method, but we adapted the level of fidelity used.

Explain changes: Although the initial plan was to revise the prototype after each session but the time-intensive nature of Wizard-of-Oz testing did not allow for that.

Detailed Method Description: We used RITE method (Rapid Iterative Testing and Evaluation) during Round 1 with our low-fidelity prototypes. Sessions were conducted in class using the Wizard-of-Oz approach where team members manually simulated interactions. After the participants completed the tasks provided, the team discussed immediate changes - such as unclear entry points or confusing album flows - and noted down the changes to be made accordingly. This method allowed us to test two conceptual models (categorized vs gamified) while integrating feedback. Insights generated through this method helped with which flow elements were kept, removed, or redesigned for the high-fidelity prototype.

Method 7: Usability Testing - Task Completion and SUS

Goal (contribution to project): This method enabled us to evaluate our high-fidelity prototype. By having participants complete three structured tasks, we were able to measure the clarity, intuitiveness, and overall learnability of the prototype. The inclusion of post-task questions and post-task questionnaires helped capture ease of use, and user sentiment.

Revisions or adjustments: We expanded the testing protocol to include a scenario, three separate tasks, task-level satisfaction ratings, and a post-test questionnaire. We removed SUS in favor of the 1-7 satisfaction scale included in the script.

Explain changes: We replaced SUS with a satisfaction scale included within the script since the structured questions and open-ended reflections provide more task-specific data than SUS.

Detailed Method Description: We conducted high-fidelity usability testing with participants over zoom. Each session followed a standardized script. Participants were given a scenario, along with that, they were also given three core tasks. Moderators recorded the session and took notes on navigation patterns, button interpretation and overall interaction. After each task, participants answered open-ended questions and provided a 1-7 rating on ease of completing the task and intuitiveness. This method provided both behavioral and reflective data, offering insights on where the flow aligned with the user's mental model, and where it had to be refined.

Results

Method 1: Literature Review

The literature review showed that people experience their “digital past” as emotionally rich and personally meaningful, rather than as a neutral archive. Prior work on personal informatics, memory, and photo practices highlighted that photos often act as memory cues and emotional anchors, which supported our decision to frame Memento around meaningful memories instead of simple storage management. At the same time, the review consistently described digital photo collections as cluttered, overwhelming, and cognitively demanding to manage. Deleting or organizing photos was often portrayed as tiring, emotionally loaded work rather than a light maintenance task.

These findings helped us position our project: we needed to design for emotional value and sense-making, not just for freeing up space. The literature also suggested that gentle structure (such as voting, or guided prompts) and playful interaction can lower the perceived burden of curation. However, it warned that people easily abandon tools that feel like admin work, which foreshadowed adoption challenges if our design leaned too heavily on manual sorting.

Method 2: Competitive Analysis

The competitive analysis revealed that mainstream photo apps such as Apple Photos and Google Photos set strong expectations for core behaviors: scrolling through a feed, tapping into albums, marking favorites, and occasionally searching. These tools work well for basic access and light organization but do not explicitly help people meaningfully curate their memories. We also examined more utility-focused apps like swipeWipe, Remo, and clean my Phone that target storage or clutter, such as duplicate cleaners and screenshot removers. These apps showed that users are already familiar with one-tap, high-volume cleanup actions and appreciate automation when it feels safe and reversible.

Across the tools we reviewed, almost none treated emotional meaningfulness or personal storytelling as the central value proposition. Success was typically framed in terms of gigabytes saved or number of items deleted. This gap helped us position Memento as complementary rather than directly competing: existing tools focus on space saving, but we wanted to focus on meaningfulness and treat photos as reminders of people, places, and stories.

At the same time, the analysis reminded us that we would be compared against very polished, low-friction experiences, so our flows needed to feel as streamlined as the best of these tools.

Method 3: Semi-Structured User Interviews

The interviews revealed that participants’ photo curation habits are driven mainly by external pressures rather than intrinsic motivation. Most people only start sorting or deleting photos when they run out of storage or receive repeated low-storage warnings. When they do engage in curation, it evokes mixed emotions like a

combination of overwhelm and cognitive strain on one hand, and nostalgia, satisfaction, and a sense of productivity on the other. Overall, the process is experienced as mentally demanding, especially when deciding which photos to delete. Participants often described last-minute cleanup such as quickly deleting photos at a concert before an artist comes on stage, or while sitting in a waiting room as something they do in short bursts and usually as a secondary, background activity (e.g., while watching TV). Some even reported always starting from the very beginning of their camera roll, which made the task feel repetitive and endless.

Participants also expressed frustration with current tools, especially Apple's Photos app. They felt that the app prioritizes a single continuous stream and Apple-defined categories over user-defined structure, which makes the sheer volume of items overwhelming. Retrieving specific photos was described as a hassle in cluttered libraries. While tools like Apple Maps and search were occasionally helpful, they were also perceived as inconsistent or only effective when users already remembered a key detail like location. Interviews confirmed that camera rolls are not just collections of cherished photos, but they are also filled with screenshots, temporary reference images (like dates, tickets, or recipes), and one-off items taken to share with others. These temporary photos often linger long after their usefulness has expired, adding to the noise.

When participants talked about meaningful photos, they almost always pointed to images involving other people and memorable settings, such as trips, special events, or moments from major life transitions. Meaningfulness was strongly tied to the stories that could be told about a photo, the people in it, the place, and how it captured the vibe of a particular time. At the same time, participants acknowledged that not all pleasant or aesthetic images truly mattered in the long run. For example a series of cityscape shots might contain a few photos that genuinely evoke memories, while the rest feel superfluous as a set. A small number of items, like a screenshot of an inspirational quote, also carried personal meaning, but even these were seen as potentially temporary.

These insights led directly to our design implications. First, we concluded that any successful system must help users remove obvious noise like screenshots, throwaway shares, and short-lived informational images before asking them to make harder judgments about meaning. Second, we recognized that meaningful photos are best surfaced through their connection to stories, people, and events, not just through abstract metrics like file size or recency. This drove us toward a flow that separates curated from uncurated content, uses AI and metadata to detect likely noise, presents small, manageable batches of photos, and groups images by people or events so users can choose the most meaningful among shots.

Method 4: Interview Analysis - Affinity Diagramming via FigJam

For analysis, we chose affinity diagramming in FigJam over full coding in Atlas.ti to balance depth with time constraints. After listening to recordings and cleaning up the notes, we transferred key statements and observations into FigJam, then grouped them into clusters representing shared themes. These clusters captured patterns that we turned into a written insight document that fed into persona creation and early design decisions. This method's positive impact was in making the qualitative data actionable. By visually clustering comments, we moved from scattered anecdotes to coherent themes that directly informed features such as addressing screenshots and low-value content and providing ways to lean into stories and emotions rather than pure deletion. The process clarified user needs and frustrations enough that the design team could confidently prioritize certain flows over others. A neutral outcome of this choice was that working from notes (instead of line-by-line coded transcripts) sometimes led to higher-level themes rather than very fine-grained nuance. While this level of detail was sufficient for our project's scope, it may have glossed over rare or subtle perspectives. The main negative tradeoff was that by not fully coding in Atlas.ti, we sacrificed some methodological rigor and might have missed cross-participant patterns that only show up through systematic coding. However, the time saved allowed us to move into prototyping while the insights were still fresh.

