Project Significance

Team 1 (Buffalo) "Cloud-Based Infrastructure for Biomedical Sensor Data"

Camden Lopez • Taj Morton • Alex Weeks

Clinical research studies can produce large amounts of data which represent a rich resource for analysis. An example is an NSF-funded collaboration between the OSU School of EECS, OHSU, and the Oregon Center for Aging and Technology (ORCATECH): sensors non-invasively monitor aging patients and wirelessly upload data to a server via smartphone. Post-processing and machine learning algorithms can transform such data into monitoring and predictive information that aids care and treatment.

Typically, clinical data are stored on local servers and post-processed using programming languages such as MATLAB and R. However, local storage and computation are not viable for larger data sets. Data volume and computation requirements demand a more scalable solution.

Cloud computing services not only provide a scalable option for data storage and computation, but they can also offer improved reliability and security due to concentration of resources and expertise in the service provider. Leveraging cloud services to improve the scalability and availability of clinical data storage and analysis can improve utilization of the data. Better data utilization will mean better medical understanding and care.

Our client wishes to explore the viability and various options for a cloud-based infrastructure to store and analyze biomedical data such as that produced by the EECS/OHSU/ ORCATECH sensors. Of particular interest are the options for running analysis on the cloud using MATLAB and R, data transfer and storage throughput limitations, and data loss rates during upload.

Towards these ends we are developing a Java web application that uses Amazon Web Services and MATLAB/R to store, analyze, and display sensor data. A successful project on our part will produce methods and knowledge that can be put to use in the clinical research setting to improve handling of data. If the cloud proves useful here, it may also find its way to consumer applications. Ultimately, applications that combine small sensors, smartphones, and the cloud may include everyday products used to promote health, safety, and overall well-being.

Team Name: CMS-team

Project Significance Paragraph

The Corvallis Montessori School (CMS) project of creating a database with a web-based front end is important for four main reasons: Improving administration efficiency, reducing the schools environmental impact, improving parent interactions with the school, and improving our skills as software engineering professionals. The CMS currently stores all their records on paper in various file cabinets which wastes time that could be used on improving the children's education when administrators have to dig through paperwork. As stated earlier the CMS currently uses a lot of unnecessary paper and our project will not only save the school money but will have a positive effect for the environment. Parents will be using our software to enroll their students and track their progress leading to a more stress free process. Lastly by working as a team and completing this project our team is solidifying the skills we have learned throughout our educational carrier as computer scientists here at Oregon State University.

1/17/2012

CS 461 / 462 / 463

Project Significance Document

Code3Know: Mobile Real-time Firefight Assistance Application

Team 03: Ben Bodenmiller, Cameron Buchanan, Peter Radke, Chadway Cooper

Firefighters put their lives in danger on a daily basis as a civil service. At some point in our lives, we all may be put in a situation where we will rely on that civil service to protect us or our loved ones. As citizens that benefit from this protection it is our responsibility to do what we can in order to help them successfully complete their missions. This project helps firefighters by allowing them easier access to necessary features and functions that before were too costly or burdensome, but is now within the palm of their hand. This helps alleviate unnecessary stress when planning missions and allows firefighters to focus on their mission at hand.

This project is going to tackle two of the major challenges facing firefighters in the line of duty. When called to a large structure, a commercial or industrial building, it is up to the fire department to acquire architectural plans with exit and hydrant locations. If the plans are not in the binder of prints the department might have, the race is on to find and distribute these documents. Often times there might be only one person on location with the information necessary and they have to communicate this to all the other firefighters. Our application will use global positioning to determine the location of the emergency and locate building plans in a database. The plans will display on a mobile device in the hands of the firefighter and give each of them this essential information.

We are also going to put another important tool into the hands of every firefighter. Currently infrared technology is available to a firefighting unit as a heavy, cumbersome piece of equipment that is costly and bulky. We believe this technology has the capability of saving lives by locating hot-spots in a burning structure as well as locating people by their heat signature. We are going to integrate this technology into our application, allowing firefighters to use a connected infrared camera as a life saving device.

We believe these tools to be not only important, but necessary in providing the best protection today's technology can provide. Firefighters across the nation, and anyone who finds themselves in need of the services provided by these civil servants, will benefit from this project. The technology and equipment exists, we just need to put it into the hands of the brave men and women who risk their lives for others.

Collada Web Editor Project Significance

Team 4
Patrick Kreutzer, Nathaniel Gideon

The Collada Web Editor project is taking advantage of new web based, 3D graphics technology to design a way for graphical objects to be loaded to a website where they can be viewed, edited and loaded. This is a new and relatively unexplored use of the technology. There are many softwares that can be used for loading, editing and exporting models, but using a web application to accomplish these actions is new territory.

A web application like this would have numerous potential uses and advantages. For instance, a web application could be viewed and utilized by multiple users simultaneously. It could take advantage of input from several individuals and allow each one to view each others works.

The benefits and possible function for this technology would be the implementation of a large scale graphical object library. Such a website could harness the technology to allow users to submit graphics, objects and textures of their own making. It would also allow users to search and view each others' creations. If an individual found an object they wanted to use or modify they could download it from the site to work with it personally.

