A

gmented Reality

An altered state…without the long hair, rock 'n' roll and hemp clothing

By Ruksana Hussain

Technical start-ups aplenty call Atlanta home, and there has been a recent concerted effort by many local groups to stake Atlanta's claim on a piece of the flourishing tech industry. Atlanta techies are headed on the right path with "augmented reality," and they have the chops to back it. Companies big and small across industries far and wide are head over heels in love with the technology, which has moved from the lab and into the mainstream.

Augmented reality (AR) refers to a digitally enhanced view of the real world. AR is a cutting-edge technology that adds layers of digital content in the form of audio, video and images on top of what is seen by the naked eye. Computer generated content in real-time enhances the way you explore and perceive what you are seeing. With a camera or sensors on a smart phone or tablet…or even smart glasses, the technology is more accessible to the everyday consumer. Large companies and institutions that have the funds to invest in research and development are adopting the technology more and more. It can be used on magazine pages, any advertising material, business cards, instruction manuals, t-shirts and more. Want to access additional editorial content from a publication? Use an AR app and browser to view additional information.

QR codes may become passé. With a QR code, a user scans a matrix barcode to access two-dimensional information; typically a web page, video or document. And that is pretty much the end of that experience. AR data can be used with any image: simply run the tablet or smart phone over your object of curiosity and enhanced 3D features show up. The experience gives the ability to digitally manipulate and interact with the object.

Currently, a few well-known AR platforms and apps such as Layar and Vuforia are perhaps the best known. Many more are joining the fray, trying to better the AR experience by focussing on tracking mechanisms, location and marker based applications. Apps that work hands-free viewing devices like head mounted displays are on the way. As is the case with any innovation in technology and the constant human desire for a better life experience, the AR players are many and the uses infinite. Some of the leading experts and companies working with AR are right here in Atlanta and thriving at it.

ALCHEMY

"I think Atlanta is positioned to be a leader in augmented reality," says Margaret Martin, Founder and CEO of Merlin Mobility, a rising star in the Atlanta AR space and the 2012 southeastern regional winner of Harvard Business School's New Venture Contest. "At the core of it is the lab at Georgia Tech, one of the premiere facilities in the world. Having so many major corporations that, if not headquartered here, certainly have a significant presence, and the ability to be able to travel easily through the Atlanta airport, give Atlanta the opportunity to be at the center of the AR market."

Martin has more than 20 years of experience in taking software companies to commercial success. A third generation native Atlantan, her experience includes time spent in the Los Angeles, Silicon Valley and Portland technology markets. A member of Atlanta Technology Development Center, the country's oldest tech incubator, Merlin won customers through connections there as well as avenues like Venture Atlanta, where she presented in 2011. It was also there that she announced the wide release of their AR platform, Alchemy, in 2014. The company currently has 12 employees in Atlanta and is gearing up for expansion, courtesy of a recent capital infusion. "We are probably going to hire about 15 people between now and Q1, and we will be rolling out not only Alchemy but some exciting components of Alchemy that have not been publicly disclosed yet. We are really excited about that," Martin shares.

Alchemy operates with mobile phones and tablets. These 3D applications allow employees and customers to virtually interact with products. The software takes data from the front- and rear-facing cameras on the mobile device and combines it with the 3D modeling software and other data in the cloud to create a 3D blend between the physical space and the product. The Alchemy platform can be used for a wide variety of applications including sales, repair, education, purchasing and inventory management. It allows companies to create, host, deliver, manage and track mobile AR-based content and customer data. It also allows companies to easily create, deploy and update AR content to iOS and Android mobile devices. The platform aligns with the full lifecycle of customer's products, systems and services including marketing, training manufacturing and supply chain, creating dedicated apps for specific business needs. By bringing products to life using Merlin's Alchemy enables real–time collaboration, sharing experiences and interactions between user and brand.

Counting Coca-Cola, GE and AT&T among their long list of local and international customers, Merlin's focus is on marketing and instructional augmented reality, be it products for the average consumer or large industrial customers. "We focus on purposeful applications," adds Martin. "Research around AR demonstrates that the killer application for AR

"Atlanta is positioned to be a leader in augmented reality"

—Margaret Martin, Merlin Mobility

is helping people understand concepts in significantly shorter periods of time. That has really informed our approach. We are interested in applications with a long shelf life as opposed to having one-off advertising campaigns for a particular product that is short lived."