Method 5: Multifidelity Prototyping - Sketching and Figma

Multifidelity prototyping allowed us to translate insights into tangible interfaces in a staged way. We began with hand-drawn sketches to explore different flows. These sketches helped us reason about layout, navigation, and key

decisions without getting caught up in visual details. Once we had early validation through low-fidelity prototypes, we moved into high-fidelity Figma screens with defined components, visual styling, and consistent iconography for usability testing.

The main positive result of this method was speed and flexibility: we could discard weak ideas and refine strong ones quickly, ensuring that the high-fidelity prototype reflected considered design decisions rather than first drafts. This staged approach also made it easier to align the team, because everyone could see how concepts evolved from sketches to interactive flows. Neutrally, some aspects like AI-driven clustering or automatic detection of certain photo types, remained conceptual and were only simulated in the prototype, which meant that user feedback focused more on interaction and comprehension than on actual algorithm performance. On the negative side, this limitation occasionally made it harder for participants to fully imagine how the tool would behave at scale, and some concerns about speed or accuracy could not be meaningfully tested within our prototype environment.

Method 6: Design Interview - RITE Method

Using the RITE method with paper prototypes allowed us to compare two conceptual flows and quickly uncover where the design was working and where it was confusing. In the first flow, participants responded positively to several elements. Two of the three users appreciated seeing storage and photo count information on the home screen, which made the value of the app feel more tangible. The iconography itself was delightful and self-explanatory for most participants, and one user specifically noted that the small prompts above each photo helped them remember why an image mattered. The presence of a “maybe” option was also well-received, because it gave users a way to defer difficult decisions and revisit borderline photos later. The gamified summary at the end of a session, showing how much storage they had freed, reinforced a sense of progress and satisfaction.

At the same time, this first flow exposed several sources of confusion. Inconsistent icon labels across screens (e.g., “Yes/Meh/Nope” in one place and different wording elsewhere for the same actions) made users hesitate, and one participant explicitly called this out. The home screen options “Start Curation,” “Quick Recap,” and “View Meaningful Moments” were also not clearly differentiated, leading at least one user to click into “View Meaningful Moments” when they were actually trying to access the main gallery. Cleanup modes overlapped conceptually as well, for example, “obvious noise cleanup,” “event-based review,” and “meaningful curation” all seemed to do similar things, and one participant chose a noise-cleanup option even when instructed to focus on meaningful memories. These reactions suggested that the conceptual model of multiple modes was not yet clear, and that users did not always understand the consequences of choosing one path over another.

The design changes emerging from this flow centered on clarity and guidance. We identified the need for consistent iconography and clear, action-oriented labels to reduce cognitive overhead. We also saw opportunities to improve the icons visually, making them more expressive while ensuring they remain consistent throughout the app. Participants’ questions about what “meh” meant and where such photos would go led us to propose lightweight onboarding or info pop-ups that explain what each action does and how the swipe model works.

Another suggestion was to add a thumbnail strip next to the main image while swiping, so users could compare similar photos and maintain context within a batch. More broadly, we recognized that the home screen needed fewer, clearer options and that “meaningful” versus “event-based” curation might be better presented as sub-flows rather than competing entry points.

The second flow produced a somewhat different set of insights. Participants found the favorite button intuitive, and the overall system became easier to use as they interacted with it, confirming that the flow was learnable with a short warm-up period. Automatic grouping of photos such as clustering food photos or location-based sets was particularly appreciated, as it aligned with how users naturally think about events and categories. However, several aspects of the interface still caused confusion. Users were unsure what the initial number on the first screen referred to when asked how many photos they wanted to go through; one person even wanted a smaller set than the default, which suggested that scoping the session by count may not match users’ mental models. Inside the

grouped gallery, two participants were unsure where to click to move forward and had trouble interpreting the circle and star icons. Multiple users were also puzzled about why favorited and non-favorited photos were combined in the same group, which blurred the distinction between “meaningful” and “regular” images.

Proposed changes for this flow focused on strengthening structure and feedback. We identified that separating favorites into a distinct group could reduce confusion and better reflect users’ expectations that special photos live in a different space. Participants’ desire for more direction led us to recommend clearer instructions and on-screen guidance, as well as making prompts more visible, since many users missed them despite finding them helpful when they did notice them. Finally, we noted the need to more clearly communicate “what happens next” after users finish a batch so they understand the outcome of their actions and the next step in the process.

Across both flows, the discussion highlighted several methodological constraints and broader design implications. We only tested with three participants, so we treated our findings as qualitative rather than relying on time-on-task or scoring metrics. The paper-prototype, Wizard-of-Oz setup introduced limitations in immersion and consistency i.e. different groups sometimes experienced slightly different handling when they strayed off the intended path, which we accounted for when interpreting the data. We also recognized that the two concepts embodied slightly different goals, one leaned more toward meaningful decluttering, the other toward meaningful curation and album building, which influenced how participants perceived and evaluated them. Even so, all participants were satisfied with the set of photos that resulted from the more decluttering-oriented model, suggesting that users can feel good about outcomes even when the conceptual framing differs.

Taken together, the RITE sessions gave us a prioritized list of changes. At the highest priority, we need consistent icons and labels, simpler and clearer home-screen navigation, better explanations of what actions do, and a reduction in overlap between modes. We also want to keep and refine features that participants liked e.g. automatic grouping, the “maybe” option, and gamification ending, while incrementally adding distinct favorites sections, and optional advanced grouping for blurry or duplicate photos in future iterations. These insights directly informed how we redesigned the high-fidelity prototype and clarified where our product should sit on the spectrum between “storage cleaner” and “meaningful memory curator.”

Method 7: Usability Testing - Task Completion and SUS

High-fidelity usability testing gave us a clearer picture of how the prototype works in practice and how users understand (or misunderstand) its core concepts. AI usage was not problematic. Some participants did not even register it as AI, as the app just grouped it by event, which is far under the scope of what AI is capable of. When asked about our app sorting by people, one participant said that they would simply think of it as similar to Apple Photos.

The task at hand asked people to curate photos by meaningfulness, but users still struggled. 2 participants clicked quick clean up first. There must be more clear text.

Prompts were helpful with 2 main caveats: they had to align with the mental model, and they had to be aware of the prompts. One user remarked that “some photos were good, but don’t necessarily mean a good memory.” Another user found them to be helpful, but assigned photos that were aesthetic to “not sure.” The same participant noted that the prompts were unnoticed after a while, because they were static. One participant didn’t notice, but said they would’ve been helpful.