Larry Baker
Michael Mendes
1/17/2012
CS 462

Project Significance Document

We have all read reports where important information is hidden in a sea of information that does not apply to us. The report viewer will provide the reader with which errors have occurred in the past and which ones are new and relevant to them. The viewer will also allow programmers to mark if an error is a false positive. Compiling information on false positives will make it easier to correct our tools and eliminate these false errors from our reports. The viewer will also include the option to email the individual that programmed the code that caused a past error so that it can be checked, corrected and commented on by the originator. To limit information overload, the viewer will allow the reader to filter the output so that it will show only the information that the reader is interested in.

The net result will be a more efficient static analysis tool, which will have benefits at multiple levels. The programmer will be able to check the kernel faster. This will result in either more frequent updates or more time devoted to adding features and error-checking code by other means. This will result in a better kernel (and any other programs checked with this tool) for all Linux users. Additionally, if this kind of checking proves to be successful, then it may be implemented for other static analysis tools as well (if it hasn't been already), improving productivity (and therefore quality, feature richness, or update speed) beyond just the Linux kernel.

This project is important for both societal and corporate reasons. One benefit is that this project will help get more people interested in music theory, by providing a way for people to easily make music. It should be simple enough for a toddler to just draw on the sheet whatever they want, and turn it into something that sounds good. In addition, older children, as well as teens and adults, can make more precise drawings in order to make music that sounds how they want it to. Parents could print out the sheet and scan it back in, helping bring them together with their children. Overall, it provides a bit of introduction to music, while also providing entertainment.

The app itself will be free of charge, so on the corporate side Crayon Composer will not directly help sales for HP. However, this app could indirectly help by selling more HP products. The app could be a selling point for the HP all-in-one printers, demonstrating something that no other printer or app has provided. In addition, printing out music sheets will use ink, which HP also sells for its printers.

Project Significance: NVIDIA CUDA Texas Hold'em AI Project

Team 7: Skynet++
Lawrence Neal, Matt Atwood, Steven Innes, Kevin Strasser, Matthew Insley

The CUDA Texas Hold'em AI project poses problems in two important domains: parallel computing and the AI modeling of other agents in an adversarial environment. Completing the project will yield useful general-purpose tools and methods that can be applied to more complex AI and parallel-computing tasks.

Parallel computing is one of the main solutions to increasing processor performance. The generous increases of doubling the transistor density on chips every eighteen to twenty-four months, as described by Moore's law, no longer bounds processor performance. Rather the amount of power usage and conversely heat dissipation have become true hurdles for computer architecture. Because of this, computer architecture has moved to using multiple cores in attempts to speed up computer processing. Learning to effectively coordinate multiple cores, and especially the many hundreds of cores in modern graphics hardware, is Computer Science's most pressing problem.

Modeling and predicting the behavior of other intelligent agents is an increasingly relevant problem for many AI systems, and will grow in importance as AI technology becomes more useful and widely-deployed. Currently, behavior prediction similar to what a poker bot requires is used in game-playing AI agents and a few other niche tasks. In the future, however, AI agents such as self-driving cars will need to predict the behavior of other agents, artificial or human, in a more complex environment. For example, given another car's speed and previous behavior, predicting whether that car is about to run a yellow light could be a critically-important task. Although Texas Hold'em is a simpler domain, the basic approach we follow will yield useful tools for more complex situations. Accurately predicting the behavior of other intelligent agents, whether artificial or human, will be a necessary prerequisite for many useful AI applications.

Project Significance Document – Team 08

Wade Cline Taylor Christenson Garret Fleenor
Andrew Van Deldan

January 17, 2012

Project Significance

In order to protect confidential, proprietary, and personal data, computer users often encrypt their data through an application such as Truecrypt. While encryption is a valuable tool to protect data, the processes of encryption and decryption (the opposite of encryption) slow down the computer. The goal of this project is to use NVIDIA's CUDA technology to increase the speed at which encryption and decryption are performed on Truecrypt and thus negate any slowing effects that encryption/decryption has on the computer. This will allow people to protect their data without suffering unnecessary slowness on their computers.

The project will also showcase the power of NVIDIA's CUDA technology for NVIDIA graphics cards. CUDA was designed so that applications other than video games could take advantage of the performance capabilities of the graphics card. This means that other applications, such as Microsoft Word and Excel, may now take advantage of the graphics card, resulting in faster overall performance of the computer, but only if the programmer chooses to take advantage of CUDA. The performance benefit can sometimes be extreme, depending on the application's needs. In some instances applications have been speed up hundreds of times faster! By showcasing the power of CUDA, it is hoped that more programmers will take advantage of CUDA, resulting in faster applications.

Thus this project will provide a double-benefit to users. By speeding up encryption and decryption in Truecrypt, users can protect their data with a much smaller performance hit. The benefits from speeding up Truecrypt through CUDA will also highlight the power of CUDA, encouraging more developers to take advantage of CUDA, resulting in faster applications for all users. This will let users spend less time waiting for the computer, and give them more time to focus on things that matter to them.

