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ALIGNING 3D, A.R., AND A.I. TECHNOLOGIES WITH TRADITIONAL ARCHIVES TO ENHANCE OUTREACH TO LARGER CONSTITUENCIES: A CASE STUDY FROM THE FASHION INSTITUTE OF TECHNOLOGY-SUNY (NEW YORK, USA)

Abstract

Purpose: *The purpose of this article is to expose, explore, and highlight the three technologies noted in the article's title: 3D (specifically photographic capture), augmented reality, and artificial intelligence. The author will present her home institution's instances of each technology as a case study in their application, costs, and benefits.*

Methods / Approach: *The author conducted a scientific literature review and posed inquiries to expert colleagues to ascertain the current status of the relevant technologies' use in archives and adjacent settings.*

Results: *While specific examples of these technologies' use can be a challenge to discover, they do indeed exist. Their discovery, or lack thereof, might be due to under-promoted resources and/or services or perhaps a lack of awareness, education, and/or training. The author senses from the literature and her colleagues that a more exhaustive application of such tools and techniques will be inevitable for future archives practice.*

Conclusions/Findings: *The trajectory of technology's sophistication and its various applications are transforming the work of archivists the world over -- just as it always has. But archivists have proven themselves to be quite comfortable with, embracing of, and adaptable to change and today's and tomorrow's technology certainly should not pose a threat. In fact, technology can present countless opportunities, and really fun and engaging ones, to connect an ever growing and ever diverse researcher audience with ever changing and ever more dynamic archival content.*

Keywords: *Three-dimensional photography; artificial intelligence; augmented reality; outreach; user engagement.*

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ALLINEARE LE TECNOLOGIE 3D, AR E AI CON GLI ARCHIVI TRADIZIONALI PER MIGLIORARE LA SEPARAZIONE VERSO GLI AMBITI PIÙ GRANDI: UN CASO DI STUDIO DEL FASHION INSTITUTE OF TECHNOLOGY-SUNY (NEW YORK, USA)

Astratto

Scopo: *lo scopo di questo articolo è esporre, esplorare ed evidenziare le tre tecnologie indicate nel titolo dell'articolo: 3D (in particolare la cattura fotografica), realtà aumentata e intelligenza artificiale. L'autrice presenterà le istanze della sua istituzione di origine di ciascuna tecnologia come caso di studio nella loro applicazione, costi e benefici.*

Metodi/Approccio: *l'autrice ha condotto una revisione della letteratura scientifica e ha posto domande a colleghi esperti per accertare lo stato attuale delle tecnologie pertinenti ' utilizzo in archivi e ambienti adiacenti.*

Risultati: *sebbene esempi specifici dell'uso di queste tecnologie possano essere difficili da scoprire, esistono effettivamente. La loro scoperta, o la loro mancanza, potrebbe essere dovuta a risorse e/o servizi sottopromossi o forse a una mancanza di consapevolezza, istruzione e/o formazione. L'autrice intuisce dalla letteratura e dai suoi colleghi che un'applicazione più esaustiva di tali strumenti e tecniche sarà inevitabile per la futura pratica archivistica.*

Conclusioni/Risultati: *la traiettoria della sofisticazione della tecnologia e le sue varie applicazioni stanno trasformando il lavoro degli archivisti in tutto il mondo - - proprio come è sempre stato. Ma gli archivisti hanno dimostrato di sentirsi abbastanza a proprio agio con il cambiamento, di accoglierlo e di adattarsi ad esso, e la tecnologia di oggi e di domani certamente non dovrebbe rappresentare una minaccia. In effetti, la tecnologia può offrire innumerevoli opportunità, davvero divertenti e coinvolgenti, per connettere un pubblico di ricercatori sempre crescente e diversificato con contenuti d'archivio in continua evoluzione e sempre più dinamici.*

Parole chiave: *fotografia tridimensionale; intelligenza artificiale; realtà aumentata; sensibilizzazione; coinvolgimento degli utenti.*

KLJUČEVANJE 3D, AR IN TEHNOLOGIJE UMETNE INTELIGENCE V TRADICIONALNIH ARHIVIH ZA IZBOLJŠANJE DOSEGA VEČJIH KLJUČNIH SKUPIN: ŠTUDIJA PRIMERA IZ TEHNOLOŠKEGA INŠTITUTA FASHION OF TECHNOLOGY-SUNY (NEW YORK, ZDA)

Izvleček

Namen*: Namen tega članka je razkriti, raziskati in poudariti tri tehnologije, navedene v naslovu članka: 3D (natančneje zajem fotografij), obogatena resničnost in umetna inteligenca. Avtorica bo predstavila primere vsake izmed naštetih tehnologij kot študijo primera svoje domače ustanove glede njihove uporabe, stroškov in koristi.*

