Living Game Worlds:
A Conference on Multiplayer Games and Virtual Worlds

The Fall of OiNK

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Letter from the President
Mansi Sharma

The FIREwall has come a long way building a sense of community in the college of computing. The content we publish has a purpose of helping, inspiring, informing and entertaining you. Recently a graduate student told me how the article on E-Campaigning in the November issue inspired her to write her research paper on it! This was meant to be a position paper for her e-Democracy class taught by Mike Hunter. She has submitted her paper to be presented in the 3rd International Conference on e-Democracy: "Next Generation Society: Technological and Legal Issues" to be held on 23 - 25 September 2009, Athens, Greece. We hope to continue providing you with valuable information to make your experience at Tech worthwhile.

I would encourage students to go out for all three days of the college of computing's career fair to be held on February 3, 4 and 5. This issue covers information regarding how to prepare for the career fair and includes information about some of the companies visiting.

I hope each one of you finds something in this magazine that you can relate to and make use of. If there is anything you would love to see in the FIREwall, please let us know! We now have a very enthusiastic team of officers who hope to strive for the best publication in this college along with the rest of our wonderful staff. If you are interested in contributing to the FIREwall, feel free to drop by at our weekly meetings held on Tuesday at 8 pm in room 104b of CC or email at ccfirewall@gmail.com.

Letter from the Editor
Stephen Hilber

When I was flying back home to Virginia this past Thanksgiving break, I struck up a conversation with the lady sitting next to me and her thirteen-year-old son. Eventually the conversation turned to what sort of extracurriculars I was involved in at Georgia Tech, so I told them that I was the newly elected Editor-in-Chief of a student publication called the FIREwall - at which point the son exclaimed, "Oh, I’ve read that!". As my jaw dropped, I pulled out an issue from my backpack to make sure he wasn’t confusing our new publication with an established commercial publication - but there was no confusion. His friend had stumbled across the link to the FIREwall on the College of Computing website, and they had both read the two issues that we published last semester and were looking forward to more.

That’s what makes working on the FIREwall so cool - we’re just getting started, and we’re already having a huge impact. We’ve gotten a ton of feedback from all sorts of people, and folks who aren’t CS majors and don’t even know anybody at Tech are enjoying the FIREwall. In our efforts to try and make the FIREwall the best publication it can possibly be, we’re doing our best to continue to cover new articles and present the content to you in different ways. We’ve taken some inspiration from magazines with our full-page cover and longer articles, and I hope you like the changes and find the FIREwall to be a better publication than it was last semester. As always, we’re always looking for feedback and support, so feel free to drop us a line anytime you like. And remember - the best way to make the FIREwall the publication you want it to be is to contribute!

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Through the Looking Glass
Reflections of a Georgia Tech Graduate

By Sweta Vajjhala

I was completely in shock. The thoughts rushed through my head: I could not believe that I had gotten into Cornell. It was just earlier that Saturday afternoon that I had personally (not officially) decided that I would attend Georgia Tech. And now, all of that had changed. For 3 days, I pondered over the toughest decision of my life—whether to attend an Ivy League school. For a while, I wondered if I would regret turning down the opportunity to attend an Ivy League school. Now, 3.5 years later, I have successfully graduated from GT, and if I had to make that decision again, I would make the same one again. I could not have asked for a better college experience—living all of my dreams. Georgia Tech, and particularly the College of Computing, has continuously rewarded its students for hard work, in addition to providing them with lots of opportunities to succeed in their own ways. My experiences with the College of Computing actually started in the middle of my senior year of high school, when I attended a recruitment program that was developed by the Women@CC. This was the best college visit that I had, and ultimately, it was what determined my decision to attend GT over Cornell. In fact, all of the women that had attended the program ended up enrolling in Fall 2005. Coming from New Hampshire, it was great to see some familiar faces and people. I owed a lot to these women, who were my role models—they were poised for success and they completely defied the “computer scientist” stereotype. So, during my second week of classes, I decided to join the Women@CC, and 2 years later, I was chairing the same recruitment program that I had attended. These women felt me feel that being a woman in technology is alright, and they continuously provided support through my years at GT.

After joining the Women@CC, I decided to become a little more involved with the college. I started doing cutting-edge research, and by my last semester, I had my own project! In addition to this, I had always loved teaching, and I got the chance to become a Teaching Assistant. It was only 1.5 years into my college experience, and I had already made so many friends and gotten involved with all of the activities I wanted. So, I started searching (and yearning) for more adventure. This all of the different cultures in the world. While I was abroad, I was able to learn CS concepts in an unusual (but very fun) classroom setting. During vacations, I traveled to different countries in Europe, and I even got to see the finals of Roland Garros (one of the four tennis Grand Slams)—live! Being a tennis fanatic, this was truly an amazing experience. After coming back from being abroad, I came back with a new appreciation for learning. But, more than that, I really felt like I learned how to balance school, friends, and all of my own hobbies perfectly, and boy was I right!

After I came back from Barcelona, I got even more involved with the College of Computing—blogging and promoting the Barcelona program to no end. People I didn’t even know were coming up to me on the Stinger and asking me questions; I was shocked. However, I finally realized that I had built my network so much, and in addition to meeting even more people, I was able to open up a lot of career opportunities, as well.

I could go on and on with all of my experiences, each one shaping me to become who I am today. As much as I enjoyed learning in all of my classes and all of these other experiences, what really made my time with the College of Computing unforgettable are the people with whom I shared these experiences. I have made everlasting friendships with people from all over the world, and I have met faculty and staff that have truly become my family. They have all given me encouragement and confidence in who I have become, and just for that, they will remain forever in my heart. So, when I wake up each morning and get ready for work, I stare into the looking glass and I see a happy, young woman, shaped by the people and experiences that she had at Georgia Tech.
This past December, industry professionals and Georgia Tech students alike had the unique opportunity to witness the cutting edge of virtual worlds technology. Living Game Worlds IV, a conference centering on multiplayer games and virtual worlds, was held December 1st and 2nd at the Technology Square Research Building and Skiles Building, featuring a plethora of cutting-edge demonstrations of new and ongoing projects dealing with virtual realms as well as presentations from industry experts and award-winning designers.