Jonathan Gill
Angela Billings

Team 09
“Project Titan”
Project Significance document

Our application will be important because it allows groups of people to study in a friendly work environment with people the know. The use of our app will save users from wasting resources writing out multiple note cards. Moving into the digital age we have enabled groups of users a way to create and study note cards while on the go and from any location. Assisting students in collaborating may increase time spent studying instead of spending their time preparing. The tracking of right and wrong answers will help users focus their attention on topics they may need to work more on.

Teachers would be able to create digital flash cards and distribute them among their students, to assist in studying of certain topics. A student could also create their personal set of digital flash cards to distribute amongst their peers. Tracking of the right and wrong answers will help users focus their attention on area's that need improvement.

Our app with save many users time and money spent creating paper flash cards that are easily lost and destroyed. Our digital flash cards need only to be created once and are stored online so access and recovery is easy. It promotes group studying and improves understanding and social networking.

Rodney Keeling
Max Adamson
CS462 Winter 2012
Team 10

The peer evaluation software will allow students and instructors to have a more private, flexible, secure, and faster way of handling peer group evaluations for classes. There are both societal and technological benefits to the project, and for a variety of people. For both instructors and students, the web application uses the ONID login form, so getting started is as simple as logging in with ONID credentials.

Students benefit by having a more private, quicker, and easier way to grade group members for class projects. This method is more private since it allows time out of class, and hence not with the students in the class, for evaluation. This could increase honesty in evaluations and therefore predict success or failure earlier on. Additionally, this will get rid of the time spent evaluating during valuable class time, thus increasing time spent on learning or reviewing course material. And since this is web-based, it is a lot faster to complete than the standard paper/pencil method.

Instructors greatly benefit from this project. This will eliminate the need for transferring grades from paper to the computer, which will save instructors and TAs quite a bit of time and work. Furthermore, by providing statistics of the peer grading, instructors receive information instantly where the former method required hand-calculation. Finally, the possibility of having exporting to Blackboard is a current feature we are considering, which will make grading even faster.

CS 461 / 462 / 463

Senior Capstone

Oregon State University

Project Importance Document

Everett Delivery Center Information and Metrics Communications Platform

Team Name: FlyTec

Team Members: Sonika Coomar, coomars@onid.orst.edu

Dae Young Roh, rohd@onid.orst.edu

Client: Jared Blake, Boeing, jared.blake@boeing.com

Why is this important? It could be societal, corporate, technological, etc., but there clearly is an importance, otherwise nobody would have proposed this project.

The main purpose of this project is to perform business analysis more effectively and efficiently at The Boeing Company. The platform that we are building is going to allow users to enter data into a web interface. These data are going to be stored in the database and then an algorithm is going to run on them and perform business analysis required at Boeing. Until now all business analysis at The Boeing Company was done using Microsoft Excel which proved to be very inefficient and ineffective. A major drawback was the lack of access to live data. Our platform is going to allow the users to have access to any information at all times from one place instead of having to open multiple MS Excel files. The project will be seen as a success when the web-platform will be able to take data from the user as inputs, and then perform the business analysis and produce an output. Furthermore, this application needs to be compatible on big plasma screens to mobile devices.

What will someone be able to do because you give them this project?

In order to solve the problem, our client wants us to build a web-based platform from scratch to do two objectives:

- The user will be able to enter data using the web-platform which will automatically perform the business analysis and store it in the data base.

- The user will be able to retrieve the output of the analysis at any given time for visualization or editing purposes.

How will this affect someone's life?

Boeing’s business analysts enter their data in Microsoft Excel and then perform required analysis to produces graphs, charts etc. This is very time consuming. However, during presentations for example, if a question is asked about a certain abnormality in the certain matrix or graph, the person who is doing the presentation does not have immediate access to the data that caused the abnormality on the matrix or the graph. To solve this problem, we are going to implement the web-platform that is going to give users instant access to all data and also store analysed data with reduced time consumption.

Team 12 -- Graphical Editor for State Machines – Significance Document

This add-on we are making to an existing state machine editor for Buzz Monkey Software isn't actually being made for the video game *developers*, but rather for the less technically apt game *designers*. These designers need to be able to track the state of a game, whether it be a character jumping, or a menu changing, so that they can craft the game appropriately. They currently have a tool that does this job for them, however it is not very usable, as it is structured more in a text form and not in a graphical form. This means that it can be very difficult and complicated to trace a games path through a series of states, which defeats the purpose of using the tool in the first place. In fact, currently, the designers aren't even using the existing tool, so we are essentially giving use to the old tool. This tool will make the lives of the designers much easier by letting them view graphically what will happen as the game progresses and moves across different states. In addition to simply making their job easier, it will also save the company a significant amount of time because the tool will also be able to test and simulate state machines as well, so that the designers don't have to manually test each state machine to see if it works or not.

In addition to making the designers happy, by having a more effective state machine editor, we are indirectly enhancing the quality of Buzz Monkey Software's video games, and decreasing the time that they are spent in development.

Team 13: Heatmaps

Project Significance

Our project is to create a tool that visually maps places that players get stuck in a puzzle game onto a map of the level. The tool will make the image 'hotter' (more to yellow, orange, red colors) in the places where more players became stuck or gave up, and cooler (blue) in the less frequent locations.