Metode/pristop*: Avtorica je opravila pregled znanstvene literature in postavila vprašanje strokovnim kolegom, da bi ugotovila trenutni status uporabe ustreznih tehnologij v arhivih in sorodnih okoljih.*

Rezultati*: Čeprav je konkretne primere uporabe teh tehnologij včasih težko identificirati, le-te dejansko obstajajo. Njihovo zaznavanje ali nezmožnost odkritja le--tega je lahko posledica premalo promoviranih virov in/ali storitev ali morda pomanjkanja ozaveščenosti, stopnje izobraženosti in/ali potrebnega usposabljanja. Avtorica iz literature in odgovorov svojih kolegov predvideva, da bo izčrpnejša uporaba tovrstnih orodij in tehnik v prihodnji arhivski praksi neizogibna.*

Zaključki/ugotovitve*: Sofisticiranost tehnologije in njene različne aplikacije že vrsto let spreminjajo delo arhivistov po vsem svetu. Toda arhivisti so precej zadovoljni s spremembami, jih sprejemajo in se jim prilagajajo, zato trenutna in prihodnja tehnologija zagotovo ne bi smela predstavljati grožnje. Pravzaprav lahko tehnologija ponudi nešteto priložnosti, res zabavnih in privlačnih, za povezovanje vedno večjega in bolj raznolikega občinstva ter raziskovalcev s spreminjajočo se in vedno bolj dinamično arhivsko vsebino.*

Ključne besede: *tridimenzionalna fotografija; umetna inteligenca; obogatena resničnost; ozaveščanje; angažiranost uporabnikov*

1. INTRODUCTION

When the author became the unit leader of the FIT Library's Special Collections and College Archives, she inherited about 375,000 works of art on paper -- these were some of the most beautiful business records readers can imagine. They took and still take the shape of fashion sketches and textile designs. Over the last circa sixteen years, the collection has grown to over 500,000 records documenting fashion and textile history from 1590-current day.

Her initial and an enduring question was and still is: how does she get these valuable research resources into the hands of as many people as possible? Other questions are how does she make them discoverable and how does she best advocate for their use?

This paper will describe and demonstrate a variety of approaches to answering these and other questions related to outreach and to archives user experiences.

2. METHOD

2.1. LITERATURE REVIEW

Beginning as early as the mid-1990s, academic libraries offered virtual access that was especially helpful for students who were more inclined to learn via computer (Epse, 2020, 26). Also noteworthy was the expanded outreach opportunities that virtual access would have for potential donors (Epse, 2020, 26). After a sustained, enthusiastic response across time and institutions, the practice of incorporating virtual access only gained momentum in the new millennium (Epse, 2020, 26).

The disciplines of archival science and archeology have shared various practical traits over time. The objects in the care of archivists and archeologists are aged, fragile, unique, and examined to better understand the history of human experience.

It is one thing to virtually visit an archives repository and yet another thing to witness an ancient site virtually to the effect that excavation work could be transformed. As early as 2014, Sanders discussed the notion of virtual heritage and the use of 3D technologies that could practically send a person into the past with as much reality as could be realized. Sanders also posited that such advancements

could be a paradigmatic shift in the field of archeology. Specifically, Sanders discussed REVEAL, a new software system that as of his writing (2014) was already "having an impact on dozens of excavations around the world" (Sanders, 2014, 30).

While technically a social media site, Historypin "focuses on creating collections or virtual tours by pinning images to a geographical location" (Williamson et al., 2015, 499). A research team at Sam Houston State University's (SHSU) Special Collections published content of maps via Historypin that were enhanced with pinned images of archival materials; this richly aided navigating content and storytelling. When archival materials did not have a geographical element, the project team elected to pin such materials to a location within the library. Therefore, one value of Historypin was that it "generated views to materials before the research phase" actually began (Williamson et al., 2015, 500). This practice, by extension, actually helps preserve materials in that researcher requests can be more precise and lead to their not asking for irrelevant contents.

As of 2015, archives had already begun to embrace Web 2.0 technologies as modes of outreach "to facilitate greater access to their collections" (Duff & Haskell, 2015, 38). The authors also discussed technologies that certainly encouraged user engagement with the archives such as "social media, gamification techniques, GIS interactives, mobile applications, and remixed archival photographs" (Duff & Haskell, 2015, 38).

Of particular interest to this author is Duff and Haskell's discussion of mobile apps that use Global Positioning Systems (GPS) that would "take advantage of push technology, where service providers send messages or alerts to users' mobile phones; the alerts are triggered by online software or a user's GPS location" (Duff & Haskell, 2015, 47).

Further, according to the authors, virtual tours and exhibits were beginning at the time of their writing to employ what was at the time "a new generation of mobile applications" (Duff & Haskell, 2015, 47). In addition, they discovered that such virtual technology projects telegraphed the "great potential of mobile computing as a unique and exciting learning tool" (Duff & Haskell, 2015, 47).