However, other participants did say it aligned with their goals, and helped them identify what was meaningful to them. They thought of them as “reflective” and “makes me think of old memories”. One participant stated that the prompts were grounding and a reminder.

Regarding the organization of events, users thought it intuitive. It matched their mental models, with one participant saying “it was well organized and easy to find”. after they had got to the events page, they generally did not have an issue choosing the correct category. In terms of albums, one participant lauded the autonomy it

gives them. However, it is unclear whether some participants understood that these albums were the same as the events based organization, because they sometimes didn't designate it to a certain album, as the prompt required.

Since all three tasks were different, it's hard to say whether it was learnable. The lowest average on intuitiveness was the second task. Participants' feedback suggests that the curation feature has potential but is not yet clearly understood. Several participants (for example, P2 and P4) said they could see how the system might help them manage and select photos, but they were not always sure what the feature was doing or how it supported their decisions. A few people mentioned that they would need clearer guidance or examples to really understand how this tool makes curation easier for them. This shows that the core idea is strong, but the value is not fully visible to users yet.

The voting buttons were another area where reactions were mixed. Some participants found the buttons simple and liked having a quick way to approve or reject photos. However, others said the buttons were confusing or too small, and they were unsure what their votes actually changed in the system. A couple of participants pointed out that they could tap the buttons, but they did not know how those actions affected the final curated set.

When talking about the overall intuitiveness of the interface, participants again shared both positive and negative experiences. A few people felt that once they explored the screen, they could figure out what to do without much effort. At the same time, others reported struggling with small icons, limited labels, and not enough direction about what to do next. For example, one participant noted that they were unsure which step came after voting, while another said they needed more visual guidance through the process.

Participants also offered several concrete design suggestions. They asked for larger icons and voting buttons, clearer labels, and more consistent spacing between elements. Some participants wanted the layout to feel more like a simple gallery, where it is obvious what to look at first and how to move forward. Their suggestions focus less on changing the underlying idea and more on improving how that idea is presented on the screen.

Finally, the term "meaningful" caused noticeable confusion. Some participants did not understand what "meaningful" was supposed to represent in this context—whether it meant emotional importance, photo quality, or something the system was calculating on its own. One participant explicitly said they felt confused by this label, and others seemed unsure how to apply it when making decisions.

Discussion

Overall, this project can be considered a success and both our goals were achieved. Through user interviews, we successfully identified users' mental models relating to meaningfulness. We realized that users are often seeking to curate photos that elicit memories, even if it is subconscious. We gave structure to this abstract process of extracting memories. Through design interviews, we were able to hone in successful elements. We used our results from this to inform our hi-fi prototype and create a CTA model. We framed the prompts as questions, and the buttons as a response. Through usability testing, we found further tweaks, such as information to alleviate initial confusion regarding the process, and a more prominent prompt.

Looking back at the full project cycle, one area we would approach differently is the structure and timing of our early research. Our interviews were insightful, but the lack of participant pool limited our sample diversity and forced us to recruit through convenience sampling. This constrained the range of behaviours and mental models we were able to uncover. Similarly, our lo-fi testing relied on Wizard-of-Oz setup that was time-intensive and inconsistent across participants. With more preparation time, we would've created a more controlled and stable low-fidelity prototype to reduce variability in moderator behaviour and allow users explore more freely.

We also would have refined the home-screen entry points earlier in the process. Much of our redesign stemmed from confusion during Round 1, which could have been easily anticipated if we conducted a small concept test before the usability testing. Finally, we would have added more quantitative measures earlier - so that Round 1

could better inform comparisons with Round 2. These changes would have streamlined our process and strengthened the clarity of our insights.

Due to the sensitive nature of holding participant data and time constraints, we weren't able to test prototypes with photos from participants' own library. This would require IRB permission. While we did alleviate this by giving detailed scenarios for users to immerse themselves in, this was still a major limitation. Further studies should emphasize the use of participant photos.

There are many opportunities for future development with the Memento app. A significant opportunity lies in better coordinating the AI-driven components, such as automated grouping, event recognition, and contextual meaningfulness prompts. Our evaluation showed that participants found these promising but needed more transparency and consistency. Future work could explore how to calibrate AI suggestions to user's evolving preferences or allow users to fine-tune the prompts and grouping logic.

Additionally, album creation and long-term photo organization emerged as areas needing further testing. Participants understood the flow but indicated that batch-moving and bulk-management features would improve usability. Finally, a longitudinal study- observing how users create over time rather than in a single controlled session- would help to understand whether our app supports lasting behavioral change, reduces cognitive load, and encourages ongoing engagement rather than one time cleanup sessions.

Conclusion

We set out to understand how people curate their photos and to design a tool that can support meaningful decision-making. Our research found that users find meaningfulness through memory, context, and emotional relevance. Through user interviews, prototyping, and usability testing, we shaped Memento into an experience that supports more reflective curation through our guided prompts and photo groupings while still allowing user freedom.

The results validated our design direction as users responded positively to the structure we provided, and they appreciated the interactions that allowed the curation process to be more intentional and manageable. Although we were unable to test with personal photos, our application still delivered a strong framework to support meaningful curation.

Looking ahead, the next stage for features should include building adaptive content-aware prompts, improving bulk-management capabilities, and evaluating how users engage with the app over time. These additional steps will allow Memento to evolve into a full-fledged tool that helps people organize not just images, but memories and personal stories that matter the most to them.

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Appendix A: Interview (Research) Script

Research Questions

- What makes a photo feel meaningful (or not) to a person?
- What criteria do people use when deciding whether to delete a photo?
- What barriers prevent people from curating their photo libraries?

Intro	Hello, my name is [____], and I am a graduate student at DePaul University. Thank you for agreeing to participate in this interview. The interview involves questions about photo curation habits, as well as a walkthrough of a small selection from your photo gallery. I am working on a group project to conduct research in learning how people manage and curate their photo libraries, especially in an era where storage is less of a finite resource. We will use the insights from your interview to inform the design of an application meant to help users manage their photo libraries. The data we collect today will be used for our school project, and only our team will know your identity. Outside of our team, your identity will remain confidential. The purpose of this study is to gather insights from casual photographers who use their phone camera to capture memories. With this information, we can better understand which aspects users consider when curating their photo libraries. There are no right or wrong answers. Your answers will be kept confidential. Today's interview session should take approximately 45 minutes, without interruptions. Please refrain from using your cell phone during the interview. Give the consent form OR ask if they consent if sent prior to the interview. Do you have any questions before we start?
Warm-up and build rapport	Tell me a little about why you usually take photos. When do you take them (events, daily life, travel, etc.)? What kinds of things do you usually photograph?
Task scenarios	What prompts you to organize or delete photos? How do you feel when you try to clean or declutter your gallery? How do you usually organize or manage your photo library (if at all)? • How often? • When/ where? • Do you use any apps to help with this process? ○ (if yes) which apps and what do you like or dislike about that? • How do you decide whether a photo is worth keeping? • Are you satisfied with your photo library, and your curating process? ○ Why/why not? • How do you feel about the size of your photo collection overall (overwhelming, manageable, priceless)?