This tool is intended to help first and foremost the developers at Buzz Monkey, especially with level design. The relevant game, Rinth Island, is a game that makes money by only letting players complete a limited number of levels, and requires micropayments to unlock more maps. Thus, it is in the developers' interest to have the game flow well and for players to continually complete levels and move forward, rather than being stuck for a long time on one level or puzzle. First and foremost, this heatmaps tool would make it easier for Rinth Island to be a more profitable game for Buzz Monkey.

However, the benefit also goes to the end users – the players. Ideally, this will result in players having more fun and experiencing less frustration at any given level or puzzle. Delivering better entertainment and fun to more people is hopefully a positive effect of this project.

Finally, delivering all source code and work done to Buzz Monkey at the end of this project will allow the developers to reuse the framework to quickly and easily implement heatmaps for other games, and hopefully take the company a step forward in making user friendly, frustration-free games.

Project Significance Document

As human beings we have been known throughout our existence to be forgetful at times. Think back and try to remember looking for something in your storage unit, attic, or shed, but you just can't seem to find it. Don't you wish you had a quick pocket reference to look up where you stored all your belongings? What if your spouse is refusing to serve you breakfast until you find that ugly inflatable Santa or maybe you hid your boyfriend's video game system in a box somewhere and it's his birthday and you can't find it! This is where our storage application comes in to save you.

We know how busy people can be and we all end up acquiring things that we store for a while, but the only way to keep track of them now is to keep some sort of arcane log that you might loose as well. We are here to provide you with an application for your Android smart phone for keeping track of all the stuff you decide to store regardless of what it is or where you put it. Our easy to use interface will allow you to quickly add storage locations, boxes, containers, shelves, etc and put whatever you like in them. This will be as easy as opening up our application and typing in what you want in the search interface. All of the items you want are accessible any time you want from your android phone. In the application you can even take a picture of the item/container to keep in the phone so you remember exactly what it looks like. Our application works alongside a built in bar code scanner for containers so you can quickly scan one and reveal its contents.

When the time comes to find that pesky missing item, you can search your records on the phone quickly and easily to find out where you put it! This will cut the time and frustration looking for something you lost down to a few button clicks. We live in a very busy world where it's easy to forget where you put an item. Our storage app is here to make this part of your life more organized.

In the future our app may evolve into something a larger corporation could use to track items in their warehouse. Imagine keeping track of your warehouse inventory on your smart-phone and being able to share it through your company network and to the other employee's smart phones. Anyone could scan/enter an item coming in and out of your warehouse and update your inventory. This could be highly useful, especially in a place where there are a lot of loose items like a transmission rebuilding shop. In a transmission shop you might have a few thousand transmissions and you might not be able to remember where you left that special one you need to rebuild.. Our app could tell you right where you put it.

Regardless of being a regular consumer, or a large scale warehouse; our app is here to help you remember exactly where you put something. People usually keep their phones close to them so keeping this kind of record on them is perfect since a phone is usually always accessible any time of day. The next time you forget where you put something just remember the HG

storage app is there to help you locate it.

Project Significance: PhoneGap Solutions

Team 15: Sheena Ellenburg, Bryan Pawlowski, Daniel Sills

Our project is significant because it demonstrates the customizability and useful nature of the PhoneGap application development platform. The idea behind it is that application developers can spend less time on the implementation details, opening it up to more people. They can create applications with very rich content and functionality without needing an extensive working knowledge of the plugin components. It helps developers more easily create applications for different phone platforms, cutting time and cost constraints significantly. With these powerful tools, an application developer's code can be distributed across at least 3 different phone platforms, potentially increasing profits by one-third, and decreasing code writing time by two-thirds. Essentially, the PhoneGap development platform is a means of leveling the playing field to include all developers who may have content to contribute but may not have the technical knowledge to render that content into a viable phone application.

Our demonstration of the PhoneGap application development platform may encourage others to use it - not just hardcore phone app programmers, but hopefully anyone with modest web development experience. Just as Bill Gates' 1996 paper suggests, "content is king," and PhoneGap is there to facilitate this.

Timothy Shoaf
James Prestwood
John Neuneker
Mike Bailey
Senior Design
January 17, 2012

SIGNIFICANCE DOCUMENT

Why is this project important?

This project is important because, until recently, most 3D color data has been taken by projecting pre-adjusted 2D data onto the 3D point cloud, resulting in less than optimal lightning. This means that, excepting dramatic differences, color could not be used as a search parameter for object recognition.

With our algorithm, color 3D data can be processed rapidly which will contribute not only to civil engineering tasks (as the project's main focus) but to other fields including the emerging human computer interaction with devices such as Microsoft's Kinect.

What will someone be able to do because you give them this project?

Initially, the project centers around the normalization of lighting for the colorimetric data in a 3D point cloud. The hope is that by normalizing the lightning, one may do feature removal by colorimetry rather than topology. Put simply, imagine trying to tell a computer to remove all the leaves" in a spring time scan of the quad at your local college campus. Well, okay, what type of leaf? You may be able to come up with a list of types you want removed, but what do those look like? Can you describe them to a computer well enough for it to identify them? What if they are curved or distorted, or wet, or bent, or burned, or half eaten by some hungry fawn? It is far, far simpler just to say, "please remove all the things that are more or less this shade of green".