For example, Michigan State University has developed an app called msu.seum, mobile software that aggregates information about the campus of Michigan State

University and exposes the "scholarly narrative" of the history of the campus, including how archaeology has been conducted across the campus, through a virtual GPS-navigated tour. Museums have also used GPS technology in the creation of their apps to support user creation of customized tours of the museum, to facilitate wayfinding through different learning spaces, and to utilize social media technology (Duff & Haskell, 2015, 47).

In 2019, Norton et al's "Bridging the Digital and Physical: Increasing Engagement with the Grateful Dead Archive at UC Santa Cruz" identified the strengths of digital projects vis-a-vis aiding student scholarship, enhancing on-site exhibit experiences, engaging broader communities through online exhibitions, and promoting unique collections (Norton, 2019, 19). UC Santa Cruz's use of the software ThingLink helped participants to create a virtual 360° tour of a library exhibit space.[2] As one unintended beneficial result, the technology also helped the librarians to "preserve a record of a physical exhibit after deinstallation" (Norton et al., 2019, 19).

In "Sense of Direction: Embedding a Virtual Tour in Course-Integrated Instruction Sessions at an Academic Library," Epse emphasized the time-saving points of virtual access in academic library settings, saving time for all stakeholders including faculty, students, and librarians alike. As in-person tours can take as much as an entire class session, virtual tours can be available at the convenience of the viewer and can readily orient students who might not have visited an academic library before (Epse, 2020, 23).

Hall began her article, "Journey with Veterans: Virtual Reality Program using Google Expeditions," with the question, "Where would you like to go?" (Hall, 2020, 1). This is a most apropos question that reaches the heart of our purpose for employing such technologies. Hall emphasized how enriching it was for specific, disadvantaged user populations -- seniors and veterans -- to still have access opportunities, users that otherwise might not have the resources to visit physical collections or spaces of interest or relevance (Hall, 2020).

As recently as September 2023, in their article, "Integrated Framework for Virtual Tours and 3D Visualization of Cultural Tourism in Pattani, Thailand Based on WebGIS Platform," Sangmanee and Suwanwerakamtorn declared that „Virtual

2 https://guides.library.ucsc.edu/loveonhaight360

tours can be used as a publicity and learning medium" allowing users to browse for relevant content before committing valuable resources to visit a repository onsite (Sangmanee & Suwanwerakamtorn, 2023, 56).

2.2. EXPERT COLLEAGUE INQUIRIES AND COMMENTARY

The four professionals I interviewed for their expert opinions regarding the use of the highlighted technologies and their application for enhancing outreach to and expansion of archives users each have very different roles at the author's home institution of FIT-SUNY. Their expert commentary follows their names and titles.

Miyo Sandlin is an Assistant Professor/Librarian in Instructional Services/Student Engagement for the FIT-SUNY Library.

Augmented reality in library outreach still seems to be in its nascent phase. When I attended ALA in 2022 I asked a room of attendees how many librarians were using AR technology, about 30-50% raised their hands. However, when I asked how many were creating AR objects, only a handful raised their hands. I think this is the downside of creating augmented reality content, there seem to be a limited number of libraries using it. I don't see a lot of workshop opportunities at library conferences or case studies among our peer institutions, so there is a bit of a learning curve involved in teaching yourself. On the upside, the cost of creating AR is relatively cheap and free in most cases. Creating augmented reality filters used to involve a lot more coding and expensive software. Now however Meta Spark AR, allows you to create AR for Facebook and Instagram for free using a platform that is mostly drag and drop.

One issue we experienced with AR is that although our filters created for Instagram have a global reach, they may not find a natural audience with your local student body unless you promote them on campus. Our Instagram filters actually ended up becoming popular in Brazil and India but not widely shared by our campus community. This is still great news but doesn't fulfill our original goal of outreach among students. We had much more success using Zappar filters in a local on-campus exhibition where visitors to our gallery were actively using our filters to experience the exhibit both physically and virtually (Sandlin, 2024).

Amy Sperber is an Assistant Professor of Fashion Design at FIT-SUNY.

The strategic decision to incorporate A.I. imaging-enhancing technology in the enlargement of our exhibition posters stems from its commendable ability to elevate image quality and ensure preservation. The enlargement process with AI guarantees that the expanded images maintain a high level of fidelity, steering clear of common issues such as pixelation and preserving the original aesthetic. The integration of traditional archive images with A.I. technologies was pivotal in achieving large-scale presentation of historic fashion illustrations. Beyond enhancing the visual appeal for our audience, the utilization of A.I. significantly contributes to image preservation. The algorithms employed effectively counteract the degradation often associated with resizing, playing a crucial role in maintaining the authenticity and longevity of historical or valuable images showcased in our exhibitions. This not only enhances the viewer's experience but also aligns with our commitment to presenting captivating and enduring visual content (Sperber, 2024).