Some of the presentations from current Georgia Tech and SCAD students included:

Several projects from the Handheld Augmented Reality Game Design class involved the Gizmondo (a hand-held gaming device with a digital camera on the back) and external cues that the device can read. One project/game was a shooter that involved a cityscape represented in actual space by a box with glyphs pasted on the sides. The player had the ability to walk around the structure to find enemies and shoot with the handheld device. Another was an interpretation of a certain puzzle game with moving pieces of different types, the only difference being that this game was in a three-dimensional space. A third was a representation of a tactics RPG, rendering the real world in addition to markers on the game board.

PhD students, as part of the Electronic Learning Communities Research Group, presented several ongoing research projects involving online learning, wiki creation, social networks, and collaboration from across great distances. The projects touched on how different groups (both social and professional) develop through engaging in online participation and the social learning that takes place through online collaborative environments.

The Synaesthetic Media Lab participants presented numerous research projects engaging forms of new media, focusing on tangible interaction for the participant. Pre-

Demos available through Demo Day in the Skiles Building from undergradautes and graduate students included The group researching Digital Improvisation probed at the roots of human interaction by exploring how humans perform improvisational acting and comedy. Participants from local improv troupes were solicited and videos were taken in order to explore visual cues and cognitive functions, with an overall aim of improving development of artificial intelligence. The study is in its initial phases, but the project itself seems an interesting take on creating an algorithm for creativity (at least in the abstract sense).

Some projects involving real life surroundings included how recycling infrastructure is displayed in digital media and Atlanta strip mall ecology. In the former, recycling centers were mapped digitally to explore the social and material needs of an adequate recycling community, and explore new ways to view the process and politics of recycling. Avatar Theater provided an interesting new method of social interaction involving traditionally solitary forms of entertainment. The user is able to link up with friends in a digital multiplex in order to collectively watch (or jeer at) a movie or television program. Each member of the audience has the capability to interact with other members and even the program itself (through the form of text bubbles or virtual tomatoes).

Using multiple new media devices for a singular purpose, the Next Generation Play demonstration proved to be an unusual but thought-provoking use of technology. Different aspects of the project centered on the attempt to combine TV with handheld technology to provide a casual gaming experience, featuring user-specific items incorporated into the gameplay. The IP location also was used to connect users who are physically close to each other in the game environment, as well as connecting identified virtual compatriots.

In the ultimate dance-off test of man versus machine, the Second Life Augmented Reality group explored the
interactions with virtual characters in a Breakdance Performance Experiment. Members of the GT Break-dance club volunteered to “compete” against characters modeled in Second Life. The movements by the avatars are produced through a combination of motion capture and scripted motions, and build off of sensors that register the movements that the live break dancers perform.

The Ellis Island project involved a MMORPG set in New York City at the turn of the century, using interactive narratives to simulate the experience of entering the United States as immigrants and their descendants. The user can experience interactions between cultural identities, past history and shaping of future history, and building new communities in an unfamiliar land. The board version of the game was presented at the conference, with the anticipation of an electronic version to be produced at a later point in the project.

Many other fascinating projects from many disciplines in the Georgia Tech community were presented to scholars and professionals who work with games, technology, and the very “living worlds” on which the conference centers. Exploration of new media uses, outlets, and corporations serves to further innovation in technology, and we are lucky to be at the forefront of some spectacular developments at Georgia Tech.

Day Two

The Living Game World conference was more than just demos and presentations from students and professors: the conference also offered numerous panel-style discussions featuring industry leaders and innovative thinkers. The keynote speech by Christopher Klaus (of ISS, Kaneva, and Georgia Tech campus building fame) emphasized the growing importance of virtual world environments; Klaus cited a statistic that eighty percent of web users will engage in a virtual world by the year 2011. He speculated on the future developments that could grow out of current trends, including a fully-immersive internet experience featuring different aspects of 3D. Because the market for alternate reality domains is relatively immature, there is no dominant player, despite estimates of up to $8 billion of commerce in virtual world goods by 2018. Klaus touched on the movement towards providing free-admission, signup worlds, with the emphasis in revenue on trade within the world (or purchase of “worldly” goods). He pulled together some basic criteria for creating successful worlds that include: targeting a community, creating a brand environment, creating real-time engagement, rewards, and incentives, and encouraging creativity, among others.

The panel entitled Playing Well With Others explored the areas of collaboration and group interaction in 3D environments, and featured presenters from projects by IBM, Georgia Tech Collaboration and Learning Online, and Turner Broadcasting Systems. Team interactions in an online environment, in the IBM project, were aided by forms of group identity (team shirts, clubhouses), goals, and participation encouragement. Sometimes the features of the individuals were evident even with the anonymity barrier, however, as teams of certain countries could identify the other countries present based on the way they chose to interact via avatar. Georgia Tech presented many examples of differences in collaboration online, such as the dynamics involved with high-schoolers crafting a Wiki, online animation collaboration, and other uses of the internet as a learning environment. While the standard view of learning involves instruction with detailed formation presented, the researchers observed that in virtual worlds, legitimate peripheral participation was a driving factor of learning (new users observed veteran users for a length of time to learn the system in an effective way). Turner Broadcasting emphasized that the online environment, especially in virtual worlds, calls for a new look at how to address common ideas. They cited an example of iReport, a Second Life CNN hub that functioned as a user-generated news outlet. This participatory journalism proved to be mostly self-policing, and was more popular than the traditional-style headline display of news items chosen by CNN.