However, without the lightning normalization, many points do not have the correct color values, and thus will be falsely missed, or possibly erroneously included, in such a search. Our project aims to deal precisely with that problem.

There are also other applications outside of the initial civil engineering issue. More frequently now, devices such as the Microsoft Kinect--which employ both a color camera and 3D scanner--are being used to act as an interface between human and machine. These devices may too benefit from a fast normalization algorithm.

Imagine being able to get a truly "hands-on" genetics lesson in the classroom. Splitting apart the DNA right in front of you using nothing but your hands--attaching the little replicating polymerase molecules and zipping them up as you would your jacket watching as the computer simulates the science based on your every move. Surely that might have inspired a bit more in your memory than the flat images and long-winded explanations of your high-school texts.

How will this affect someones life?

Directly, our project is of application to surveying. 3D images are taken of, say, a road between two hills. Six months later, another set is taken. By comparing the sets, one can determine the amount of land shift and determine whether new retaining walls or wire need installation. This implies a reduction in taxes by increasing the monetary efficiency of our state's civil engineering projects.

Given the myriad applications of better 3D imaging technology, it is hard to say immediately how this might affect ones life. We posit that many similar educational applications such as mentioned above may fall out of 3D imaging technology as it progresses, but ultimately only time will tell.

Team 17

James Admire
Abbas Al Zawwad
Abdulwahab Almorebah

Project Significance

Programmers often have a hard time finding good reusable code in online code repositories. Our project will help users who use online code repositories find good and reusable code by using metrics that we researched to develop a better ranking algorithm. Our project will help in improving the CoScripter search engine which will sort and rank online scripts in a better and more effective way than the current search engines in online code repositories.

According to the CoScripter website, “CoScripter is a system for recording, automating, and sharing processes performed in a web browser” (http://coscripter.researchlabs.ibm.com/coscripter). People can write scripts to perform an online activity and share them with other users through CoScripter’s repository. Users can search the repository for scripts that they may want to use.

By allowing users to use this project, they should spend less time searching online repositories to find the scripts that fit what they are searching for. Even though the result might not be what they are exactly looking for, it would be the best available search result. Spending less time searching means that the user is going to have the ability of being more creative with what is usually “wasted time” using other search engines.

Nathan Nicholson
Jerrid Procter
CS 462
Team 18
January 13, 2012

Project Significance

Our project consists of creating a searchable database for The Business Enterprise Center (B.E.C.). The B.E.C. is a company working for the City of Corvallis to bring new businesses to the area. Once a potential client is found, The B.E.C. would then locate a suitable business site, and report the findings to the client. If the terms are agreeable, the client then moves in and Corvallis grows.

At the current moment, The B.E.C.'s database is inefficient, clumsy, and unorganized. In order to search through the current database, the user (a B.E.C. employee) has to tediously scroll through each and every bit of information just to see if the data is relevant to the client or not. This is time consuming, and what should just take a matter of minutes ends up taking days or weeks (mostly because other projects are going on at the same time, and it is very easy to lose track of what you were originally searching for).

Our team A.U.S.E. (Awesome University Student Engineers), is teaming up with The B.E.C. (forming team B.E.C.A.U.S.E.) to provide an improved software system that will manage The B.E.C.'s database. Our goal is to create a system that will allow The B.E.C. to quickly search through their database via scanning through organized data, or by a search feature we will incorporate. With these features in place, The B.E.C. will save immense time and thus would be able to report potential land areas to the client. The faster a client is able to move in, the faster Corvallis grows. The faster Corvallis grows, the more options are available to current residents. Also, by helping maintain a "good standing" status with The B.E.C., the more potential for future dealings with the Capstone project – which helps out O.S.U. students.

Everyone in the Corvallis area benefits from a faster, more efficient system used by the B.E.C. - residents and students alike.

Intel x86 Atom processor

Technology is constantly growing and companies are competing to deliver mobile technology that will enhance the way we live. However, companies do not always produce the best products, it is our responsibility as shoppers to find out what products really stand out from the rest. The most popular devices in the mobile market are tablet computers. Tablets are small light and they are capable of doing most of what a conventional desktop can do, with the portability of a notebook. Yet, as a customer who is interested in buying a tablet, it is hard to pick the right one. Regardless if you are going to use a tablet for videos, browsing, etc. we believe that those tasks can be done better, faster and more efficiently on an Intel-powered tablet. The aim of our project is to provide an animated wallpaper that is visually stunning, yet at the same time highlight the advantages of a tablet powered by the world's leading producer of microprocessors.

Furthermore, our project is not just to help customers; it is also going to show the world and other major Original Equipment Manufacturers and Original Design Manufacturers (OEM's/ODM's) that tablets running Intel Atom have better performance and are more reliable. Moreover, convince these manufactures to design tablets that are based on the Intel Atom processor, and to convince customers that tablet's running Intel's silicon is a step ahead of ARM processors.