James Pearce is the Emerging Technologies + Innovative Technology and Digital Production Manager for FIT-SUNY.

As part of a larger initiative/strategy to help promote SPARC as a global resource for researchers beyond FIT, a 360 VR tour of SPARCs physical spaces (Rare Books, Periodicals, College Archives, Manuscript Collections, Reading Room) was proposed by SPARC leadership in 2022 (???). This 360 tour - also known as a „digital twin" - should allow users to easily navigate around the space freely, with interactive hotspots allowing for text description, external links, images, and video. FIT chose the Matterport platform to create and host this digital twin of SPARC. In considering which platform to build and host the SPARC 360 tour, FIT examined resource requirements and functionalities, as follows:

- Hardware capture (initial cost, ease of use of 360 cameras)

- Post production (ease of use and time required to „stitch" and editing multiple 360 images to create 3D walkthrough of entire space though bespoke software tools)

- Interactivity (ability to add hotspots to add localized information using a variety of media)

- Hosting (cost, ease of use - for both the content creator, and the end user - to host digital twin, via a web page, accessible from FIT's main site, to be viewed via desktop + mobile browsers, and common VR headset platforms).

In comparison with other existing 360 tour platforms, Matterport required the least amount of resources to produce the desired result, whilst checking all FIT's boxes for end-user ease of use and functionality. Whist Matterport has become the market leader in creating these 360 tours/digital twins for commercial real estate, there are an increasing number of use cases in higher education + research facilities, as the platform simply „works" with a minimum of fuss to create and host these interactive online spaces to help educate + promote their missions to wider audiences (Pearce, 2024).

Helen Lane is an Assistant Professor/Librarian in Instructional Services/Instructional Design Librarian for the FIT-SUNY Library.

A topic on everyone's lips in higher education is the way in which pandemic shutdowns affected teaching and learning for the long-term. That which technological advances made possible, Covid made attractive and practical. The boundaries between in-person and online learning, already blurred by extant and emerging technologies, have now more or less faded away. In fact, it might be more precise to say that they have melded together into what some are calling a HyFlex (hybrid flexible) modality of learning and engagement. HyFlex learning and engagement happens face-to-face and virtually, synchronously and asynchronously, all through the same points of access. In libraries such as ours, this HyFlex modality can be seen in the services we initiated because of Covid closures and have retained post-pandemic. Things such as research appointments by video conference, online book holds and self-checkout, remote and asynchronous library instruction, and an increasing reliance on digital textbook reserves.

Augmented Reality, Virtual Reality and 360° InteractiveTours (jointly known as Extended Reality/XR) have an important role to play in this HyFlex learning environment. These XR technologies offer the potential to simulate hands-on and experiential learning, as well as to facilitate play-based and collaborative inquiry free from physical constraints. Regardless of whether the XR is happening in a campus facility or remotely as part of an asynchronous online class or service, it can be a powerful tool for immersive learning. Something as straightforward as an interactive 360° tour of an archival collection can give students a sense of access and agency that few other online experiences can mimic. Provided that computing and internet are not an issue, 360° tours provide access with far fewer

logistical and social barriers than in-person tours often do. Librarians and archivists are familiar with being guides to self-directed learning and exploration. As such, I think we are uniquely positioned to harness the power of XR technologies to create learning experiences that are open-ended and encourage further inquiry and discovery.

Artificial Intelligence - both generative and predictive - also figures into the post-Covid higher education landscape. Unlike XR technologies, however, which easily adapt to and augment traditional learning and inquiry strategies, AI is a more disruptive force, meaning that we need to adjust our learning and inquiry strategies to it – not the other way around. Services such as Siri, Alexa and Google Assistant have long harnessed natural language and predictive AI to interpret a person's query and provide the "best" answer based on a myriad of factors. Such ready-answer services have had minimal impact on traditional library research methods but have definitely shaped the expectations of our patrons when they use our databases. For its part, generative AI, including ChatGPT and Midjourney, has the potential to change the very way we approach content production, undercutting past assumptions about what can be learned from the process of writing text or creating visual works. Generative AI is also playing a role in search and information retrieval and analysis. Microsoft Copilot and Perplexity are examples of generative AI tools which can produce long-form written content and cite popular and scholarly sources from the web, while tools such as Elicit, Research Rabbit and Semantic Scholar's Semantic Reader pose to revolutionize the literature review process.Seeing as how both predictive and generative AI intersect with the production and retrieval of information, role of librarians in teaching information literacy with regard to the use of AI for academic and creative work is paramount, as is their own technological professional development (Lane, 2024).