Contextual Inquiry	Please take out your phone and open your camera roll. Scroll to a small set of photos (10-20) that you feel comfortable discussing with us, from a recent trip, event, or just a week. • Are there any meaningful photos in this photo set? why or why not"? ○ (If yes) describe which photo feels the most meaningful to you. Why? ○ Are there photos you keep even if they don't feel meaningful? Why • If you were to organize or declutter these pictures, how would you do it?
Exploring Opportunity	• In an ideal world, what features would you want a photo curation app to have to make organizing easier or more enjoyable? • What features would make you trust or distrust such an app?
Wrap Up	• Anything else you'd like to share about your photo habits or memories?
Demographics	• What is your age? • What is your occupation? • What is your education level?
Closing	That concludes all the questions I have for you today. Do you have any final thoughts you would like to share or any questions that you would like to ask at this time? I really appreciate you taking the time to speak with me today. If there's anything further you need, please do not hesitate to contact me. I can be reached at [insert email].

Appendix B: Interview Analysis

Figma link for Interview Affinity Map: <https://www.figma.com/board/SHjjXeztzbITha20bci7MC/Interview-Affinity-Map?node-id=0-1&t=kFbYaEmZtVXwuY9f-1>

Appendix C: Persona

Persona

Name: Sarah

Age: 25

Gender: Female

Location: Chicago, IL

Profession: Digital-Media Coordinator



Scenario:

Gal uses her iPhone every day to capture her life. She takes photos of everything—friends, outings, and little moments she wants to remember. She also snaps pictures of practical things like doctor-appointment cards and event posters so she doesn't lose important information.

Over time, her camera roll has become huge and scattered across multiple photo locations. She knows she should curate and clean things up, but the idea of going through thousands of images feels overwhelming. Cleaning up photos only becomes a priority when she runs out of storage or starts getting constant "storage almost full" notifications.

Goals

- Get rid of similar, blurry, or otherwise extraneous photos
- Keep only the photos that remain meaningful over a longer period of time
- Reduce the mental effort it takes to manage and find photos

Motivations

- Limited phone storage pushing her to clean up
- Wants to find her favourite photos faster when she's reminiscing or posting

Behaviors

- Takes daily, casual photos primarily on her iPhone
- Relies solely on phone storage (no external drives)
- Uses photos as a quick capture tool for information (appointments, posters, etc.)
- Has images spread across multiple places/apps but is unsure how to organize or migrate them

Pain Points

- Decision fatigue about what to keep versus what to delete
- Overwhelming number of pictures makes it hard to even start curating
- Confusion about different storage/backup options and reluctance to pay for extra storage

Appendix D: Process Flow

[illegible]

Appendix E: Design Interview Script

Task	Imagine you have recently gone on a memorable trip to Florence, Italy with friends and are using a hypothetical app to help organize photos from the trip. Please use the app to choose the pictures you feel are meaningful and wish to keep.
Prototype 1 Questions	What do you think the Yes, Meh, and Nope did in the app ? Looking back, are you satisfied with which pictures were kept and which weren't? Is there anything (else) that was unclear?
Prototype 2 Questions	What did the 'favorite' button mean to you? Were you satisfied with the way the photos were grouped? Looking back, are you satisfied with which pictures were kept and which weren't? Was there anything else that was confusing to you? Would you like a "delete" option?
ASQ Questions (asked after each prototype)	For the following questions, please give a number ranging from 1-7, with 1 being strongly disagree Overall, I am satisfied with the ease of completing the tasks in this scenario. Overall, I am satisfied with the amount of time it took to complete this scenario. Overall, I am satisfied with the support information, (on-line help, messages, documentation) when completing the tasks.
Post-test Questions	What did you think the apps meant by "curate"? Which one do you think would be more successful in helping you identify meaningful photos? Which model was more intuitive to you? Why? Which model do you prefer?

Appendix F: Design Interview Analysis

Figma link for Design interview Affinity Map: <https://www.figma.com/board/yli7R3bnunqA4iioQ3FJyM/Affinity-Diagram?node-id=0-1&t=jzIBPNZdNnKz6sgO-1>

Appendix G: Priority Matrix

Feature / Change	Priority	Rationale	Evidence
Consistent iconography and clear action labels (Keep / Maybe / Delete)	High	Reduces confusion and hesitation	Inconsistent terminology noted by users
Simplify and clarify home screen options and navigation	High	Prevents early task errors and misclicks	Users selected unintended options
Add onboarding or info pop-ups explaining actions and outcomes	High	Improves learnability in first use	Users unsure where images go after actions
Clarify grouping logic and remove overlap between modes	High	Avoids redundant pathways	Event-based and meaningful modes perceived as similar
Include Delete action in grouped and single-image views	High	Supports decluttering in same workflow	Users wanted delete option readily available
Increase visibility and clarity of prompts	High	Prompts help decision-making when noticed	Some users missed prompts
Add thumbnail strip for context while swiping	Low	Improves comparison among similar images	Requested during testing
Separate favorites into a distinct group	Medium	Reduces confusion in grouped galleries	Users unclear why favorites mixed with others
Replace “choose number of images” with time/date-based selection	Low - Future	More intuitive way to scope the task	Users confused by image count input
Improve visual design of icons	Medium	Enhances clarity and recognition	Users enjoyed icons but noted inconsistency

Maintain storage-freed gamification feedback	Low	Motivational, already understood	Positive reaction during testing
Explore automated grouping for blur/duplicate/similar photos	Low-Future	Useful but higher implementation complexity	Suggested by users, not essential for MVP