Our project is going to allow you to see, read and understand the performance of tablet running Intel Atom, semi-graphically. Showing information about the system usage, such as battery usage, CPU, etc. The data will be displayed so that any person can understand it.

Project Significance Document
Team 20 (Inductors)

Intelligent Tutor systems provide concise and appropriate feedback to students to help guide them through the process of problem solving. The Tutor acts as a helpful companion on the quest to a better understanding of the concepts and challenges involved with each problem, helping to create an environment where students are more likely to stick with each problem and work it through, instead of growing frustrated and giving up. Many students at Oregon State are familiar with Intelligent Tutors in the form of Mastering Physics and Webworks, which are used by professors in the Math and Physics departments. Intelligent Tutors allow students to have immediate access to relevant information and advice, and allow them to overcome difficult challenges without interrupting their study processes by having to seek out help from outside sources.

Our Intelligent Tutor, developed jointly by Oregon State Computer Science Capstone Team 20 and Microsoft Research, is designed to aid students in understanding the concept and implementation of Simple Circuit Reduction. Our system employees a primarily graphical interface for the presentation and solving of circuits, and displays appropriate feedback as the students progress through each problem. The circuit descriptions and tutor advice are the only portions of the system delivered as simple text, which enables the tutor to be easily ported to different languages without the need to rebuild each problem from scratch. The tutor is implemented via a web based interface and functions in a client to server environment, making the hardware requirements on the client side extremely light and allowing the system to support a wide range of devices.

In addition to the traditional roll of an Intelligent Tutor, our system is also a tool to aid Dr. Sumit Gulwani and his colleagues at Microsoft Research in better understanding the learning process of students worldwide. By recording and reporting on each step, successful or not, a student attempts during the solution process, the tutor goes beyond simply noting which problems students struggle with and affords a glimpse into the actual thinking process. By analyzing this data Dr. Gulwani and his colleagues will be able to gain a better understanding of how students from different backgrounds and cultures approach specific challenges related to circuit reduction, and use this understanding to develop more effective tools to aid future students. Ultimately this benefits not only students, but the world itself as students leave their educations better equipped to excel in a wide variety of scientific fields.

Above The Cloud

Jace Allison, Darrin Dunham, Jeremy Kreutzbender
CS462 – Jan. 14th 2012

Significance Document

The Above The Cloud capstone team is developing an iPad application that will be the mobile client for Veeva System's Veeva Vault. The Vault is an innovated cloud-based content management product suite. Cloud-based means that Veeva hosts and operates all the servers in a shared data center environment; customers only need a web browser to access the application. Professionals in the biotech, pharmaceutical, and medical device fields can manage their critical documents and other digital assets that are required as part of developing, testing, and gaining FDA approval for new drugs and medical devices through the Vault. In layman's terms, the Vault provides a secure place for the customers to store their documents, which they can access from anywhere, so long as they have an Internet connection. The capstone team is seeking to provide a way to alleviate the constraint of being connected to the Internet.

If a professional in the aforementioned fields is not in their office, but perhaps on site testing a new product or device, where an Internet connection is not available, all the benefits of Veeva Vault fall through the cracks. Through the use of an iPad and development of a mobile application for the Vault, it will be possible to access needed documents while offline. This can be achieved by having the app connect to Veeva Vault while in the office (or anywhere there is an Internet connection) and create a local copy of all needed documents on the iPad; these documents can then be opened whenever and wherever needed. This will allow users of the Vault to maintain the benefits it provides in locations where they normally would not be able to have access their critical information.

Project Significance

Lewis Valentine and Chris On

The OSU Geomatics engineering lab has been gathering vast amounts of spatial data. Over the last few years this amount has increased significantly. Now approaching 20 terabytes there is a need to organize and store this data in a more efficient fashion. By providing them with a database management system for their huge tracts of point clouds and other data we will enable these researchers to spend more time dealing with their data and less time keeping track of it. Besides just students using this data to learn, the researchers in the lab have produced a large number of publications and we would expect their output to increase after we set them up with this database. We are also working with them to provide them with fully maintainable code that works best with their existing personnel so that they won't need the help of capstone students for this project again.

Team 23- McAfee Threat Android Application

Anthony Karas, Marshall Adams, Jake Cray

Our project is important to internet security professionals and the companies that people in this industry support. Our android application will allow people in the internet and electronic security industries to do their jobs more quickly, efficiently, and effectively. The ability to quickly look up information about viruses and other threats that may be affecting a security professional's protected equipment Is invaluable, and with our application, those professionals will be able to do so anywhere they have their Android phone and reception. Our application will link up to McAfee's well-established internet threat database to enable users of our application a fast and portable method of threat analysis. This will increase the overall security of companies that rely on use of the internet to conduct business.

Security professionals that install and use our product will be able to use this application to multitask better by not needing to take up their screen with a McAfee security window, or can identify threats they find on the go. They will in turn be faster and more mobile in their job, giving them increased efficiency in their work place. These aspects of our product turn into an effective business practice for the company utilizing it with their security team, giving increased security to the various computer systems under their watch.