3. RESULTS

While specific examples of these technologies' use can be a challenge to discover, they do indeed exist. Their discovery, or lack thereof, might be due to under-promoted resources and/or services or perhaps a lack of awareness, education, and/or training. The author senses from the literature and her colleagues that a more

exhaustive application of such tools and techniques will be inevitable for future archives practice.

4. DISCUSSION

4.1. IN THE BEGINNING: ANALOG ASSETS

Reflecting back on her own institution, the author's operation is a generous circa 600 square meters in footprint. The three total vaults are state of the art in terms of environmental controls and materials are shelved according to domain; there are three domains, which are 1. manuscript collections; 2. rare books, periodicals, and audiovisual materials, and 3. the College Archives.

Each of the three vaults are maintained at 18 degrees Celsius and 45% relative humidity; both measures tolerate plus or minus three degrees or percentage points. These measures are standard for the industry in terms of archives consisting mostly of paper content.

Image 1: Original sketch from A. Beller Co. of a Chanel design circa 1917-1918. Courtesy of FIT-SUNY SPARC.

Image 01 is but one example from circa 500 manuscript collections of fashion illustrations; this collection dates from 1915 to 1929. These illustrations represent Paris couture business activity in part during WWI years - an extremely rare period detailing the evidence of couture fashion history. Parisian couture houses, such as Chanel, whose illustration you see above and who has rarified heritage collections, rarely have such a full record of fashion business activity for this time period.

4.2. HYBRID TIMES: ANALOG TO DIGITAL

FIT began to actively digitize analog assets in the late 1990s. At that time, it used proprietary software that quickly became obsolete for storage, retrieval, or both. In addition, originally, all digital assets were behind a firewall rendering the content only accessible to FIT community members with a current, official email address.

When the author arrived in 2008, she realized this made no sense regarding access policy given SPARC's analog holdings were accessible to anyone who made an appointment to visit the repository.

After years of advocating for an alternative, SPARC Digital[3] was born in 2017 to make right this policy and practice both of which are antithetical to SPARC's mission, which states:

Whether operating on-campus, remotely, or in a hybrid mode, Special Collections and College Archives (SPARC) fosters original research across and beyond the FIT community by acquiring, preserving, and providing universal access to primary research materials including College archival records. Unit materials include physical, digital, and 3-dimensional examples. All acquisitions support one or more curricula offered at FIT; our user community is as diverse as the content on our shelves, and all are welcome (Trivette, 2023).

3 https://sparcdigital.fitnyc.edu/

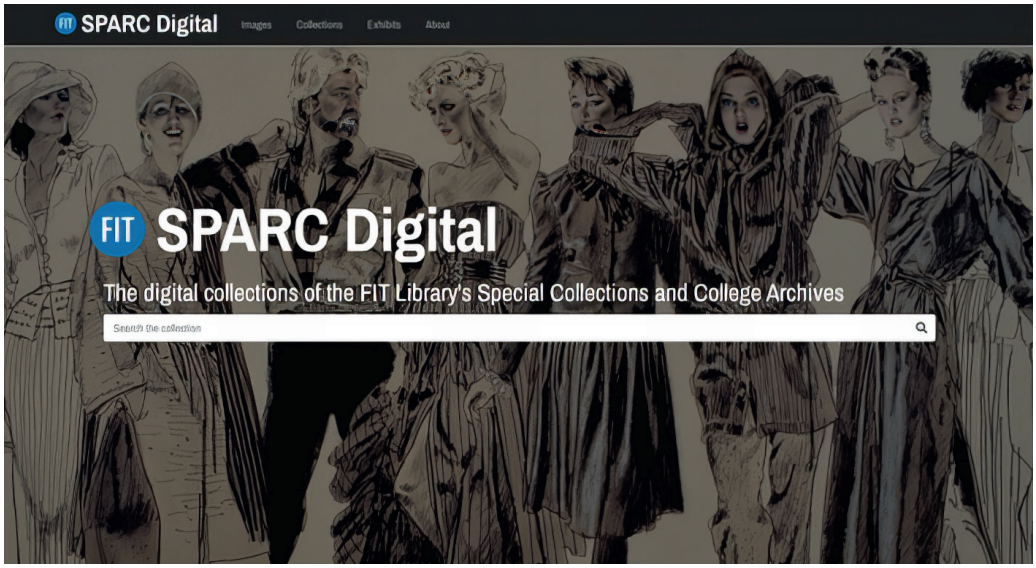

Image 2: The FIT SPARC Digital homepage. Courtesy of FIT-SUNY SPARC.

Originally built using Omeka software, SPARC has since upgraded to Omeka-S, which yields more customization vis-à-vis search operations and results. Today, SPARC Digital incorporates almost 9000 assets and it grows weekly. However, this total is the tip of the iceberg given SPARC has about ten terabytes of assets awaiting ingest.