Appendix H: Usability Testing Script

Intro	Hi. Thank you for joining us. I'm ____ and this is my colleague ____ . Today, we will be conducting usability testing of the photo curation app we are developing. We'll ask you to conduct 3 tasks aligned with the app's goals, and ask you questions after each one. We'll then ask you questions on your experience as a whole. We are aiming to see if our app resonates with its goals, along with seeking to find general areas of the app that could be improved. Therefore, no difficulty you experience is reflective of you, but instead of the app. Please share your honest thoughts about the experience. We won't take anything personally. We encourage you to 'think aloud' while completing the tasks. Just tell me whatever is going through your mind. If you're reading anything, maybe read it out loud. This allows us to gain insight on your thought process. It may seem unnatural but it will become easier as we proceed with the test. If we don't hear this, we will gently remind you. My colleague will be taking notes. I might direct you to a different part of the site or move you on to the next task but that's a part of the process. I'll send you a link of our prototype and ask you to share your screen. As a reminder, we will be recording the session. *Send prototype link* Have you looked over the consent form and do you give your consent? Do you have any other questions? Great, let's begin. I'll start recording now.
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Task scenarios	I will now give you a scenario to imagine yourself in to give the tasks context. Overall Scenario: Imagine you have just returned from a long anticipated daytrip to the Art Institute of Chicago and surrounding area. You went with 2 close friends you hadn't seen for a while, and got to spend quality time with them, all while experiencing world-class art. You use an app called Memento to help you curate your photo gallery based on meaningfulness. Task 1 You wish to meaningfully curate 10 photos from this trip right now. Please show us how you would navigate to the option that will allow you to do that in the app. Happy Path: Press 'Curate Gallery' Press 'Event-Based' Review Select '10' from dropdown menu Press 'Start Curation' Press 'Art Institute, Chicago' Task 2 Please use the app to categorize each of the 10 pictures as either meaningful, not meaningful, or wish to decide later. *Make Sure to note how the user goes about organizing photos: is it linear? back and forth?* *If user changes vote, ask them to unpress the other button, and mention how this is a limitation of the prototype* *Observe if the user notices prompts on top of each picture* Task 3 Please move the photos you designated as meaningful to an existing album called 'Day Out at Art Institute', and then finish the curation process. Happy Path: Select arrow in 'Yup' Click 'Move to Album' Select 'Day Out at Art Institute' Click 'Finish'
Follow up + clarifying questions	Task 1 What do you think about the automatic categorization of photos into albums? - Do you think they are conducive to how you go about organizing photos? Elaborate. In this set of pictures, there were two images that were very similar. How did you go about categorizing these images? Task 2 What did you think the purpose of the buttons "yup", "not sure", and "nope" were? How did you go about deciding the categorization of each photo? On each of the photos, there was a prompt asking, in some form, if the photo brings back good memories. What did you think of these? - Did these prompts influence your decision in any way while categorizing photos? Elaborate Task 3 What did you think about the steps you took to move the pictures into the album? All Tasks For the following questions, please give a number ranging from 1-7, with 1 being strongly disagree - Overall, I am satisfied with the ease of completing the tasks in this scenario. - Overall, I am satisfied with how intuitive the task was. Post-Test Questionnaire That brings us to the end of the tasks you will conduct. I'll now ask you some questions relating to your general experience. - How intuitive did you think the app was? - Our app used AI to group images, and to give contextual prompts on some of the images to help determine meaningfulness. What did you think of this? - Could you see yourself using this app? Would you recommend it to a friend who is looking for a photo curating app? - Do you have any suggestions?

<i>Wrap-Up</i>	That brings us to the end of the session. The insights we have gathered from you will allow us to improve on our app. Do you have other questions for us? Great, you can contact me if anything for any other question you have later. Thanks for your time.
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Appendix I: Usability Testing Analysis

Figma link for Usability Testing Analysis:

<https://www.figma.com/board/Idl1h7s70L0gHpnNR8S9q/Affinity-Map--Round-2?t=sk5JJ4xKelqviRVU-1>

Appendix J: Interactive Prototype

Prototype Links/Instructions

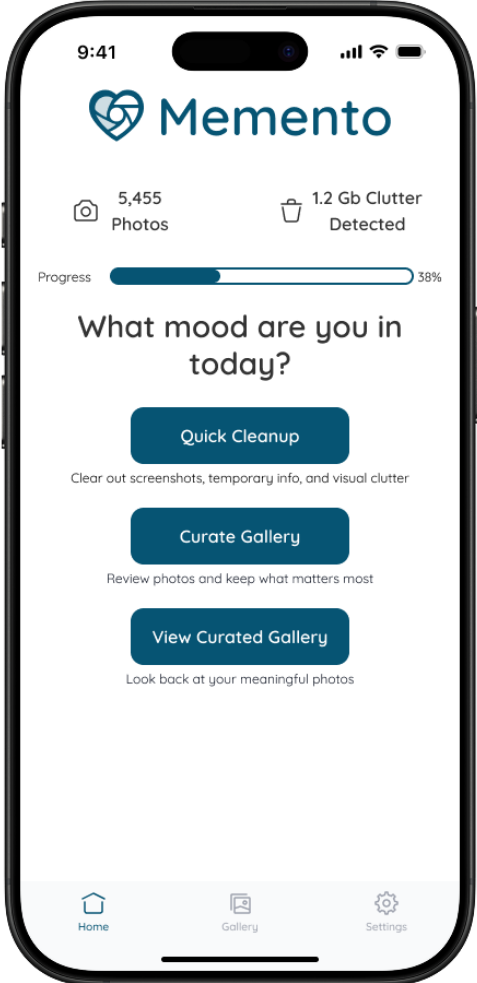
Prototype link: <https://www.figma.com/design/8UQWO4VrmgWwVqWOxVDcFi/Designs?node-id=456-2311&t=MLeFJS22CURWBHvX-1>

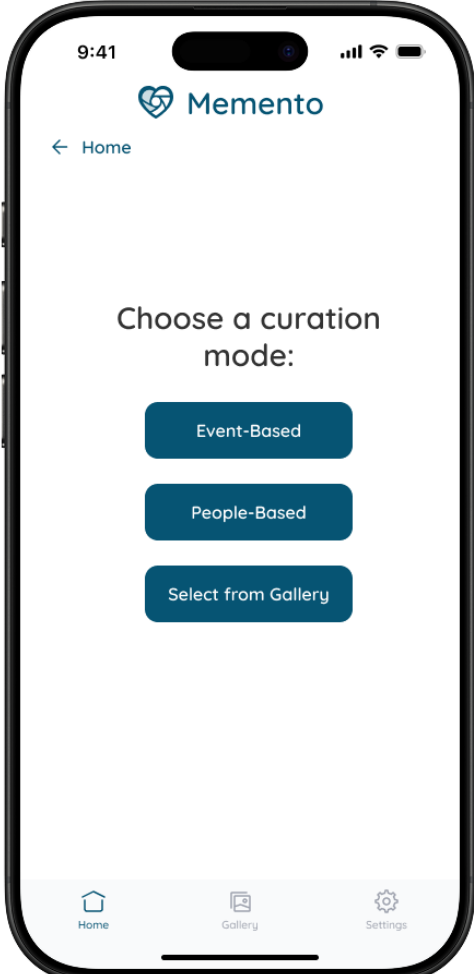
Prototype Instructions:

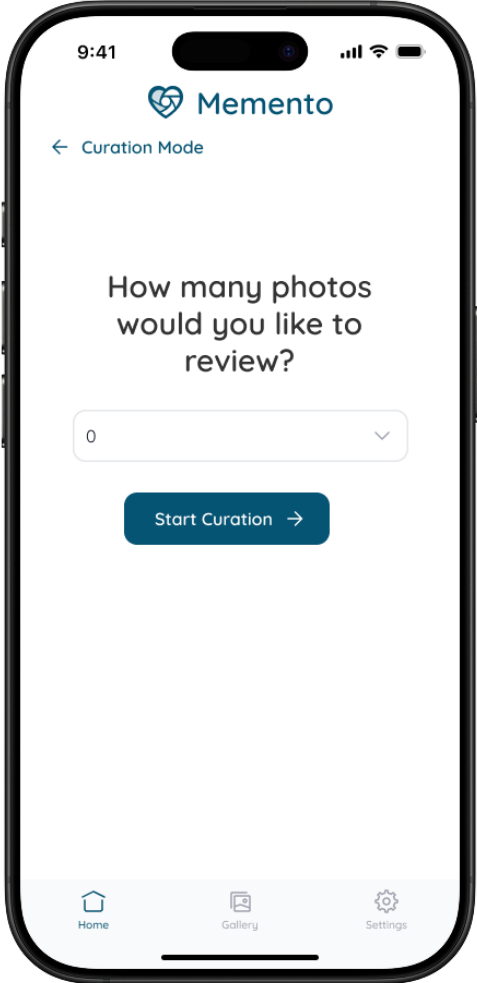
- From the home page, click “Curate Gallery”
- From the curation mode selections, click on “Event-Based Review”
- From the dropdown selection, click on 10 for the number of photos to review
- On the event-based review page, click on the “Art Institute, Chicago” album
- From the curation options popup, click on “Let’s Start”
- On the 10 curation pages, click one of the 3 categories, and use the arrows to navigate between the photos. Once all photos have been categorized, click “Review”.
- Click the arrow in the Yup category
- Select the photos and then click “Move to Album”
- Select “Day Out at Art Institute”
- On the review page, click “Finish”
- On the congrats page, click “I’m done for today” to return to Home