Designing for New Audiences brought together representatives from companies all over the world, including Habbo Hotel, Whyville.net, and Elf Island. Habbo Hotel is an online teen community that boasts incredible user participation, and leverages their user statistics to create ongoing content for their specific demographic. Habbo conducts extensive user surveys, as well as focus groups, and extrapolates the results to different country trends (for example, US teens put more value on respect, followed by friends and family, whereas Latin American teens put value on traditionalism as paramount). This testing proved useful in the roll-out of specific features, such as the concept of “respect” points, and constantly improves these attributes by encouraging user feedback. Whyville.
net takes advantage of user-generated content to provide features for its constituency, and explores the connections of its uses through virtual epidemics: “diseases” that spread virally through connections and interactions in the virtual worlds. Elf Island separates itself from other MMO-type games by catering towards children and employing a “mirrored gaming” experience. Kids who build habitats in the game are “contributing” to a real-world project to build houses for the needy. Elf Island partners with non-profit organizations and when the collection of houses in the virtual world reaches a certain number, the non-profit undertakes the task of building an actual structure in an underprivileged area. The children are kept informed of their own contribution to helping others, so that they feel connected to the game on a personal level.

In a discussion of *Cultures of Virtual Worlds*, several industry specialists and digital anthropologists explored different aspects of how these environments affect human interaction and online society. In an attempt to fit the ethno-

The aspects that designers themselves inject into the world-play (or the aspects that they purposefully do not fully control) shape the culture of the space. For example, a designer of a third-person shooter environment COULD control the abilities of the players such that they are not allowed to deviate from missions or interact with the surrounding environ-

ment. However by ALLOWING players this ability, virtual culture is shaped. Allowing players to express themselves is also aided through a feedback loop present in many of these environments between the users and the designers. Even real-world cultural norms find their way into virtual space, such as how various groups treat the opposite sex, and the importance of avatar aesthetics. The norms may have a different standard (a World of Warcraft character wearing a chain mail bikini could be socially acceptable in-game, but not in “first life”), but they still exist, despite the anonymity factor.

This Virtual World symposium was a unique combination of professionals and students, providing insight on new trends and innovations in the arena of online immersive environments. The breadth of material covered is beyond the scope of a single article, but readers who are interested in more details can visit the website (http://gameworlds.gatech.edu/) to view archived video and slide presentations, and to get information about future occurrences of the conference.

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A Dozen Tips For When You Hit The Career Fair

By Ajai Karthikeyan

Do Your Homework
Most career fairs, Tech’s included, publish a list of companies attending the fair beforehand. Take a look at this and do some background research into the companies and job opportunities with them. Asking representatives specific questions focused on the company you’re considering shows a genuine interest in the company.

Dress (And Look) Right
The age old saying that the first impression is the best impression still holds true. Though only business casual dress is required at most career fairs, business professional has more often than not become the norm. Also, watch out for dirty shoes, undone buttons, and stains. For guys, shaving is advised but well-kept facial hair is acceptable.

Resumés, Resumés And More Resumés
Bring enough resumés to last through two career fairs. Nothing is more disappointing than not being able to give a potential employer your resumé because you are saving your last one for the company you really want a job with. Another good idea is to print your resumé on resumé paper—higher quality paper normally that is normally made from cotton and available at most office supply stores. Remember that the goal here is to stand out from the crowd, and every little bit helps.

Time, Time, and More Time
Arrive early! Career fairs are usually least crowded at the beginning of the day, and, aside from avoiding the crowds, the longer you are there, the more time you have to talk to people. Also, keep in mind that you don’t waste time waiting in a line if you are the first person in it. Also, note that the most crowded times are those when everyone is free, such as lunch hours, closing time, and 11 am to noon on a Tuesdays and Thursdays.

Get You Bearings
Once you arrive at the fair, take some time to familiarize yourself with the place. Take a look at the map and walk around the room a few times. This will allow you to double-check representatives’ locations as well as give you a heads up as to where the lines and crowds will be.

Prioritize
Make a list of companies you want to talk to and prioritize them. Try to start with someone low on your list (or even one not on it); the practice will be much more useful when you reach the companies you’re more interested in. Be sure to balance this with the fact that there will be a lot of wait time, and that you will most probably not have enough time to talk to everyone on your list (especially if it is a long one).

A Firm Handshake
Nothing beats a firm handshake, a smile, and a quick, “Hello”. Handing the representative your resumé after this is ideal.

Be Flexible
You never know what can happen. The specific job you were gunning for might have already been filled, or, on the other hand, new positions might have opened up. Be flexible and hope for the best. Another time where flexibility is key is when you have to make the choice between waiting in a long line for the golden job or using that time to talk to five other potential employers for silver jobs. Note that wait times for most big names can be anywhere from half an hour to an hour long.

Take Notes
With the number of companies you will be talking to, there is no way you are going to remember all the information that will be coming your way. In particular, write down dates and time for application deadlines and information sessions, as these tidbits of knowledge have a habit of dissolving quickly. Sometimes, the representative you speak with might not have the answer to one of your questions, and in such a case, request and note down the name and contact information of someone who might.

Exchange Cards
If you have business cards, offer one to the representative. This is an indirect way of asking for theirs. If you don’t have business cards, then simply asking the representative for theirs is perfectly acceptable. There are many advantages to having a potential employers business card. Firstly, you now have a direct contact with the company, with the proper spelling of their name, direct phone number, etc. Secondly, you now have the chance to send the representative a brief thank you note acknowledging their help (and once again, making you stand out from the crowd).

Lay Off The Swag
Yes, career fair freebies are awesome, but try to maintain a bit of professionalism when you see them. Good practice is to not take anything until the employer offers it to you. If they don’t, then at least make sure you ask before you snatch something from their table. Never grab an obscene quantity of free stuff and never pick anything out of boxes. Remember, you came here for a job, not free stuff.

Be Courteous
Smile. Also be polite and courteous to everyone present. You are not just representing yourself but Tech as well. Everyone present has an interest in the Institute and many are probably alumni.
Music piracy is finally turning its back on the ‘tried and true’ early peer-to-peer (P2P) days of Napster-like clients, spurred on by the increase in both bandwidth by users and interest by law enforcement. To replace this aging model, BitTorrent has stood out above many alternatives as an easy and ‘safe’ way for users to share and trade their collection of tunes. The false sense of safety portrayed by BitTorrent, however, is leading to a legal repeat of the Napster and Direct Connect days. Fool them once, they say.

