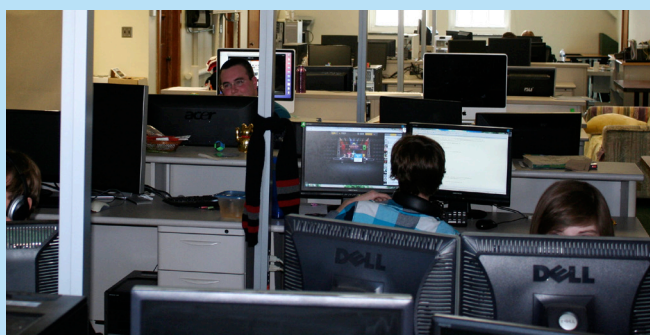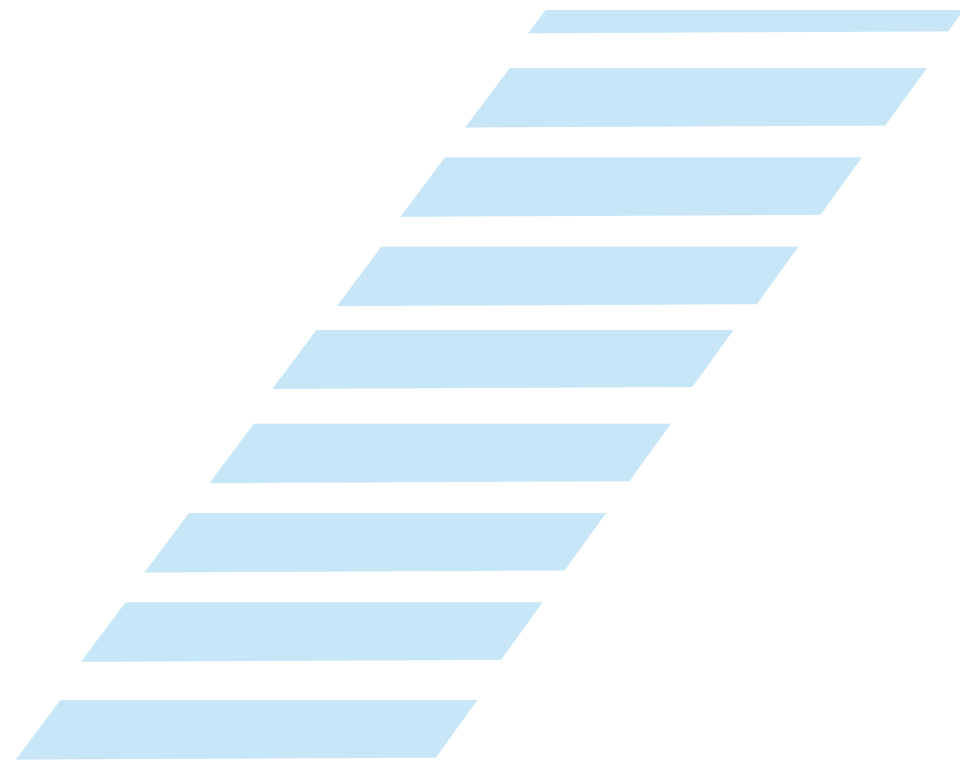# MATRIX

What is MATRIX?

MATRIX is a digital humanities center located on Michigan State University's campus, but our influence stretches around the globe. We have teamed up with international partners such as Africa, Brazil, and East Asia to preserve cultural artifacts through digital objects such as video, document scans, and 3D modeling. This enables us to share this content through public access and to build on that content, creating a unique and easily accessible experience. Much of the work done by MATRIX ultimately aids museums, researchers, and imperiled cultures. Due to the Center's strong open-access policy, most projects are completed with open-source, open-data software. This gives people and organizations without significant resources control over their own cultural assets.

In addition to producing and maintaining digital resources, MATRIX is also highly involved in training the next generation of scholars, especially those interested in programming, history, anthropology, and the digital humanities. More students are employed by MATRIX than by any other center on campus, and this work experience is especially beneficial to students who are hoping to go into careers in archiving or museums. Students gain hands-on training through projects such as the Quilt Index — a digital collection of metadata and images of quilts — and the Slave Database, a digital collection of the stories and histories of enslaved persons. Working at MATRIX means that students often come into contact with scholars in other disciplines and learn how to partner with people of different backgrounds to achieve interdisciplinary goals. With such a wide range of programs and opportunities, MATRIX alumni have gone on to do amazing work all over the country.