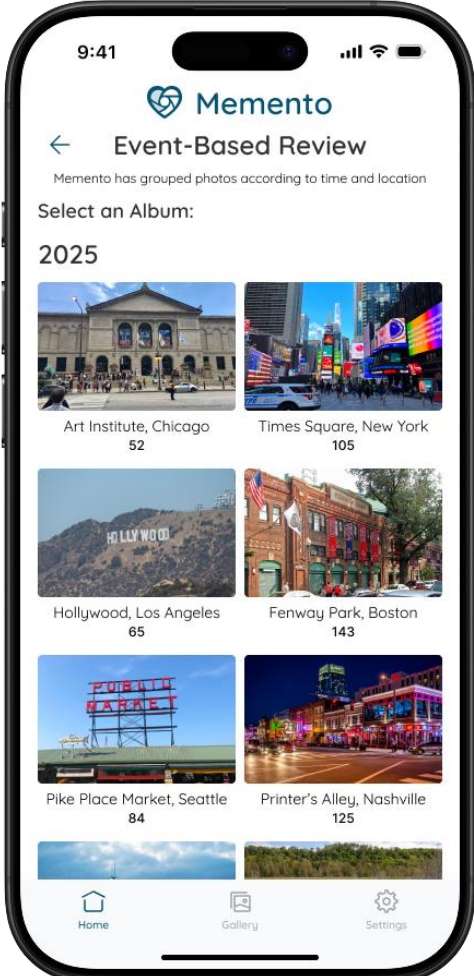
Prototype Main Elements

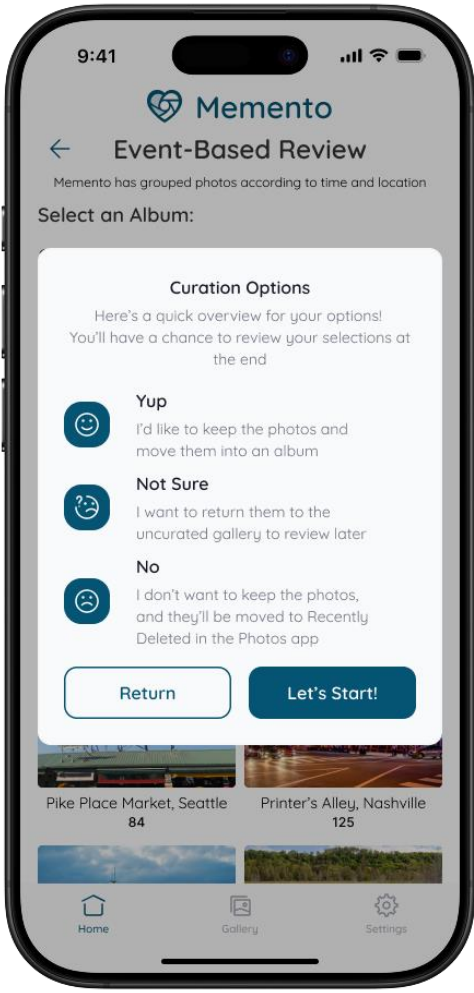
<i>Prototype Screen (number) or (name)</i>	<i>Annotations</i>
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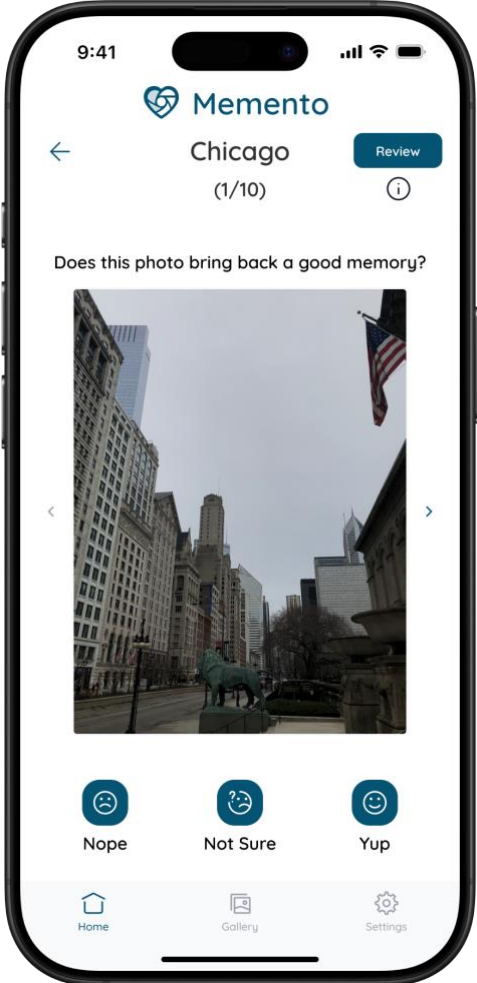
	Name - Homepage The home screen shows the app logo, total photos, and detected clutter, followed by a progress bar. Three main actions are available—Quick Cleanup, Curate Gallery, and View Curated Gallery—each with a short description. A bottom navigation bar provides access to Home, Gallery, and Settings.
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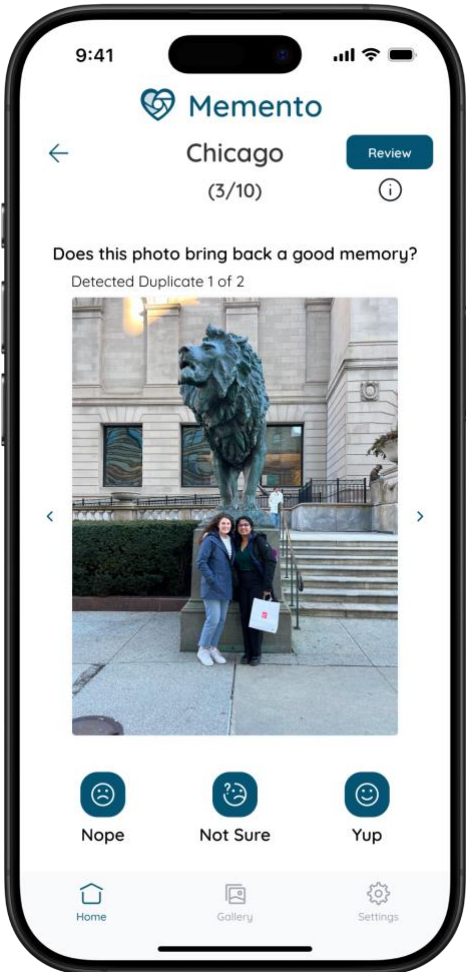
	Name - Curation Mode This screen lets the user choose how they want to begin curating. It displays three options—Event-Based, People-Based, and Select from Gallery—each presented as a clear button. A back arrow returns the user to the home screen, and the bottom navigation bar remains available for quick access to other sections. This screen lets the user choose how they want to begin curating. It displays three options—Event-Based, People-Based, and Select from Gallery—each presented as a clear button. A back arrow returns the user to the home screen, and the bottom navigation bar remains available for quick access to other sections.
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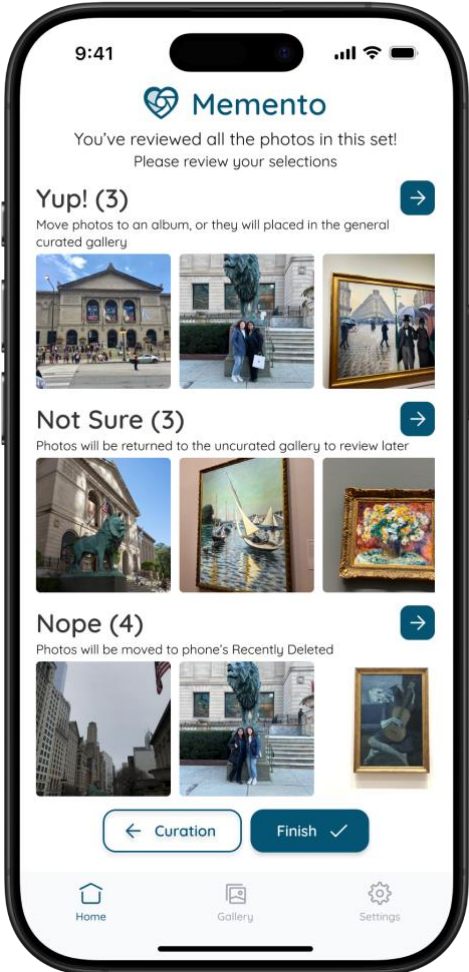
	Name - Number Selection This screen asks the user how many photos they want to review, offering a dropdown to select a batch size. A Start Curation button initiates the process, and a back link returns to the previous screen. The bottom navigation bar remains visible for easy access to other sections
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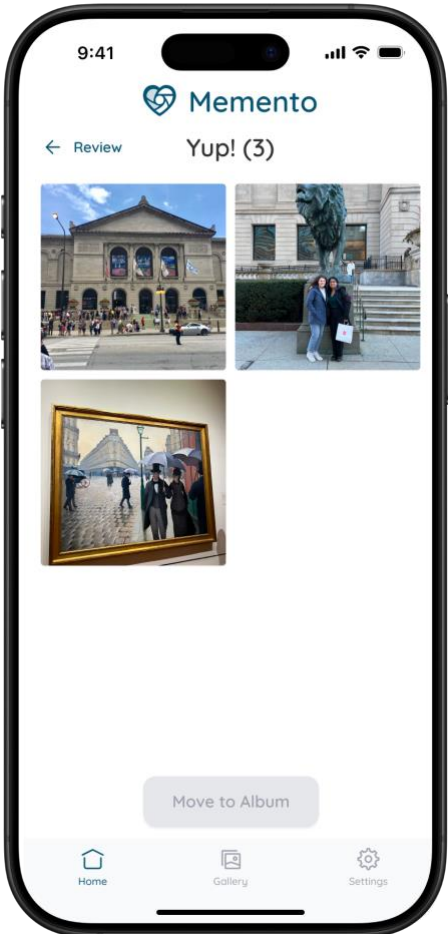
	Name - Event-Based Review This screen shows AI-grouped event albums organized by year. Each album appears as a photo thumbnail with a location label and photo count. Users tap an album to begin curation, while a back arrow returns to the previous mode selection. The bottom navigation bar stays visible for easy access to other sections.
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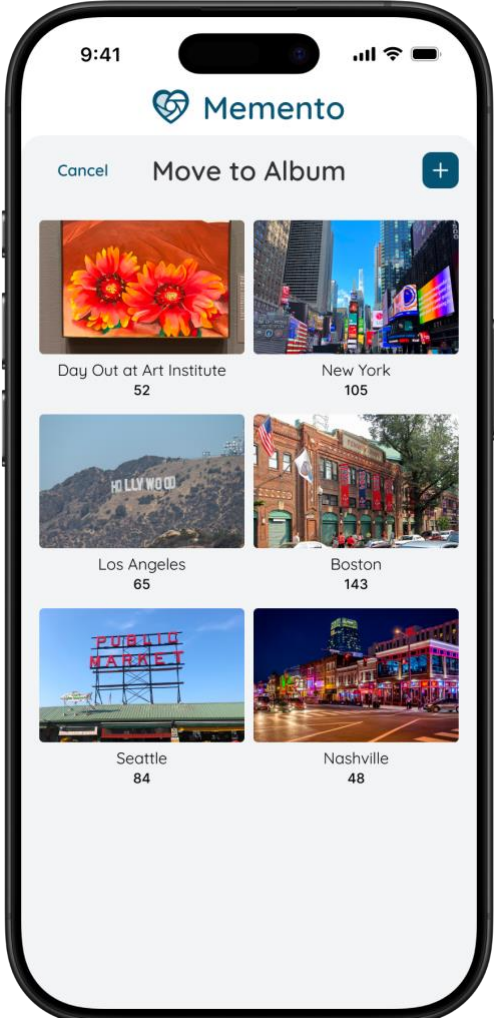
	Name - Event-based Review - Popup A popup explains the three voting options—Yup, Not Sure, and No—along with what happens to photos in each category. Two buttons allow the user to go back or begin the curation process. The rest of the screen is dimmed to keep focus on the popup.
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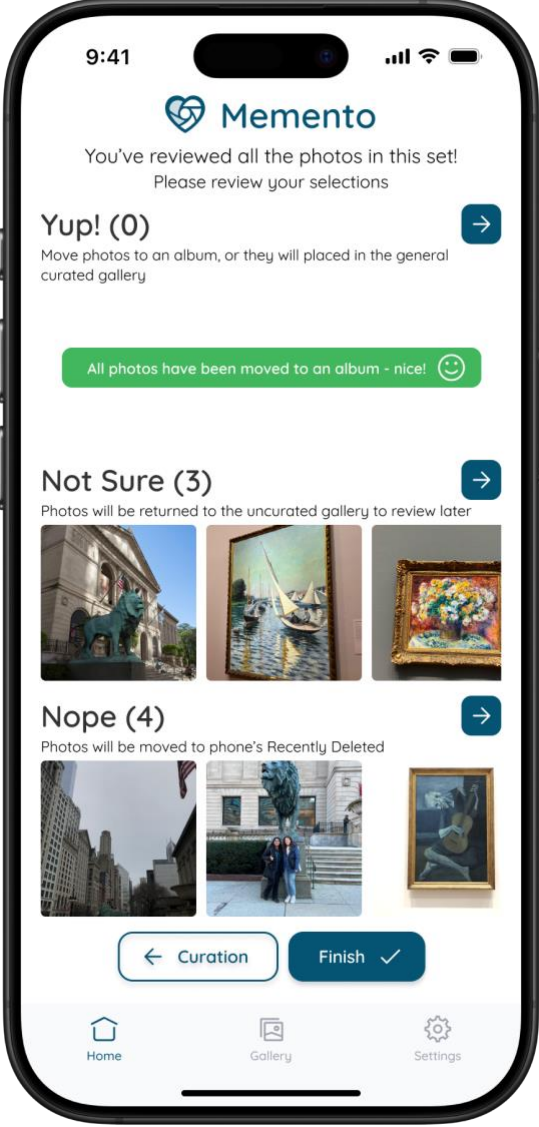
	Name - Curate - 1 Users would select from one of the 3 options and then use the arrows to navigate between the photos they have selected for that session. All screens are the same other than when a duplicate is detected, which is shown below
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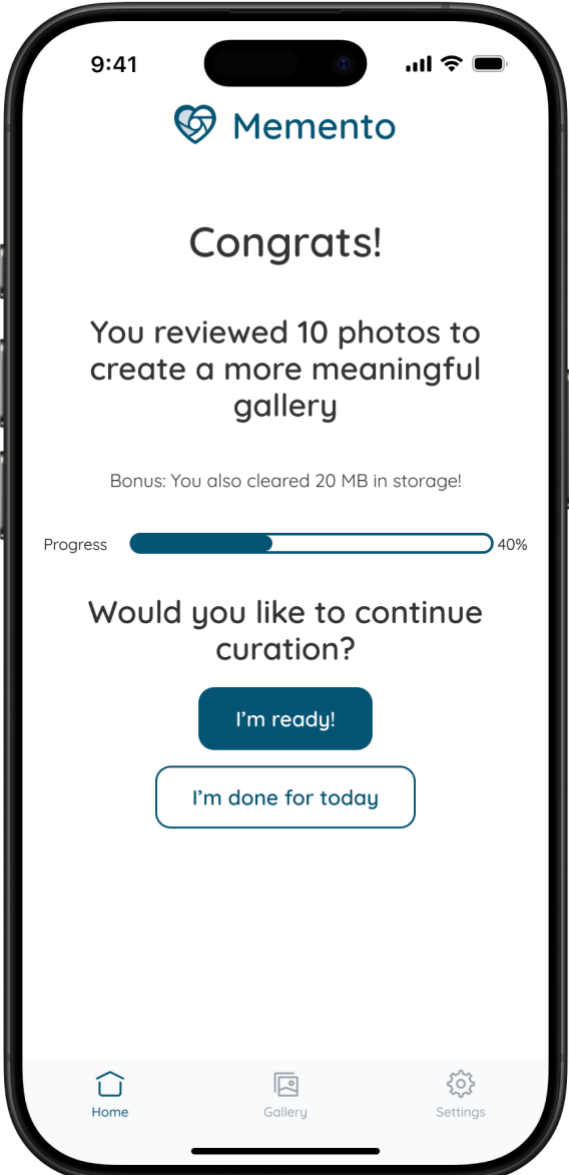
	Name - Curate - 3 We added a line about duplicates to help users make an informed decision when looking through photos
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	Name - MovePhotos From this screen, users can review what photos they placed into the three categories. They are also reminded of what each category does when finished In the Figma file, each category is empty because based on what is selected in the prototype during the curation, that is what is displayed in this frame.