Aging client-server modeled P2P applications such as Soulseek and Limewire, once heralded for their eclectic and diverse selection of music, are bleeding users and thus bleeding music collections as a consequence of the Napster Effect. In it simplest form, the Napster Effect states that when one file-trading application is taken down in any manner, users of the original application step up to set-up, create, and maintain alternatives to replace the dismantled original. An interesting consequence of the Napster Effect is that these alternatives have the mistakes of the preceding application to build and learn from and thus become more secure and decentralized with each iteration.

As client-server P2P applications took center-stage as the focus of the anti-piracy fight, applications using this model were seized and closed, leaving their users and administrators alike to both develop and look for a safer and faster alternative. BitTorrent has emerged as the clear successor to the Napster model, thriving on the decentralization and (sometimes) anonymity that the protocol provides the users.

Beginning in the early 2000’s, BitTorrent sites (called trackers) began to emerge, most offering an all-in-one source for software, music, movies, and television shows. For many users switching from Napster-like applications, BitTorrent was a fundamental shift in how many users pirated. No longer did you download an application to install and immediately open to search for pirated files. Instead, the BitTorrent application is simply the protocol for sharing, distributed as an application to handle the sharing and downloading of torrents (which will be explained shortly). Once installed, the application sits idly and has no interface or means to search, download, or share files. To actually find files, a user would have to navigate to tracker sites through their browser and download torrent files from the tracker’s website, which would then be opened by the BitTorrent application and begin downloading the requested files.

Early BitTorrent trackers were no more than repository lists of torrents that were recently uploaded or most popular, and provided no commenting or message board system for the users of the tracker. However, all of these trackers were public, meaning that all a user would need to do was to search, download, or share files. By Eric Sembrat

for operators of BitTorrent trackers and certain sites crumbled under the legal pressure, users began to rethink how trackers should be operated and how new trackers could avoid mistakes that early BitTorrent trackers have made. A recurrence of the Napster Effect brought along a new idea to BitTorrent trackers: privacy, which was mastered by OiNk’s Pink Palace (commonly referred to as OiNk).

OiNk began in May 2004 as a music-only private BitTorrent tracker and was known for its diverse collection of uploaded music as well as its quirky rules. The first thing a user would notice about OiNk would be the trackers appearance: every page was styled in pink and grey and had the OiNk pig (a pink pig wearing headphones jamming) on every page. Users on OiNk could have avatars, but the tracker had a rule that all avatars must be ‘cute’. No clarification was ever made on what cute signified but users followed it by uploading an avatar that they felt was cute (from cartoon bears to scantily clad women). The tracker built a sense of community with its users by allotting members a message board on the tracker’s site to discuss music piracy and general discussion, as well as providing users the means to comment on any torrent file’s description and thank users for uploading a particular album.

OiNk was unique in that it pioneered a strict qualities-standard for every torrent file uploaded to the tracker. For every music torrent, OiNk required that it be a full album being provided for users to download. On top of that, the album must not be a repeat of anything already uploaded in the same format on the tracker, follow specific encoding standards for sound quality, and not be a transcoding (a re-encoding of a digital file that usually left the file with significant quality loss). Users on OiNk who downloaded but didn’t upload data to users would be put on warning after a certain threshold and if the user did not upload torrents or upload data,
the account would be closed. The qualities standard for users and uploads was unprecedented for a BitTorrent tracker because previously, trackers were not concerned with tracking or monitoring their users behavior. This allowed OiNk to keep the non-contributors limited in what they could download and reward users who frequently contributed by using the invite system, another innovation that OiNk deployed for BitTorrent trackers.

Private trackers are referred to as ‘private’ because users without an account (much like many message boards) cannot view any of the website and instead get a login page or error. Unlike message boards, however, private trackers do not normally allow any kind of registration for users to gain access to the webpage. In OiNk’s situation, a select number of individuals were allowed to sign-up to the tracker before the registration was closed off permanently to provide a base set of users. This base set of users would upload and download torrents and by being a member for a select amount of time or having a positive ratio (your uploaded data on the tracker divided by your downloaded data), would receive an invite code.

Invite codes are what OiNk and other private trackers found was an easy, safe, and efficient way to provide membership to new users and reward current users for contributing to the tracker. Current users would receive an invite code, usually denoted by an alphanumeric code, or a unique registration link that would allow explicitly one member to sign up on the tracker. OiNk was unusually strict in that restrictions would be placed on the inviter's account (banning, temporary suspension or download limits) if the invitee failed to maintain a respectable ratio.

However, invite codes are eventually what drove OiNk into the ground. From OiNk’s inception, the tracker was known from the outside for being incredibly stringent in handing out invites. Curious BitTorrent users created blogs, forum posts, and even websites for the sole purpose of requesting one of those much-coveted invites. This increase in demand and stagnation in supply lead many OiNk users to sell their invites, which was quickly banned by OiNk’s administrators because of the security risk it posed to their tracker. Their solution to remedy the overwhelming demand for invites, though, was much more dangerous than any risk that could have come from selling invites.

In the span of two years, OiNk’s administrators seesawed from handing out invites to extraordinary users who contributed on a daily basis (which kept membership size low) to handing out invites liberally to a majority of its users on a semi-regular basis. Simple math dictates that if users overall obtain an invite on a semi-regular basis and invite new users (who in turn get to distribute their own invites), then the membership size of the tracker will explode. And with OiNk, that is precisely what occurred, as the membership exploded to nearly 180,000 users. The eventual ease to obtaining an invite led legal authorities to simply find a source of invite swaps (such as a chat room or message board), request and obtain an invite, and then monitor the tracker for illegal activity. Just like with Napster, an explosion in memberships (which led to an increase in publicity both online and offline) led to its eventual seizure and closing.