Alchemy is used to develop applications for all client projects. It has a browser component that is used to deploy the application and Merlin has put a lot of resources into the analytics that provide clients with a dashboard to track access and interaction. No surprise then that Merlin has been at the receiving end of recent accolades such as Technology Association of Georgia 2013 Top Ten Innovative Technology Company and winner of the People's Choice Award for the Coolest Technology at the 2013 Georgia Technology Summit. Giga Om named Merlin Mobility one of six cool start-ups to watch out for in Atlanta.

On a larger scale, closing the gap between the expectation of the technology and what it really can do is the key. "Probably the biggest challenge is not properly setting expectations for the capability of the technology with clients. It is two-fold: if you put a lot of light-weight apps out there, they tend to deter from the real strength of the technology. But not understanding what you can do really well and what you can't results in selling into companies concepts that aren't viable with the technology. They have a poor experience with it and are not receptive to using the technology again. A lot of companies are focused on tracking technology but at Merlin, we have taken a different approach and are more focused on that middle layer that enables us to provide an elegant user experience for both content creation and for the end user."

ARGON

Nestled in Georgia Tech's campus is the Augmented Environments Lab (AEL), spearheaded by Dr. Blair MacIntyre. MacIntyre is Martin's counterpart in organizing Atlanta augmented reality meetups and an industry recognized veteran when it comes to all things AR. An Associate Professor at the School of Interactive Computing, MacIntyre directs AEL and research focusing on the design and implementation of computer-enhanced interactive environments. His current focus is on augmented reality environments;

Blair MacIntyre

especially those that use personal displays (i.e. displays worn or carried by the user) to directly augment a user's perception of their environment. He has been conducting AR research since 1991 with the goal of understanding the potential of AR as a new medium for games, entertainment, education and work. MacIntyre has collaborated on a variety of AR gaming and entertainment projects over the years and leads the Argon AR Web Browser project at Georgia Tech. His research has been supported by many technology and content companies, including Atlanta's own Qualcomm, and he has written a wide range of academic papers and quoted many as an expert source on AR.

"We submitted a new version of the browser to the app store recently so hopefully that will get released. The project has expanded to focus on trying to create a framework for doing AR using web technologies. What we are interested in is not so much having our own browser, but enabling people who would

want to work with AR and web technologies, whether it is on the desktop or using Argon, be it the browser itself on the iPhone," he explains.

MacIntyre has been with Georgia Tech since 1999, and in 15 years there he has been integral to many projects. He has worked primarily on Argon—the world's first standards-based augmented reality web browser. The goal of Argon is to bring AR to the masses through a web-centric platform, like your favourite web browser, so anyone can experience, experiment and deliver AR for work or play. "We basically turned Argon into both the browser and a framework which runs on both the desktop and on our browser on iOS. Soon we hope to be able to get it on Android and Windows mobile, but it also is going to a point where we might be able to run AR apps in a browser like Firefox or Chrome on Android, since they're getting to where they actual-

Experiencing an AR Virtual Pit at Georgia Tech's Augmented Environments Lab

"AR gives life to 2D content, it allows for an editorial to come

—Andres Jaramillo, ARWerks

Checking arrival time of the next Tech Trolley

ly support the necessary technologies. We wouldn't be able to do the image-based target tracking that we can do in Argon, but you can live the full 3D AR experience without having to install any software, and that's exciting."

Some Georgia Tech students have been using Argon in computing innovation competitions. One group is considering using Argon to create a campus tour that it is available on the web for remote students. MacIntyre and his team at AEL are also working on AR games and hoping to get an update for their game, "Nerdherder," into the app stores soon. "Nerdherder" is a free AR game for both iOS and Android. The premise of the game is to pick up little objects from the world and use them to lure or scare little nerds in an office environment and get them to their cubicles. The game is a joint project between Georgia Tech and some faculty and students at SCAD.

Other faculty involved at AEL include Jay Bolter in the Literature, Media and Communications department for the

Digital Media program, whose interest is in cultural heritage and AR. Marybeth Gandy is MacIntyre's colleague at the consulting firm they manage together, Aura. Gandy says, "We have done a bunch of consulting over the years for different clients, big and small. The most visible implementation oriented project we did was the Rock'em Sock'em robots game for Qualcomm and Mattel." Other than some internal game development explorations, MacIntyre's work through Aura has mostly been in the expert witness space. An increasing number of patent disputes utilize AR as it becomes more popular.

