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CSCI 2270 Data Structures and Algorithms

29 April 2014

<div align="center">Research Paper: Crowd Creativity</div>

A new era is arising, a time that will push innovation and creativity to its limits, the time of "crowd creativity." Creative thought has been considered an individual process for decades, but with today's technology creativity is being redefined as a combination of the masses. As a leader and pioneer on this research, Kurt Luther shares his ideas, findings and contributions during his presentation on "Understanding and Designing for Crowd Creativity." With the rapid advancement of technology come new ideas and possibilities. Kurt Luther took advantage of this as social technologies emerged and expanded. Today, people have the ability to connect from all over the world to share ideas, pool resources, leverage different expertise, even create and innovate something new, yet this is just the beginning of crowd creativity. In the midst of this, Luther searched to find a way to maximize its potential making the future of work more rewarding. To achieve this, one must first understand the dynamics of crowd creativity, what are its strengths and limitations, and how can we design around them? Luther's extensive research on the subject led him to focus on two certain aspects to maximize crowd creativity; helping crowds coordinate and perform tasks that require expertise. These are the features Luther believes prior collaboration tools are lacking. The popular "divide-and-conquer" approach at projects is a bit outdated, and Luther has taken steps towards developing a better method. He determined there are three aspects required to encourage more ambitious, complex and successful crowd creativity: support interaction and cross-pollination, allow a wide spectrum of

participants, and promote synthesis and coherence (not just variety). Using these ideas, Luther developed a new tool towards creative crowdsourcing—Pipeline. The Pipeline system offers worthy support for coordination through implementing a new approach Luther calls "redistributed leadership." Before we get into the details of this method, I'd like to discuss the complications of previous leadership roles in collaboration projects. Leaders are essential, but a single leader that has to take care of planning, problem solving, clarifying, informing, and monitoring can be very overwhelming, so leaders adapt by implementing a top-down, divide-and-conquer approach that's conventional and minimizes interaction and interdependence. Unfortunately these methods diminish crowd creativity leading to average or unsuccessful projects; fortunately Luther's new redistributed leadership system makes for improved collaboration leading to superior results. This is achieved with the help of technology that eases the burden on leaders, allowing a more decentralized leadership that encourages creative synthesis and leverages the diversity of the crowd. The redistributed leadership model incorporates two things, shared leadership and distributed cognition. This means that leadership is distributed to both the crowd and the technology. Redistribution of leadership responsibilities creates a highly interactive and interdependent collaboration—leading to better, more creative results. The web-based software Pipeline allows a project creator to decide which crowd members to trust which certain leadership tasks and can adjust in real time. This makes it so only some members can perform leadership tasks, while all members are still able to contribute. The success behind this tool for crowd creativity has been demonstrated in numerous mass projects and competitions including the Newgrounds game jam where random teams of four are assigned to create a new game from scratch within 72 hours (1st place team used Pipeline). Pipeline has proved itself to be quite the success, but Luther wasn't going to stop there. Another aspect to

crowd creativity comes through instant feedback and critique, using human critique systems. The original critique systems that exist (Forrst, Dribble, Feedback Army, etc.) seem to be lacking in multiple areas, so once again Luther took action towards making a new, improved system, called the scaffolding critique. The idea behind scaffolding is to help learners achieve more than they would without assistance, so the critique approach is to scaffold the language and process of providing design critique for crowds. This led Luther to design CrowdCrit, a web-based tool that provides visual designers with fast, scalable, high-quality critiques. CrowdCrit also allows designers to remain anonymous so reputation is irrelevant, which is less stressful on the designer and makes for more accurate, non-biased critiques. An evaluation of CrowdCrit through a poster design contest helped demonstrate this software's positive influence and easy-to-use interface. The poster designers considered the crowd critiques to be of high-quality (better than other feedback sources) and really helped them notice any issues with their work. Luther's revolutionary appliances, Pipeline and CrowdCrit, have already displayed what they are capable of, or rather what we as humans are capable of when we utilize crowd creativity, and may lead us to a new domain of innovation and design.

      The idea of making work more rewarding than ever before is something that cannot be passed up. Kurt Luther has made a strong impact on the possibilities of crowdsourcing and crowd creativity, and I'm curious to see just how far this will go. With the technology available to crowd source creativity, just how long until this becomes a familiar method adapted across the globe, what kind of impact will this make on design and technology, and is there a possibility of reaching an exponentially higher creative thought or bank building from the source of any individual mind? Let's take a look.