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	Name - MovePhotos Yup - Unselected On this frame, users select the photos to then move to an album. Once again, in the prototype, the page is empty of photos since it is dependent on what photos were selected for this category during curation.
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	Name - Albums Albums is an overlay that displays over the MovePhotos Yup - Unselected when moving the selected photos to an album
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 The screenshot shows the Memento app interface on a smartphone. At the top, the status bar displays the time 9:41, signal strength, Wi-Fi, and battery. The app header features the Memento logo and the text: "You've reviewed all the photos in this set! Please review your selections". Below this, there are three sections for photo curation: Yup! (0): A section with a blue arrow icon. Below the title, it says "Move photos to an album, or they will placed in the general curated gallery". A green confirmation banner below this section reads "All photos have been moved to an album - nice!" with a smiley face icon. Not Sure (3): A section with a blue arrow icon. Below the title, it says "Photos will be returned to the uncurated gallery to review later". It contains three photo thumbnails: a blue horse statue, a sailboat on water, and a still life painting. Nope (4): A section with a blue arrow icon. Below the title, it says "Photos will be moved to phone's Recently Deleted". It contains three photo thumbnails: a city street, a person in a blue coat, and a still life painting. At the bottom of the curation area, there are two buttons: "Curation" with a left arrow and "Finish" with a checkmark. The bottom navigation bar has three icons: "Home" (house icon), "Gallery" (photo icon), and "Settings" (gear icon).	Name - MovePhotos - Moved Here, there is a confirmation that photos have been moved to an album from the Yup category. Users then click Finish to complete the process.
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 The screenshot shows the Memento app interface. At the top, the status bar displays the time 9:41, signal strength, Wi-Fi, and battery. The app logo 'Memento' is at the top. The main text reads 'Congrats!' followed by 'You reviewed 10 photos to create a more meaningful gallery'. Below this, a bonus message states 'Bonus: You also cleared 20 MB in storage!'. A progress bar is shown with the label 'Progress' on the left and '40%' on the right. The bar is partially filled with a dark blue color. Below the progress bar, the text asks 'Would you like to continue curation?'. There are two buttons: a dark blue button labeled 'I'm ready!' and a white button with a dark blue border labeled 'I'm done for today'. At the bottom, there is a navigation bar with three icons: 'Home' (house icon), 'Gallery' (photo icon), and 'Settings' (gear icon).	Name - Final This page signifies they finished the session. If they would like to do another round, they select "I'm ready!" Otherwise, "I'm done for today" returns to home
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