4.3. HYBRID TIMES: ANALOG TO DIGITAL - 3D MATTERPORT TECHNOLOGY

Three-dimensional tours of spaces is not a new endeavor across the gallery, library, archives, and museum industries. However, it is certainly not used in mainstream practice regarding archives' secure vault spaces. That said, when one does a cursory Google search of 3D tours of archives vaults, there are several institutions that incorporate the revealing tools and practice. They include and are not limited to the United States National Archives and Records Administration (NARA),[4] the London Vault of HSBC (Hong Kong and Shanghai Bank Corporation),[5] the University of Arizona's Arizona State Museum's Pottery Vault,[6] and the Versailles Hall of Mirrors,[7] just to name a few.

4 https://museum.archives.gov/visit
5 https://history.hsbc.com/virtual-tours/virtual-tour-hq
6 https://statemuseum.arizona.edu/exhibits/virtual-reality-tour-pottery-vault
7 https://artsandculture.google.com/story/tour-of-the-hall-of-mirrors-palace-of-versailles/cAVRZn9TN5z7XA?hl=en

In circa 2005, as an archivist for the New York State Archives, the author visited NARA in Washington, DC. In its exhibition space, it offered various virtual experiences including a walkthrough of part of its premises normally off limits to visitors. It was so impressive that the author knew one day, she wanted to offer the same experience wherever she might be working in the future.

Fast forward to 2019; the author took that long-held memory of a repository walkthrough to FIT's Faculty Research Space [FRS] personnel. FRS explores and employs emerging and innovative technologies; its personnel is a tremendous resource not only for ideation but also for the execution of those ideas to fruition. In this case, they introduced the author to Matterport.[8]

Why would she go to such lengths? Her goal was in part to ultimately attract new researchers and to lure them to visit either her onsite repository and/or SPARC Digital. As a beta test, FRS personnel and the author tested the technology in the first of SPARC's three vaults. This vault holds circa 12000 rare book volumes, circa 700 rare periodical titles, and circa 6000 rare audio/visual materials.

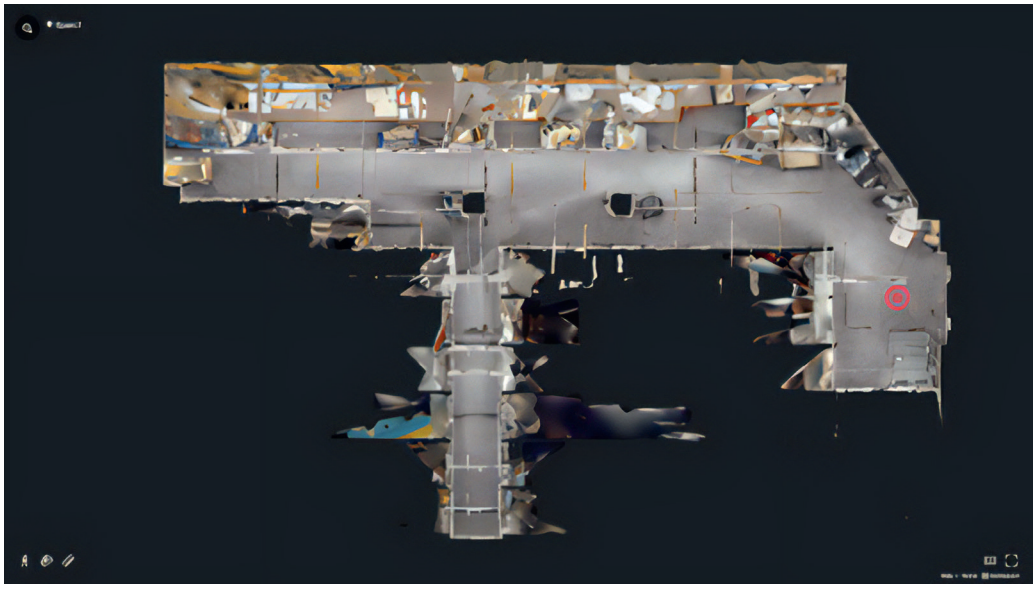

Image 3: Matterport Dollhouse view of SPARC Vault 01. Courtesy of FIT-SUNY SPARC.

8 https://matterport.com/

The beta test involved FRS personnel using a special camera to capture points that the author marked out in the space; she asked herself: what did she want people to see that they cannot or do not normally see due to security restrictions? Each point yielded a view into SPARC's space and with amazing zoom capabilities. The software created views so real, it were as if one were truly in the space and browsing the holdings as they sit on the shelves.

Image 4: Matterport view of range between two compact shelving carriages within SPARC Vault 0I. Courtesy of FIT-SUNY SPARC.

After seeing the results, the immediate sense was how democratizing this can be for researchers who might not have the resources to physically travel to relevant archives repositories. Another impression was recognizing that the virtual access could serve as a preservation measure. In such an environment, researchers would have the opportunity to engage with archivists to pinpoint exactly what is relevant for future consultation.