Nerdherder

ARWERKS

When it comes to smaller companies, the majority of augmented reality implementation appears to be happening in gaming, web-based marketing and mapping/exploration. Along those lines is the work being done by Athens, Georgia-based company, ARWerks. Co-founded by Andres Jaramillo, David Squires and Mark Evans, ARWerks boasts a development team in Columbus, Ohio and a Latin American headquarters in Panama. They also have a presence in Chile, Argentina and Brazil, attributed to augmented reality coming on quickly in South America. A team of 15 employees, the company is currently aggressively hiring in both the U.S. and South American markets. ARWerks has worked with industries including sports organizations, retail, real estate, construction and development companies, events in the television and film industry, recruiting companies, education and aviation to name a few. "One industry that has been receptive currently has been the entertainment industry, in television and film," says Jaramillo, one of the co-founders. "There are a couple of major films coming out in 2014 where we will be doing a large part of the campaign. We are going to work with various TV shows with AR apps which allow you to experience the shows and gain access to exclusive content."

Two of ARWerks' recent projects include a new application for the Heisman Trust and the Heisman Trophy, and the Georgia Virtual History Project that aims to tell the history of the state in a new and innovative way. The goal of the Heisman application is to enhance the way that the fans interact with the history of the award, learn about the previous winners and interact with the candidates, all utilizing the advantages of AR to view

the game of college football in a whole new way. On the other hand, the Georgia history project, spearheaded by ARWerks in combination with various organizations including the Georgia Department of Economic Development, the University of Georgia and various other historical organizations, is an ongoing activity that will span over a few years. The initial part of the project consists of a number of historical sites that have story caches created around them so a visitor can go to these locations across the state and experience interaction at these points of interest with AR.

Georgia Virtual History Tour

"We are taking the regular world in front of us and bringing it to life through content and different layers of information to tell more about the surroundings, to give information to tourists, educate our youth and be able to tell the story of the state in a whole new and innovative way," shares Jaramillo. The Heisman project is completed and the application will be live any day now, available both on iPhone and Android. The Georgia virtual history project was scheduled for an official launch in November.

Andres Jaramillo

Jaramillo speaks candidly on the restrictions faced by the AR industry. He mentions the need for access to the internet and free wi-fi areas as well as the lack of wearable technologies or smart phones as limitations. And while the technology might be cost-effective for a small business to exploit right now, it is still a few years away from being able to realize its full potential in a cost effective way when it comes to things like retail industry behemoths considering digital fitting rooms. "Restrictions are highlight-

ed more in countries outside the U.S., the fact that in order to experience AR you need to have access to a device and a camera, whether smart phones or tablets. While smart phones are coming preloaded with AR applications, the end user has to download an app for each experience, and given the space on cell phones, that is a limitation. For brands and companies, the stigma that AR has had is that a few years ago a lot of companies really began moving into the AR space and testing the waters but didn't get the engagement they were hoping for. And part of that was because of some of the limitations on the devices available then—smart phones for the end user to integrate with AR. But brands using AR right now are getting great returns."

One of the most widespread uses of AR has been in print media, and the migration of content to online and digital media. "AR gives life to 2D content, it allows for an editorial to come to life. We are also looking at the fact that with AR you are able to change the interaction in real time, adapt to how the consumer is reacting to a campaign, giving brands that power to react, change and update the campaigns as they exist. The best advantage for AR is that naturally and intuitively humans always want to know

information about the world around us. AR allows us to put digital layers of information on the real world in front of us, with access to information that we typically wouldn't have had before." Jaramillo sees AR as a way to seamlessly integrate technology and the great advances we have now in access to information to improve our everyday experiences. He knows there is much to be done in AR, especially in Atlanta, and sees promise in how the city is positioned considering all things AR.

"Because of the Georgia virtual history project, the local government, companies and businesses involved with it, and the commitment to telling the story of the state, Georgia is now positioned as one of the early adopters of AR in an effort that goes beyond a one-time campaign or event, to exposing AR to all. Atlanta is well-positioned among the top as far as adoption and use of AR on a continuous basis goes," comments Jaramillo. "Right now there are many exciting things coming out of Atlanta, the start-up scene with tech companies, the film industry. Atlanta offers a little of everything and in many ways is a hidden gem when it comes to technology, so we are fortunate and content being based out of the area."

To reality, and beyond!

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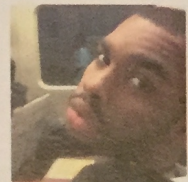
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Christine McCauley, Cover Model.... She cleans up well!!