ALUMNI
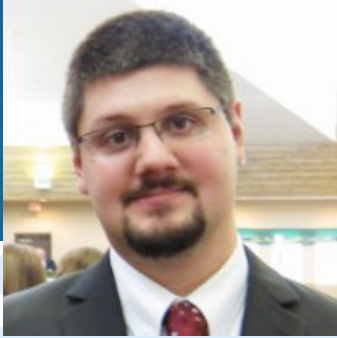
Brian Beck
Windows Core User Experience

Megan Anderson
Hr Generalist
Kellogg Company

After working for MATRIX from 2006 to 2009, Brian Beck is now a software development engineer on the Windows Core User Experience Team at Microsoft in Redmond, Washington. He credits MATRIX with helping him develop many skills valued by today's employers, such as working in teams, version control, and how to work with end users. His favorite part of MATRIX was the independence afforded to him by the management team. During his time at MATRIX he worked on many projects, including a redesign of the KORA data repository in 2008 –2009. This redesign helped to make a codebase that was faster, more compact, and more extensible. Although Brian says that there is a lot to love about his position at Microsoft, he especially enjoys knowing that his projects at Microsoft will have a widespread impact by improving the experience of millions of Windows users.

Megan Anderson worked at MATRIX for six years and believes that her experience there largely influenced where she is today. Megan is currently employed as a human resources generalist for the Central Region sales group with the Kellogg Company in Aurora, Illinois. Her duties include providing generalist support to portions of the field sales organization and developing strategy as related to talent, HR policies, and services. She helps to support approximately 2,000 sales associates in the Midwest with any HR issues or projects. Megan deals primarily with employee relations, recruiting and retaining top talent employees, and serving as a change agent to support the rollout of new projects and initiatives. MATRIX has helped to prepare Megan for her job by helping her develop skills in multi-tasking and learning to prioritize projects. She also learned a significant amount about data entry and project management from the projects she was involved with at MATRIX, such as the American Black Journal and the Quilt Index.
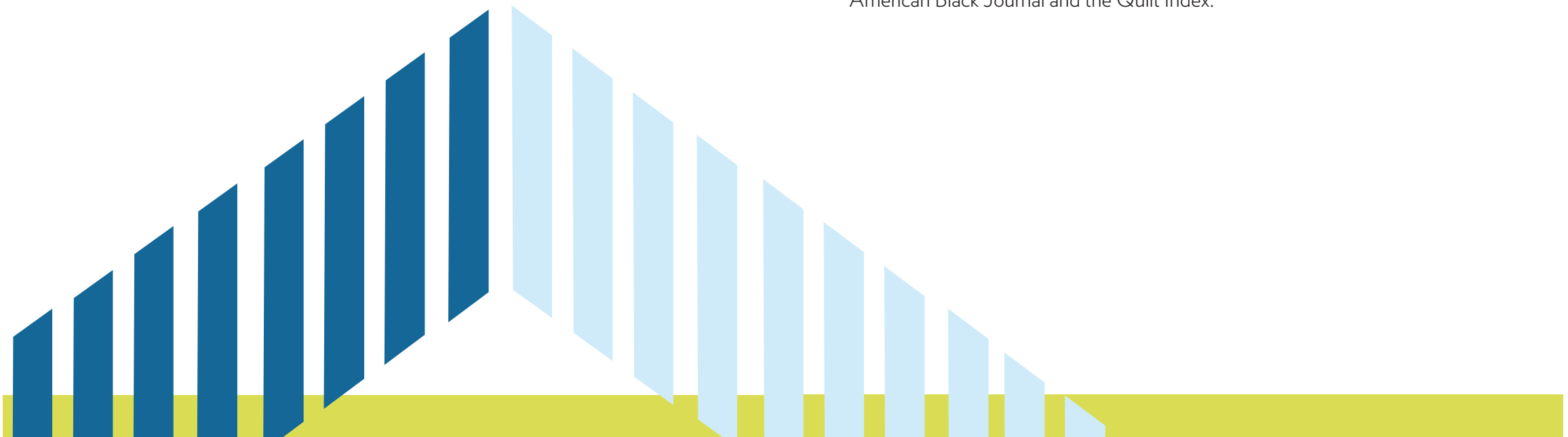
Steve Furtwangler
Software Engineer
Soar Technology

Brandon Furtwangler
HBO

Following his time spent as a graduate research assistant at MATRIX, Steve Furtwangler became a software engineer at Soar Technology, an Ann Arbor-based company focused on artificial intelligence research and application. At Soar, he is responsible for both designing and developing software. Steve also works for FourBros Studio, a company formed by Steve and his three brothers (also MATRIX alumni) that designs mobile games. Their primary project is Taptitude, a collection of over 75 minigames. Taptitude was originally released on the Windows phone, was recently released on the Android marketplace, and will soon be available in the Apple store.