Our project can also help others that just want to increase their level of electronic security at home. Non-IT professionals can download and install our application and become better equipped to handle security threats to their personal computers and data. With a little self-research into how to take care of minor security threats, our application could help some go from electronic security oblivious to security aware, and be at least moderately well equipped to handle minor security breaches of their own information and equipment. This will hopefully lead to product users to better protect themselves, and save them money in the long run by not having to hire a computer security professional to fix their computers.

Totes MaGoats

Team 24

Project Significance

The Mobile Patient Record Viewer application is important to communities in which health care is remote or inaccessible—be it because of distance, societal norms, or finances. Our application will allow people with any amount of medical competency to connect with hospital and medical resources across great distances, with little effort, to collaborate on observations. The app can record a medical observation and upload this information to a repository which is accessible by medical professionals. This app will streamline the sharing of patient information among medical professionals and therefore enable better patient care. It can also help to overcome negative social stigmas around doctors in certain cultures, especially among older people. If a grandson can take a video of his grandparent's gait using their Android tablet and send the video to a medical professional, certain diseases or afflictions can be caught early.

Project Significance
Team 25

Our project is the creation of an Android app that will allow snow-sport participants at Mt. Hood Meadows to see both their position and the position of their friends on an artistic rendition of Meadows. The app will allow individuals to add other users as friends and choose who among their friends can see their position. In addition to this mapping functionality, the app will include the ability to create meeting points that will be visible to all friends that are currently being shared with as well as a statistics recording feature allowing users to see statistics concerning their day at the mountain, including max speed, distance traveled, elevation gained, etc. The app will also have a page that will display current conditions, lift and parking lot openings/closures and other relevant information concerning Meadows.

This project is important to anyone who is tired of trying to stay in contact with other friends at the mountain by awkwardly texting back and forth with freezing fingers. The ability to see where all of your friends are (or were the last time they had cell service) will allow people to more easily find each other and ultimately have a better time at the mountain. This app will also be of interest to parents or guardians of younger children who want to ski on their own, allowing them to monitor the position of their charge periodically throughout the day to make sure they aren't camping out in the lodge maxing their credit cards out on pizza by the slice.

Ultimately this app will be helpful to anyone who wants to have their time on the mountain be a more social experience, especially those who are going in a larger party of Android users.

Team 26
Jan/16/2012

Project Significance Document

This project is important because it will help prove that the design of the NuScale modular reactor can be safely operated by 3 people for 12 reactors. By proving that having one technician monitoring multiple reactors is safe, we will allow our client company to license and eventually sell these reactors to other companies. This in turn will increase their own productivity through the use of these smaller reactors. These reactors will allow nuclear power companies to have more nuclear reactors on site, both because of the small size of the reactors and the lower costs to manage and observe the reactors. This could mean cheaper nuclear energy for any company willing to purchase and use these smaller reactors, and would make it easier for those companies to produce their own nuclear energy. On a more individualistic view, because the design is much cheaper than other reactors, this will drive the cost of energy down significantly. Because these reactors are much more safe than other designs individuals will not have to worry about the repercussions of a disaster that could be caused by other reactors.

CS 461 / 462 / 463
Project Significance Document

Oregon Farm Markets

Team Name:

Der Salat (The Salad)

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Oregon is a very diverse land. In it can be found mountains and beaches, rainforests and deserts, skyscrapers and farmlands. And just as the city of Portland is full of human diversity--in architecture, in culture, in art--the croplands of Oregon are also a rich mixture of different production techniques, different produce, and different agricultural traditions--a rich mixture, just like the soil that sustains it. As more people have begun to rediscover their agricultural heritage and become interested in where their food comes from and how it is produced, they again long to be a part of that tradition by visiting farmer's markets and experiencing little pieces of that culture. However, many of these Oregonians and especially those food-tourists from out-of-state simply do not know where to go. In order to ensure the growth and stability of Oregon's agriculture, we need to create a way to easily organize and access the information about the many produce distributors. The Oregon Farm Markets app will conveniently connect those interested in locally grown food with those who produce it, further increasing the accessibility, community, and economic aspects of Oregon's agricultural economy.

As awareness of modern industrial agricultural practices has increased, more and more people are becoming willing to change their habits, but unfortunately the society we live in and the consumer culture that has pervaded these past few generations of Americans creates a very difficult barrier for many individuals to overcome. The convenience of the alternative to eating local, organic foods is currently far greater than making the right choice. This project is a small step, but it does make doing the right thing a little more convenient. We do not want people to have to choose between health and convenience, because we have already seen that a large percentage of the population will choose the latter if this gap still exists. For many people, this will be the tipping point at which they choose the healthy and sustainable choice for themselves and their families.

From the farmers' perspective, this app will reduce the information gap that it currently exists between the customers who want to enjoy locally and naturally grown foods and the farmers who are investing their funds in cultivating and harvesting these exceptional foods. Moreover, the app seeks to promote the role that agriculture continues playing in Oregon's

economy, by providing a medium to advertise the existence of farmer's markets in most communities, as well as promoting the variety of foods available in the area, all without the cost and waste that traditional advertisement has.