OiNk’s private tracker experiment may have failed as a whole, but users viewing the fall of OiNk from both within the tracker and outside noted its successes. OiNk succeeded in having the first large-scale tracker that enforced standards and rules for every torrent file uploaded, leading to an increase in quality releases and forcing users to find obscure and rare releases to contribute to the tracker. The tracker’s closing revealed that having a sense of community (through requiring ‘cute avatars’, encouraging discussion on music-related topics, and gratitude between users) on the tracker lead users to be heavily involved with and support the tracker itself. And, in OiNk’s case, the tracker’s closure led to hundreds of angry blog posts and message board discussions regarding the seizure and closure of the tracker as well as the so-called ‘incompetence’ of RIAA. Most importantly, OiNk’s original invite policy showed that invites can be safe and positive to the community if they are given to a small subset of the trackers membership at relatively long intervals.

The Napster Effect focused itself
on how post-OiNk private-trackers could remain undetected by legal authorities and yet have a maintainable membership.

From the lessons of OiNk, private trackers discovered that invites and mass numbers of users eventually compromise any protection that being a private tracker provides. Two OiNk spin-offs, both founded and administered by former members themselves, have enacted two new rules: a return to giving out invites to a small subset of the trackers membership at long time intervals, and a maximum user cap (so users can only join when the amount of members is under an arbitrary number, such as 5,000). Both these rules work to both encourage new contributing members to join and push leeching members out to maintain the tracker’s productivity in new content. Some trackers have even gone so far as to justify shutting off invites permanently, arguing that the risk of having someone unwanted invited is higher than the benefit of having increased membership.

The days of new all-in-one or even extensive (such as OiNk) music trackers are over. What has replaced it instead goes against the entire core of the BitTorrent protocol and fundamentally changes how BitTorrent piracy operates.

New trackers are focusing towards specialized private trackers for music, catering to separate genres (indie, electronic, etc.) to separate types (bootlegs, lossless recordings, etc.). In catering to separate genres or types, a single user would have to acquire multiple invites and torrents from multiple trackers simply to get the same amount of pirated material that a single all-in-one site like OiNk would offer. And for novice computer users who seldom pirate, this negatively reinforces the idea of spending so much time acquiring access to a single tracker simply for a subset of music the user wants to pirate. Trackers are in fact shutting out the users that legal enforcement for piracy has been targeting since the inception of RIAA copyright-infringement lawsuits.

As this alienation from the average user increases and becomes more commonplace (through the creation of more private selective trackers), users interested in pirating music have two options: returning to public or all-in-one trackers that have been plagued by legal action and are unsecure to the end-user, or simply stop pirating. This natural selection by private trackers essentially leave only the most well-versed computer and BitTorrent savvy internet users who can spend this extraneous amount of time finding invites and obtaining them, as well as browsing multiple trackers for whatever interests them. And as mentioned before, alienating a majority of users and heavily decreasing traffic to the tracker goes counter to everything BitTorrent was established to benefit from.

The future of these trackers is unusually grim, especially for users that have been invited to and joined the trackers. Without a steady, large subset of users browsing, torrent files will decrease in both numbers of available seeds at any time and the time itself that a user will stay connected to the torrent file to seed. The consequence of these actions result in BitTorrent files being culled from the tracker after a period of inactivity and lack of seeds, resulting in less maintained content on the tracker. In this scenario, BitTorrent becomes a liability rather than a tool to facilitate piracy, and the only viable alternatives (FTP, web storage) are essentially backtracks where the history of piracy is concerned. And as history says: what goes around comes around.

The OiNK Website soon after they were closed down
Allow me to share with you how last night went: Click. Aww...cute pictures of cats. Click. Interesting: a free automated code debugger. Click. Nice! A how-to guide on how to build a steam-punk laptop from scratch! Click. How to make Turkish coffee. Click. Ten easy ways to break a padlock. Click. A programming language based off of Shakespeare. A virtual pet hamster. The history of the peace symbol. Hehe, fart joke. Hmm...why yes, I would like to learn how to speak Farsi, just let me clear out a few hours on my schedule.

This might sound like a caffeine-fueled chimp running rampant through the reference section at a local library, but, in reality, it is simply the latest example of the Internet’s grand scheme to reduce our average attention span to Planck length scale: the Stumble Upon add-on for Firefox.

The basic premise of Stumble Upon is that after users download the add-on, they create an account where they select topics that interest them from a list of over 300 subjects. The topics range across everything from programming, web development, and open source software to religion, philosophy, and photography, providing users with more than enough subjects to customize their meandering trip across the internet. After users have created their account, clicking the “Stumble” button on the toolbar with whisk them away to a randomly chosen website that has been previously tagged with one of their interests.

Stumble Upon contains a bit of everything for everyone involved, regardless of interest level or expertise. For example, selecting the “philosophy” interest generates everything from deep discussions on different branches of thought to a collection of how different philosophers would answer the age-old question, “Why did the chicken cross the road?”

If technology is more your thing (and, considering our college’s specialty, it most likely is), Stumble Upon offers up dozens of hacks (such as new ways to squeeze a little extra power out of Windows), free software (such as a collection of free, legal alternatives to Adobe’s CS4), cool little applets (like a simulation of how insects communicate where food is located), and tech-related news items abound, providing for several hours well-wasted.

It’s not all about wasting time, though. There are a great deal of introductions to different languages (such as a 15 minute guide to learning Ruby), guides on how to learn new skills (like how to add cool effects is Photoshop), and programming puzzles (like writing a python script that writes and solves mazes) that aim to teach users new concepts. In the end, though, if you’re wasting time with something you’re really interested in, is it really time wasted? If reading about theology, learning new computer tricks, and keeping up to date on world events are what really interest you, why should time spent doing things you love be considered “wasted.” Who knows, one day something you stumble upon might just open up a whole new set of interests to you.
If you've looked up any theoretical research topics in computer science or have simply looked up and sighed, wishing that your computer wouldn't take forever to run the latest and greatest game, chances are that you have heard of a quantum computer. So what exactly is a quantum computer, and what makes it so much better than our current computers? To answer these questions, we'll first learn the difference between “normal” mechanics and quantum mechanics.