At MATRIX, Steve was a software engineer, and later went on to become a research assistant. He worked on the backend of several MATRIX websites, including designing digital data repositories and creating tools to enable users to enter, maintain, and mark up media for the sites. Steve says that MATRIX helped him to prepare for his current job by teaching him how to budget his time while managing multiple projects. Although Steve worked on many projects during his time at MATRIX, he specifically recalls working on the Historical Voices project and the Quilt Index. Not only did MATRIX provide Steve with learning opportunities for his future, it also helped him develop relationships that led him to find more clarity for his future. "I made a lot of friends at MATRIX while I was in college, but it was also very cool to work with my brothers. We talked about what we were working on and bounced ideas off of each other a lot. I think we got along better than when we were younger, and it probably helped lead to us working together on other projects and eventually forming FourBros Studio," says Steve.

Brandon Furtwangler works for HBO (Home Box Office), designing and writing software for their digital product. His duties include streaming digital video to TVs, game consoles, and mobile devices. He was previously employed at Microsoft, where he worked on UI frameworks and Xbox technology. Brandon is also a part of FourBros Studio, a company he formed with his brothers. He and his brothers became experienced software developers while picking up hobby projects and making games in their spare time. At first it was just for fun, but became more after their mobile game Taptitude took off.

While working at MATRIX, Brandon worked as a software developer on several projects that were focused on digitizing various data sets. He helped create a data ingestion tool that was referred to as "the repository" and that later on became a more powerful tool that was called "project builder." Of his experience at MATRIX, Brandon says, "I loved working at MATRIX and still keep in touch with several of the people I met while working there. It was a great place for me to learn while I went to MSU, and the experience I got has paid off long term."

Nathan is one of the founders of FourBros Studio and works there full-time. He is in charge of overseeing the mobile games and is currently working on Taptitude. Nathan mostly does C# .NET programming for client game code as well as server side code for handling online features. He also spends a considerable amount of time acting as a support engineer for FourBros' customers. While working for MATRIX, Nathan was a programmer working with PHP and MySql server side code and also some front-end javascript/HTML code. He worked on various projects, mostly creating content repositories for digital preservation. He credits MATRIX with preparing him for where he is now because it gave him ample SQL and server side coding experience. It was also helpful for him to establish a working relationship with his brothers, which eventually led them to start FourBros Studio.

What made you decide to create FourBros studio?
"My brothers and I have been making small games and prototypes together for fun since I was in college and eventually we even released some games on Xbox Indie games (Zoomaroom and Wayne the Brain). This was all just for fun and as a way to get together every week. When Windows Phone came out with support for the same technology we used to make our Xbox Indie games we continued making games there but this time focusing on mobile gameplay and ended up deciding we wanted to make a bunch of smaller mini-games rather than a big game (as we thought this matched the mobile game experience better where people may only feel like playing a game for a few minutes at a time). This eventually turned into Taptitude and grew into a collection of dozens of minigames. As we began to monetize it through in-game advertising we decided to form FourBros Studio, LLC as a way to manage the shared income and establish a game studio identity."

"Right now FourBros Studio is made up of the 4 founders (Steve, Brandon, Nathan, Tyler) in other words myself and my brothers. Since we all worked at MATRIX I guess the entire company is made up of alumni."

Where are our alumni now?

Legend:

- 3 or more alumni
- 2 alumni
- 1 alumni

PROGRAMS

Women in Computing

During our time at MSU, MATRIX has formed a strong relationship with MSU Women in Computing, an organization of students and faculty who work to recruit, support, and retain women in computing fields. This relationship began five to seven years ago when we hired women programmers who were members of Women in Computing. Since then, many women have come to work at MATRIX. Our status as a great work environment for technologically-inclined women was gained mostly through word-of-mouth. Our office is much less gendered than most technology hubs, and provides a model for other groups seeking to provide a gender-neutral setting for computer programming and development work.

Our Apprenticeship   Program

One of MATRIX's goals is to train the next generation of the digital humanities community. We do so through our apprenticeship program, which gives MSU students the ability to learn programming skills in a hands-on work environment. The program operates under Joe Deming, who took the reins as director a year ago. Most of our apprentices are undergraduate students from the Computer Science department, as we recruit heavily from the Computer Science program as well as Women in Computing. As an apprentice at MATRIX, students learn not only the skills necessary to program, but also those necessary to be successful in a professional environment.

Our apprentices typically stay with us for two to four years. They primarily work as programmers, though some are involved in data entry and digitization as well. First, prospective apprentices are interviewed to determine if they have the appropriate background and skill set. After apprentices are hired, they are trained for one to four months before they are required to complete three training tests. While in training, apprentices receive a training pay rate. Following completion of training, they receive full pay and project assignments.

Apprentices work on a variety of projects, typically in teams of one to three people. Our current project is a major revision of the MSU Press website. We have completely updated the back end of the website, as well as integrated WordPress. The website has also been changed to reflect the MSU Press brand standards. Four students worked on this project.