Crowdsourcing is already very prevalent around the world; to share information, ideas, research, even gather funds. We are heading the right direction, and with new technology that supports maximizing crowd creativity, we need to get everybody on board. Crowdsourcing has been on the rise and will remain to expand as long as it proves beneficial, and as Pipeline along with other new crowdsourcing tools being developed, there are no signs of slowing down. Corporations like AT&T have already demonstrated the successes of crowdsourcing for innovation. AT&T has been utilizing its own software, the innovation pipeline (TIP), with similar goals to that of Luther's Pipeline. TIP is exclusive to AT&T employees all over the globe whom are able to contribute and share any ideas they have for the company. As AT&T senior executive vice president John Donovan puts it, "Ideas grow, get refined and enhanced—and the best ideas get turned into real products, applications and services for our customers." It seems strange to see such success behind these innovative crowdsourcing tools, yet they still remain so unspoken. If our ideas and products can be "refined and enhanced" shouldn't all companies, inventors, designers and so on being taking part of this? As more start to realize the profound impact crowd creativity can have on our world, it's only a matter of time till other companies recognize and follow AT&T's example for innovation, and more individuals will become aware of other beneficial creative crowdsourcing tools like Pipeline and CrowdCrit.

Luther provided evaluations of both Pipeline and CrowdCrit showing that they both indeed lead to better products. I don't doubt this; there were many supporting examples from different competitions and projects that show success—Newgrounds game jams, Gishwhes scavenger hunt, Junto films, Holiday Flood project, poster design contest—but I'm interested in what degree of a difference do these applications make. I'm suggesting an experiment to produce clear, relative results that illustrate the direct affect that Pipeline and or CrowdCrit can have on

the product. An experiment must include an independent and a dependent variable, where the dependent variable is directly manipulated by the independent variable. For the most clear results, I will include three independent variables—assistance with Pipeline, assistance with Basecamp (another project-management tool), and no management assistance—where the dependent variable will be the final product's rating. Since the Newgrounds game jam already has a good implementation of assigning random teams of four (random assignment needed for validity), finishing their task within 72 hours, and then scoring the products as it is a competition, this experiment will be perfectly incorporated into the game jam with the minor addition that teams will also be randomly assigned to one of the three independent variables which they will believe to be the same for all other teams. These conditions provide a control group, the teams with no assistance, which the Pipeline and Basecamp groups can then be compared to and see how they rank up. Once all the games are in and rated, average all the individual scores of each of the independent variable groups to observe how, on average, each method of management affects the results and how the three compare (ideally Pipeline with the highest average, followed by Basecamp, left with the other guys in last). Similarly, this process could be repeated with CrowdCrit as well, compared with another human critique system on a simple task like making a virtual poster. Once an experiment is held then the public could truly see what a difference these tools make, provided that they rank the highest.

Stepping back and observing this concept of crowd creativity and how it is taking place today may almost depict some sort of Sci-Fi reality. The creativity of countless individuals may be linked up and conjoined to a single well rounded enhanced idea? If that's today, what's tomorrow? A higher thought that pulls from the minds of millions? Well, isn't that something. It almost scary how fast we are progressing as a race of intelligence and technology, and what was

once science fiction may be closer than we know it. As more of the population becomes accommodated to crowdsourcing and especially crowdsourcing for creativity and innovation, what bigger pictures will this lead to? Is there a possibility of a technological high-intelligence oracle, one that not only stores the millions, perhaps billions of ideas that are put out from the large population of human minds, that can then be processed and analyzed by the computer so it can make connections, gather frequencies, ultimately leading to predictions and even making judgments. All hail the almighty oracle (scary, yet fascinating, right)! Ok this might still be a bit farfetched, but is that not where we are heading with this technology. Now, let's tap into some of the wonderful opportunities that crowdsourcing offers today, which can lead to a better tomorrow. Crowdsourcing provides innovators and entrepreneurs with the tools and support they need to succeed. If you have developed a brilliant idea, whether it be individually or a crowd effort, then the next step is to get that idea in motion, but that is not always easy. With the help of crowdsourcing though, one can take advantage of crowdfunding: online financial contributions made by investors, sponsors, or donors that can really help kick start the project. The innovator starts his/her campaign by explaining the idea and getting feedback, and if donators and investors are convinced that it is a worthy idea they will make contributions to help raise funds. Websites like Ice dragons (icedragons.co.uk) exist on the basis to support innovative entrepreneurs through a mixed community of innovators and experienced investors. They promote "crowdsourced financing and wisdom in exchange for equity" and "accelerating entrepreneurial growth through finance, talent and connectivity." With opportunities like this available, the world of innovation can skyrocket and technological advancements may progress faster than ever before. It's only a matter of time before reality catches up to science fiction.

In a world that is constantly developing and advancing there are endless possibilities. Individuals have the power to create; imagine then make something out of nothing. But, an individual is limited, limited in brain power, possessing one mind and one mind only. With the introduction of crowd creativity, these limitations can cease to exist; the minds of millions have the ability to come together expending colossal amounts of brain power towards a single goal. The human race may be taking steps towards something revolutionary, a new dawn of innovation and enlightenment. Crowdsourcing creativity is still a new phenomenon that has revealed what it can achieve on a small scale, but as the scope of these crowds continue to grow, so will the possibilities.

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