If you've ever taken a physics course or have ever met someone in a physics course, you have probably heard of Newton's Second Law, which is essentially the famous $F = ma$ equation. This is a “classical” equation, or an equation that works well in the macroscopic sense. Strangely enough, there is no such thing as “force” in quantum mechanics. The analogous $F = ma$ equation, called the Schrodinger equation, is a lot more difficult to solve and interpret. In fact, the Schrodinger equation doesn't even tell us where an object is going to be at a given point of time. If we solve it, we get a function, $\psi$, commonly called the state, or wavefunction, which describes a particle's state at any given moment of time. It is essentially a black-box which describes the particle. What does this state mean, and what does it give us? Using the state, we can compute various probabilities of the particle having a particular trait. Whether we want to find the probability of the particle being in a particular place or the probability that the particle has a particular momentum, we refer to the particle’s state. Once we measure a particular trait of the particle, the particle’s state collapses onto another state.

Let’s put this into context. Suppose somebody, say Harry, comes to you and asks you a simple question: “Where are you going to be today?” At first, your initial response would be something along the lines of: “At what time?” If Harry persists and replies, “It doesn’t matter what time,” you’re either sure to get annoyed and leave, or list the various places you’re going to be. You could also give him a list of probabilities of activities that you will be doing at any given moment of time. For example, if you sleep for 8 hours, work for 4 hours, and play for 12 hours, you would tell Harry that the probability of him finding you sleeping is $8/24 = 1/3$, the probability of him finding you working is $4/24 = 1/6$, and the probability of him finding you playing is $12/24 = 1/2$.

This is essentially how a particle sees it. When we obtain the Schrodinger equation for a given particle’s situation, we ask it, “Hello Mr. Electron, what are you going to be doing today?” When we solve the Schrodinger equation to get the particle’s state, the electron kindly gives us the probabilities of where it’s going to be. It is then up to us to interpret this to our advantage. We can contrast this to the classical particle, which would give us a time sheet of exactly where it is going to be at what time. Unfortunately, as our microscopic particles are almost always quantum mechanical, it will only “give us” probabilities.
Now, let’s say that Harry comes and checks on you at some point of time during the day. Initially, he didn’t know what you were doing; all he knew was that you would be sleeping (probability 1/3), working (probability 1/6), or playing (probability 1/2). However, immediately after he visits, he can tell what your state is. With regards to states, before he visited, in his mind, our state was something along the lines of

$$\psi = \frac{1}{3} \psi_{\text{sleep}} + \frac{1}{6} \psi_{\text{work}} + \frac{1}{2} \psi_{\text{play}}$$

(In reality, this isn’t the true state; it is actually $$\psi = \sqrt{\frac{1}{3}} \psi_{\text{sleep}} + \sqrt{\frac{1}{6}} \psi_{\text{work}} + \sqrt{\frac{1}{2}} \psi_{\text{play}}$$ where the coefficients of the states are actually the square root of the probabilities of Harry finding you in each respective state. However, this is due to mathematical formalism in quantum mechanics.)

We call this a superposition of states; it basically represents the fact that we could be in any of the above “sub-states,” that is, $$\psi_{\text{sleep}}$$, $$\psi_{\text{work}}$$ or $$\psi_{\text{play}}$$ at a given moment. The coefficients of these sub-states are the probabilities of Harry finding us in each respective state. Now, as soon as Harry drops by, he knows what you’re doing. Suppose that you were playing. In that case, he is absolutely certain that you were playing, so your state then becomes

$$\psi = \psi_{\text{play}}$$

In quantum mechanics jargon, our initial state collapsed onto an eigenstate after Harry’s measurement. This simply means that initially, before measurement, he was unsure of what you were doing. However, after measurement, he was sure of which state you were in.

Now, the same core ideas are present in quantum mechanics. A particle is in a given superposition of states, and we can, by solving the Schrodinger equation, find the probabilities of the particle being in any given state. In fact, though this seems to be a leap, we can use the exact same state to compute the probability of the particle having a particular momentum, or any other property for that matter. As you can see, the probabilities you provided Harry were only limited; you provided him a finite many states that you would be in: sleeping, working, or playing. But by asking the particle how its day is going to go, it gives us literally everything we need to know about it; it can even give us an infinite number of states that it can be in, and the only way we can find which state the particle is in at a given moment is by measuring it. This is the true power of quantum mechanics: where is all the information regarding the probabilities stored? There are sometimes an innumerable number of states that a particle can be in. The question is, can computers model this?

To answer the first question: nobody knows. It is still a mystery as to how quantum mechanics works. The laws of quantum mechanics are seemingly arbitrary. The great Richard Feynman once said, “Do not keep saying to yourself, if you can possibly avoid it, ‘But how can it be like that?’ because you will get down the drain, into a blind alley from which nobody has yet escaped. Nobody knows how it can be like that.”

As for the second question, computers can model atoms with quantum mechanics and put them together, but quantum mechanically modeling even a grain of sand would prove to be a formidable task. As there are over one billion billion atoms in a single grain of sand (that’s a 1 followed by 18 zeros), modeling every single electron and proton would be incredibly difficult. However, nature somehow manages to pull its act together and chug through the calculations. Let alone a grain of sand, it does calculations for our entire cosmos, and extremely quickly at that! Clearly, if we could somehow harness this power, computing speeds would accelerate to points people have never even dreamt of.

This brings us back to our original two questions: what is a quantum computer, and what makes it so much better than our current computers? In the heart of quantum computers lie the
principles of quantum mechanics. Inner workings of a quantum computer are highly based upon quantum states and quantum superpositions. Now, how can we think of building a quantum computer? One of the easiest ways is to just consider a hydrogen atom. If you have taken a chemistry course, you probably know that hydrogen is composed of a proton which is orbited by an electron. Now, we know that electrons are either spin “up” or spin “down,” which we can think of as 1 and 0, or “on” and “off” with respect to our current computers. If we can plaster these hydrogen atoms into a motherboard and measure the spin of the electron to be either up or down, we can represent individual bits and bytes with a large enough number of atoms. However, this isn’t as simple as it seems; if it were, quantum computers would be abound already!