Many of our apprentices have moved on to positions with high status software companies. Recently, one of our designers made the Knights of the Old Republic website for BioWare. Some of our apprentices have also gone on to intern with Electronic Arts, Intuit, and Cisco. In addition, we have many contacts at local companies, such as TechSmith in Okemos and Vertafore in Lansing, as well as contacts at international companies such as Microsoft.
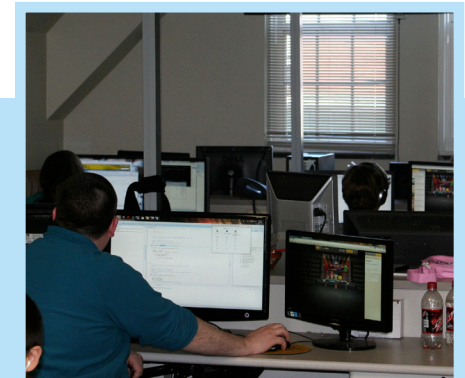
MATRIX Projects

Africa Past and Present is a monthly podcast produced by MATRIX and hosted by MSU historians Peter Alegi and Peter Limb about history, culture, and politics in Africa and the diaspora. The show highlights significant people, ideas, and discussions in African studies from a wide range of disciplines and perspectives. The mission of our shows is to broaden the availability and accessibility of cutting-edge knowledge relating to African experiences and to do so in a down-to-earth and informed manner. Shows feature interviews with eminent scholars and persons, commentary on current events, and issues and debates of relevance to Africans at home and abroad.

The Cultural Heritage Informatics Initiative is a platform for interdisciplinary scholarly collaboration and communication in the domain of Cultural Heritage Informatics at Michigan State University. In addition, the initiative strives to equip students with the practical and analytical skills necessary to apply information, communication, and computing technologies to cultural heritage materials, influence the current state of cultural heritage informatics, and become thought leaders for the future of cultural heritage informatics. Many of the initiative's students are often found in MSU's Anthropology, History, Art History, Classics, Museum Studies, and Historical & Cultural Geography disciplines, all of which have a focus on cultural heritage.

The Community Video Education Trust (CVET) is community based and community development orientated. It is located in Cape Town and exists to serve the previously disadvantaged communities of the greater Cape Town area. CVET has more than twenty years of involvement in programs to bring about transition toward the democratization of media access and use and the utilization of video technology as a catalyst in social development. The core business of CVET is to train community members in video production as well as producing commercial productions. The production output on average is about 20 productions per year, and they have produced for the South African Broadcasting Corporation and e.tv, among other channels.
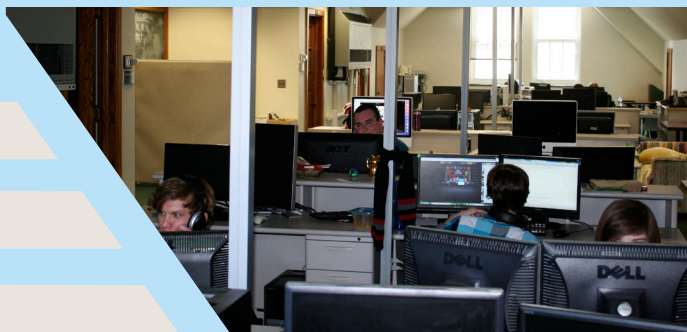
American Black Journal (originally titled Colored People's Time) went on the air in 1968 during a particularly historic moment of racial turmoil across the nation. ABJ is a televised public forum for black citizens and continues to broadcast new shows into the 21st century. In order to preserve over three decades worth of cultural touchstones, the staff was tasked with taking almost 1,500 recordings across five different formats and creating a universal archive of footage that took years of careful work. Once digitized, MATRIX members uploaded the footage to a website of their creation. This website is a part of a long-term collaboration between Detroit Public Television and Michigan State University to preserve and present the crucial and historic materials of the American Black Journal television program.

KORA

KORA, a digital application and publishing platform, is an application developed by MATRIX executives Mark Kornbluh and Dean Rehberger. KORA is used by MATRIX for working with digital objects of all media types and for easily creating displays that enhance their educational and research value.

Designed for long-term preservation and access, KORA includes unique features that meet two important needs of institutions with limited technological resources: (1) simple design of the digital repository and the ingesting of data (2) and the ability to display digital materials online in diverse ways, such as image galleries, multimedia educational activities, and story chapters.

The KORA architecture is unique in that it can accommodate any set of metadata schemes in individualized digital libraries. Users can easily create metadata elements using a simple point-and-click interface, select the type form control for each element (e.g.

required formats for date, URL, audio file upload, etc.), and then determine whether the element is required for each record, whether it should appear in search returns, and other features. KORA then automatically generates storage structures, data entry, and validation requirements for each metadata scheme.
KORA also includes an easy-to-use "associator" tool for creating relationships that combine objects of various media types. As demonstrated by diverse websites built with KORA, many creative displays are possible using this open source application.