The beta test was very successful and the author looks forward to using this software in more strategic and programmatic ways throughout the SPARC operation's footprint.

4.4. INCORPORATING THE NEW: AUGMENTED REALITY

In addition to 3D photography, SPARC employs augmented reality to engage visitors in another truly immersive way. To achieve this end, it uses Zappar software and refers to the AR instance as the *Fitting Room*.

In the Fitting Room, visitors may "try on" or rather, insert themselves into sketched garments as depicted by historical illustrations such as in Image 07 below.

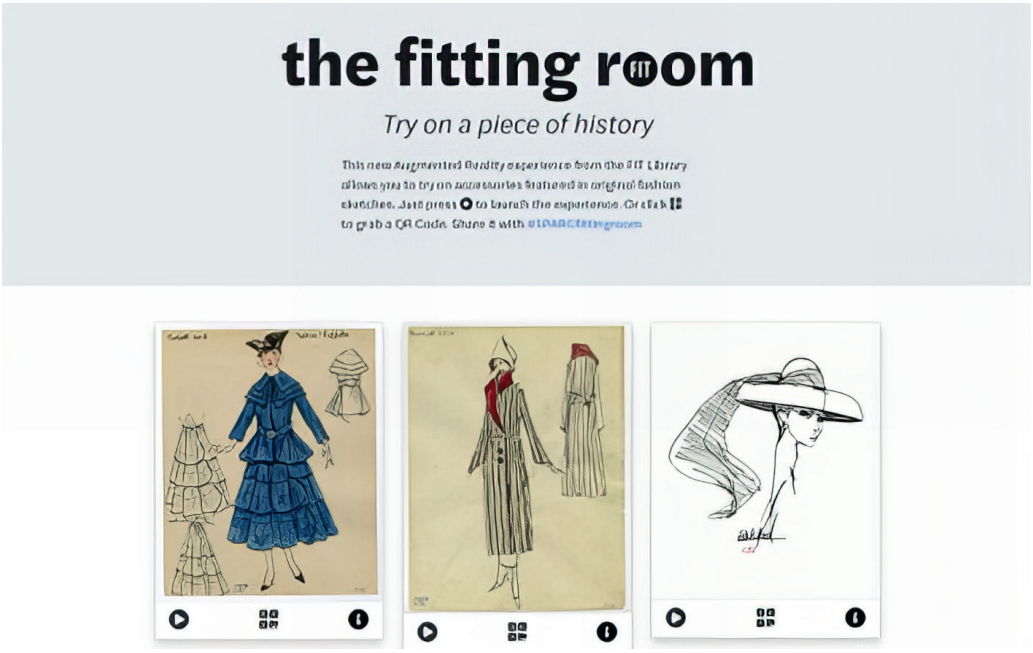

Image 5: The Fitting Room homepage. Courtesy of FIT-SUNY SPARC.

Once landing in the Fitting Room, visitors may select a garment illustration of interest and scan the associated QR code. When they have results on their devices, then they may share the resulting images with others via Instagram using the hashtags *#fitspecialcollections* and/or *#SPARCfittingroom*.

Images 6 and 7: Fashion sketch from A. Beller & Co. of a Doeuillet Coat, circa 1923 and a Fitting Room capture and display on Instagram. Courtesy of FIT-SUNY SPARC.

4.5. DEPENDING ON THE CURRENT: ARTIFICIAL INTELLIGENCE

Thanks to other, super intelligent and adventurous colleagues at FIT, SPARC welcomed artificial intelligence (AI) into its operations beginning the summer of 2023.

FIT began its ambitious AI journey with a test case using two tiny, 72 dpi jpeg images.

Images 8 and 9: Images courtesy of Daria Dorosh (2023).

These images were created to be symbols of a large-scale exhibition and to be the greeting images as seen on the street at 302 Seventh Avenue, New York, NY USA. However, exhibition planners needed the images to be much bigger in scale and they had no scalable master copy. The images' purpose was to lure passers-by to visit inside the gallery so the images would need to be much larger given the purpose and the installation area, which was a total area of 4.8 meters high by 3 meters wide.

Thanks to AI, planners were able to increase or upsize the thumbnail jpegs an exponential 800% with an increase to 8000 pixels on the short side. What were 72 dpi jpeg thumbnails were transformed into crisp, beautiful, and captivating banners, the first measuring 4.4 meters by 3 meters. The second image was also upsized and measured 2.5 meters by 1.5 meters to inhabit a proportionate area.

Image 10: First of two scaled images; created from 72 dpi jpeg file and transformed to a banner measuring 4.4m x 3m. Courtesy of FIT-SUNY SPARC.