Remember that motherboards are also composed of atoms, which also have protons and electrons. Also, Pauli’s Exclusion Principle states that no two electrons can be in the same quantum state. Now, as strange as this seems, we can’t distinguish two electrons from each other; they all “look” the same and we can’t color them or mark them to make them different from each other. These two statements make the development of a quantum computer difficult; the electrons in our hydrogen atoms begin to interact with the motherboard electrons and the other atoms. Now, you may ask, what if we place these atoms in a large enough vacuum chamber such that the atom interactions with the hydrogen atoms are minimal? This is more or less what an ion trap is, and small qubits, or quantum bits, have been simulated this way. But, we have yet another problem: the hydrogen atoms still interact with each other, calling for error corrections. These error corrections are difficult to compute, and it turns out that a large number of hydrogen atoms need to be added in order to accommodate for our “bad” quantum mechanical effects. Scientists are currently working on finding ways to make ion traps useful for quantum computing.

So, if you were able to understand the above without breaking a sweat, congratulations! You’re well on your way to becoming a theoretical quantum computer scientist. I hope you’ve gotten an idea as to what the basics of quantum mechanics are, and what the implications are of this seemingly fantastic concept. Development of a quantum computer will receive nothing short of a Nobel Prize, as quantum computers have the potential of revolutionizing our industry. After all, with nature on our side, computing speeds seem to have no limit.

“...if we could somehow harness this power, computing speeds would accelerate to points people have never even dreamt of.”
Obama (Almost) Stripped of His Utility Belt

By Abhishek Jain

In 2009, if Obama were a superhero, his Blackberry cellphone would be his utility belt giving him the capability to perform his duties. Enabling him to swing through and rid us from the evil, especially Economus Crisus. But this villain is unlike any previous, he is far more vicious than the Joker, Venom and Lex Luther combined. This is the Villain who has brought down major financial firms around the world and is robbing millions of people of their jobs.

In these difficult time of war where no one can be trusted and every penny is important, the people of America are desperately looking for a savior amongst themselves who shall relieve them of their misery. They are looking for a change and Obama is their only hope. A man with all the qualities to become the next superhero; one who is physically fit, intelligent, energetic, confident and has a plan: a plan to defeat the malicious bad guys.

Due to his aptitude of being the enforcer of justice he has been promoted to Superhero-in-charge. But what is that we hear? The Secret Service, his own regiment of body guards, has thought about stripping him off his utility belt forever as per the laws of the superhero guild. Because they are afraid that someday when Obama is looking away his opponent will sneak up on him and use it against him. The one thing he keeps the closest to him and is used for fighting crime will be gone. How shall we walk on the streets without being afraid of being mugged? Is this a part of Economus Crisus’ evil plan?

One proposed compromise between Obama his battalion was to only use his belt for personal use like communication device to check up on his wife and kids, using his master key when he accidently locks his car keys inside the car, bat-rope to climb up a building when late for a dinner, etc.

Without his Blackberry, Obama will be left weakened in front of his enemies (Globe Heater, Tax raiser and Unemploymentania) who plan to join hands in defeating him and the world. The people of American would then be shocked and unable to do anything as Obama is bat-cuffed by his own friends.

The point here is that Obama’s Blackberry enhances the quick thinking and unrelenting work ethic we elected him for. Luckily, the Secret Service has come to their senses and realized that this is not the time to strip our most celebrated superhero of his most valued weapon. In the words of Robert Gibbs(Obama’s Press Secretary), “The President has a Blackberry through a compromise that allows him to stay in touch with senior staff and a small group of personal friends in a way that use will be limited and the security is enhanced to ensure his ability to communicate, but to do so effectively and to do so in a way that’s protected.”
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**Pizzaz**

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**Beverages**
- **Indian Chai** $0.99
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- **Mango Lassi** $1.69
- **Salt Lassi** $1.69
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- **Falafel Salad** $4.99
- **Falafel salad, Lettuce, Tomatoes, Cucumber, and onions** $6.99
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**VEGETARIANZ**
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Historically Black... Web Browser?

By Nikea Davis

In November of 2008, 40A Inc., an African American owned company, released its version of a web browser named Blackbird. According to Blackbird’s website, “Blackbird was developed on the simple proposition that we, as the African American community, can make the Internet experience better for ourselves and, in doing so, make it better for everyone.” This browser, powered by Mozilla, was made with the intent to help find African American related information and helping users interact with the African American community more easily. Naturally, there are many different reactions and questions among different communities, even within other communities. Here are some reactions from members of the African American community within the College of Computing:

"Can this browser really serve the African American community? Are African Americans unable to find information that pertains to themselves on their own? Certainly, with the proper education, practice or experience any African American can find any information they please on any browser. A child has the ability to find pornography on the web, so why can’t an African American with at least a pre-teen competency find information about their own community online?”

“The idea behind the Blackbird browser actually stirred some thoughts that I had not previously had. The notion of a ‘browser for African Americans’ implies that the current state of internet search engines, or browsers, is not returning results with minority voices in mind. This is an interesting proposition because we all assume that the internet is the ‘great equalizer’—and, frankly, it can be. As the developers of the browser stated, tech savvy or seasoned search engine pros can find the kind of information tailored to their needs. Apparently, a skill set or previous experience is necessary to find minority news and information. This is not something that I have previously thought about, and so, in short, the Blackbird browser (or the concept of the browser) has begun my interest in ‘technologies and inferred cultural bias,’ and ‘minority needs and their uses for technology’. As a side note: I do not know, yet, if a browser is necessarily the venue for addressing these issues, but I am open to the idea.”

“From a legal and technological aspect, how can 40A Inc. possibly create a browser that looks and acts just like Mozilla Firefox? I know that Blackbird is powered by Mozilla, but it seems to be just Firefox with some bookmarks and a black background. That would allow any person to add some extensions and bookmarks to Firefox and call it their own. And another thing, how do they get their African American content? Do they search for phrases like ‘black people’, ‘African American’ or ‘negro’ in combination with what you enter into the search bar?”