FIT employed Hitpaw[9] AI software technology with the aim to achieve three initial goals:

1. To Improve Image Quality: Hitpaw's algorithms and machine learning techniques enhanced the quality of images as it automatically adjusted elements such as brightness, contrast, colors, and sharpness. It made the images more vibrant, clear, detailed, and in FIT's case, larger;

2. To Increase Time and Effort Savings: AI photo enhancing software automated many tasks that typically require high amounts of time and expertise. With Hitpaw software, one can achieve impressive results without the need for extensive manual adjustments. As such, the time and effort savings can certainly result in cost savings as well; and

9 https://www.hitpaw.net/photo-enhancer.html

3. To Enhance Accessibility and User-Friendliness: Hitpaw offered intuitive interfaces and easy-to-use tools such as presets, which allowed first-time users to enhance assets immediately (Hitpaw, 2023).

The aforementioned exhibition explored FIT founder Max Meyer‘s impact on the fashion industry through his role at Abraham Beller and Company, a women‘s coat and suit manufacturer in NYC. This is the business whose records were represented within this paper.

The exhibition highlighted the connection between the fashion business industry and FIT. It also showcased a significant materials donation that helped to build the Library‘s Special Collections and College Archives. Meyer‘s gift of over 8,000 Beller company sketches depicts renowned Paris couture from the early 20th century; they were featured and paired with actual garments from the FIT Graduate Fashion and Textile Studies program’s garment study collection; each garment was conserved by students and alumni of the masters program.

In a more traditional measure, the thirteen sketches represented in the exhibition are originally 20 centimeters by 25 centimeters. They were scanned as tiff files at 600 dpi or 6000 pixels on the long side, an archival standard. Eight of the thirteen enlarged sketches were assigned a QR code from the Fitting Room so visitors could virtually try on the depicted garments in real time and place.

Image 11: Installation view of the Beller/Dorosh exhibition at FIT. Courtesy of FIT-SUNY SPARC.

As mentioned above, in the late 1990s, FIT's digitization efforts were far from optimal. Although digitization standards were still in a formative phase, personnel either knowing standards or not decided to scan circa 1000 originals as .jpeg-born assets. As is well known now, jpegs are a lossy compression format meaning that information is lost or discarded each time the file is opened.

In the future, the author, and others at FIT hope to enhance these .jpeg-born assets via an AI batch conversion to scalable, lossless files rendering their use virtually limitless.

In a more traditional measure, the sketches represented in the exhibition are originally 20 centimeters wide by 25 centimeters high. They were scanned as tiff files at 600 dpi or 6000 pixels on the long side, an archival standard. The robust digitization allowed exhibition planners to print the images to scale at 1.5 meters wide by 1.8 meters high at or nearly lifesize.

In the background and above the central figure in Image 11, readers will see video footage from circa 1925 of Parisian ladies dressed in their fashionable finery. The colorization of the film was imparted with a different AI tool by a third-party contributor, which made the moving images come to life especially at night; the constantly looping films were completely enticing to people passing by on the street.[10]

Verbal reports from FIT security guards monitoring the area reported remarkably high numbers of visitors throughout the exhibition cycle of August 03 through September 10, 2023.

5. CONCLUSION

The trajectory of technology's sophistication and its various applications are transforming the work of archivists the world over -- just as it always has.

But archivists have proven themselves to be quite comfortable with, embracing of, and adaptable to change and today's and indeed tomorrow's technology certainly should not pose a threat.

Rather, technology presents countless opportunities -- and this author thinks really fun and exciting ones -- to connect an ever growing and ever diverse researcher audience with ever changing and ever more dynamic archival content.

10 Glamourdaze content can be seen at https://glamourdaze.com/1920s-fashion.

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SUMMARY

The purpose of this article is to expose, explore, and highlight the three technologies noted in the article's title: 3D (specifically photographic capture), augmented reality, and artificial intelligence. The author presented her home institution's instances of each technology as a case study in their application, costs, and benefits. The author conducted a scientific literature review and posed inquiries to expert colleagues to ascertain the current status of the relevant technologies' use in archives and adjacent settings. While specific examples of these technologies' use can be hard to discover, they do indeed exist. Their discovery, or lack thereof, might be due to under-promoted resources and/or services or perhaps a lack of awareness, education, and/or training on the part of the practitioner. The author senses from the literature and her colleagues that a more exhaustive application of such tools and techniques will be inevitable for future archives practice. The trajectory of technology's sophistication and its various applications are transforming the work of archivists the world over -- just as it always has. But archivists have proven themselves to be quite comfortable with, embracing of, and adaptable to change and today's and tomorrow's technology certainly should not pose a threat. In fact, technology can present countless opportunities, and really fun and engaging ones, to connect an ever growing and ever diverse researcher audience with ever changing and ever more dynamic archival content.

Typology: 1.02 Review Article