“My personal opinion is that the idea of open source is for users to use the tools available to develop any type of application that an individual developer sees a need for. Therefore although an application like Blackbird may or may not seem necessary I feel that it is perfectly within the spirit of open source for developers to create applications like Blackbird. So, I see it as a good thing.”

“Blackbird, or the idea of a ‘black’ browser, incites mixed reactions amongst the varying African American social groups. Unfortunately, for the educated, technology-aware group with which I identify, the instinctual reaction is one of repugnance and pity. This group questions every aspect of the tool, from its necessity down to its authenticity and authority, and ultimately how other races and cultures will view this product, as if to protect the already tarnished image of the African American culture from the threat of yet another stain. On the other hand, for a number of African Americans, the reaction could quite easily have been one of pride; the idea of a black browser might instill a sense of identity, unity, and inclusion – and perhaps, exclusion. The fact is that both initial reactions could be equally wrong! For those who would have written Blackbird off as another retrograde tool designed to repartition people along color lines, they may be surprised to find difficult-to-reach information pertinent to their own cultural experience now within their grasp. Or those who so eagerly embrace Blackbird as the ‘definitive Black browser’ might be disappointed to find that Blackbird offers them no new experience at all. Whether Blackbird or any other ‘for-us-by-us’ Blackengineered products are worth a chance as part of everyday living is an evaluation that should not be left to stereotype, instinct, or peer pressure, but to personal necessity and experience. Blackbird – like all products – is designed only to make life easier and more enjoyable; if your browsing experience is complete, don’t change it – but give a product a chance before making your final judgment!”
From March 3rd to March 7th, Georgia Tech ACM will be partnering again with Yahoo for Yahoo! Hack Week. Throughout the week, students will be treated to free food, demonstrations, raffles, game tournaments, tech talks, and a Yahoo! Atlanta round table, as well as insights into future technologies.

The culmination of Hack Week will be a 24 hour coding competition where contestants will design and develop a fully functioning application. Both undergraduate and graduate students are allowed and encouraged to participate. There are no rules regarding specific topics, but category specific prizes will be awarded. At the end of the competition, each entry will be scrutinized according to problem definition, the creativity of the hack, the difficulty of the problem being addressed, and the presentation of the hack to the judges. Past projects can be found at http://developer.yahoo.com/hacku/.

ACM will present prizes and trophies at the awards ceremony on March 7th. This year's first prize is set to be an HDTV, and the first place regional winner will also compete in round two of Hack Week competitions in Sunnyvale, California, and recieve a chance to intern with Yahoo!

Take advantage of this event to network and socialize with College of Computing students as well as Yahoo! employees. For more information, watch out for flyers around the CoC and Klaus buildings and join the ACM group on Facebook.
Past Highlights: Anime Cookout

By Stephen Hilber

High spirits and warm burgers were enough to make people forget about the cold weather at Anime O-Tekku’s biannual cookout held on January 16th. Participants sank their teeth into delicious kosher hot dogs and burgers fresh off the grill, while the delectable miniature brownies were seized first by those more experienced in the ways of the cookout. The foosball table attracted a steady stream of competitors, with the foosball table itself miraculously surviving the abuse of that one guy who always spins the players way too hard. A massive lawn-sized chess set was the home of the more tactically minded anime fans, as dozens gathered around to watch and get the chance to play each other. These are just specific highlights, though - everybody was talking and having a great time, and the games present just served to help facilitate the good times. Despite the ridiculously cold weather, there was a constant thirty to forty people present throughout the cookout, many of whom were running around, playing tag, and racing down the Klaus walkway on carts. It was a great time for everyone at the event; even people who weren’t anime fans still had a great time hanging out with friends and relaxing after the first two weeks of school. If you get the chance to go to a future cookout hosted by Anime O-Tekku, do it; there’s more than enough good times and good food to go around.

Women @ CC

Relay for Life

By Mi Seon Park

At their first meeting of the semester, members of Women@CC discussed their upcoming event, Relay For Life—the American Cancer Society’s signature activity that offers everyone in the community an opportunity to participate in the fight against cancer. Teams of participants camp out and take turns walking/running around a track or path. Women@CC is attempting to create a CoC student organizations Relay For Life team, with Steph Yang as the team leader. Everyone is welcome to join, and remember, this is for a good cause! Anyone interested can sign up or look up for more info at http://main.acsevents.org/goto/coc. Registration costs $10.00, with 100% of it going to the fundraiser for Relay For Life! The event will be held on Friday April 10, 2009, at the CRC SAC field.

Women@CC meetings will be held every Monday from 4:00pm to 5:00pm in the Student Organizations Room (CCB 104b).

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- You must include a resume with your submission to qualify

>score the loot

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- Eighteen Second Prize winners will receive a DRW gift bag

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02.03.09 – Computer Science/Computer Engineering Career Fair
02.04.09 – Internship Resume Drop Deadline
02.12.09 – On Campus Interviews

Please contact lwray@drwtrading.com if you have any questions.

www.drwtrading.com/algochallenge
Entertainment Software Producers is holding its first competition of the semester, and we’d like all of you to participate and join in the fun! The challenge is to design and develop your own fully functional “game in a box” - it can be a board game, a card game, or whatever else suits your ideas best! The deadline for submissions is FRIDAY, FEBRUARY 20, and we WILL have significant prizes for the winning teams (assuming you’re a member of ESP, of course). The full contest rules can be found online at http://cyberbuzz.gatech.edu/esp, so go online and check it out!

If you want to meet up with motivated individuals to work on a great project and learn a lot about designing awesome games, come to our weekly development meetings in room 102 of the CoC every Thursday from 6 PM to 9 PM. We’ll have food, discussion topics, game reviews, and plenty of time to get your hands dirty and make great games. Come in and have a blast!

Opportunity Alert

The Human Computer Interaction Graduate Program at Iowa State University hosts a summer Undergraduate Research Experience, sponsored by the National Science Foundation. This is a ten week internship where students take short courses in HCI and work in interdisciplinary teams on research projects. Housing and meals are provided, as well as a stipend. More information about this program can be found at http://www.hci.iastate.edu/REU/

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