Project Significance Document
Team 28

Our project is most significant to the Python developer community because it enables them to create, manage, and share libraries of code with ease. It is technologically important because it pushes the Python community to use a more rigorous method of distributing code so there are less compatibility problems and so that management of packages on your machine is much more stable and intuitive. A stable development environment is important, especially when working with large amounts of code. If your environment is faulty or unstable, you will run into problems with dependencies and package versions. Our project utilizes the newest Python packaging standard (Distutils2) to enable features such as installation, un-installation, searching, and bundling of new and old-style Python packages.

What will someone be able to do because you give them this project?
This project will streamline the Python community's ability to distribute packages amongst each other. Ideally, in the future someone will be able to use a single package manager to install any Python package. Members of the community will have a better understanding of how a package's contents are organized. When our project is finished members of community will be able to easily share a wide array of projects for use, collaboration, and development. The ability is easily share and maintain code is paramount in any open-source community.

How will this affect someones life?
By simplifying the way Python packages are both created and delivered, Python developers can quickly and effectively find, install, and use code created by fellow developers. Simplified and easy to understand package management means less time trying to get 3rd party packages to work or install correctly and more time in actual code development.

PROJECT SIGNIFICANCE DOCUMENT

COMPUTER SCIENCE 461 / 462 / 463

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Why is this important?

The Valley Library is a busy place, especially during prime study times. It's difficult to find a seat by walking around the library, so a well developed system to track each seat and having all the information on a single computer, or on the web, will help ease the stress of students. A less stressful student will be more successful.

The Valley Library already has an implemented system that tracks certain computers at the library. This project is a good extension on the previous "Logging Computer" system for all the seats at the library.

What will someone be able to do because you give them this project?

For occupants of the library (or other buildings), the Real-time Seating Availability System (RSAS) will allow people to easily and quickly find an available seat in the library, without spending extraneous amounts of time walking around various floors.

For library staff and system administrators, RSAS provides the ability to monitor the capacity of the building.

How will this affect someone's life?

For occupants of the library, RSAS will make their lives at least a little less stressful, especially during exam times. The system will give the occupants a bird's eye view of the library (or any building) that displays to the occupants the available seats in the library.

In addition, the system will give the occupants a brief idea of how full the library is before taking the time to travel to the library.

Team 30: Rest 3D API
Project Significance Document
1/16/2012
Blaine Eakes
Erik Hortsch
Spencer McElmurry

Since there 3D technology and web-based technologies have been developed separately, there is a certain disconnect between them. WebGL has attempted to connect them, but it is only the first step into doing so. We are taking that next step with the REST 3D API. By allowing certain features in the API, both client and server side, we can embed 3D graphics into the Web. Users will be able to upload, download, search and query COLLADA files through an XML database. This will allow them to easily access these 3D models and use them for any web application they may have. This will break down a barrier 3D technology has had in the past by making it easier to use on the Web. Since the API is built using REST, it helps promote its use and allows users to see the various applications of REST.

Project Significance

Smartphone App for a Wireless Thermoelectric Energy Harvester

Mobile Initiative: Team #31

The Project is to develop an iPhone application to interact with Perpetua Power's wireless thermoelectric energy harvester technology. This project is important to Perpetua Power because it provides more detailed information to their customers about the potential of their products in a wide range of industries. It has the potential to reduce the cost of the Demonstration Kit to customers who already own an iPhone or iPod Touch. It will also create a new platform for product marketing to reach new customers and continually improve their relationship with existing customers.

Team 32
AKA “Team Pup ‘n Suds”

Project Significance

Our application provides students with the ability to study online with other peers from their classes. As of now there is not an online social study application that is widely used and effective. Exposing students to our tool as they are inducted into university life will be a good way to form a solid studying foundation. Studying has been left behind while other aspects of academic life have evolved to adapt new technology. Our goal is to bridge this gap with our tool. Our project idea was created by Jon Dorbolo, who realized that when given opportunities to study more effectively; people take advantage of them. For example, there are study groups in the back of the Valley Library organized by classes and topics with teaching assistants which may be used by any students. Our application is significant because it will simulate this experience from the comfort of your office, school, or home. With our application, students will automatically have accounts created for them based off of their university credentials. When a student begins their daily studies they can log into the application and begin browsing through their classes and subjects to see which of their peers are studying the same topics. This allows for a student to pair the necessity of studying with the convenience of the internet instead of one excluding the other. Setting up study groups can be difficult; our application will help do it for you - in real time.

This will affect an individual’s life by giving them more opportunities to meet up and study with their friends or other students from their classes. There could be a case where someone is struggling in a class and they don’t know anyone to help them out or study with in which case they could log on and discover a buddy. A new studying buddy could help motivate and encourage this individual to improve their own study habits resulting in better learning curve and better results. Some students may not even know how to study, having gone through compulsory education without needing to. Regardless of individual needs, our tool will provide a valuable studying experience.

Michael Adams
Nathaniel Mitchell
Team 33
Photo Automators

Significance Document for the Photo Roster Application

This application is, for the time being, first and foremost for professors at Oregon State University. It is a much needed tool that allows instructors to quickly put faces to names so as to give a better, more personalized teaching experience. At the moment there is a web application that allows students to opt-in and let their picture be seen, but this is not widely known about and has major privacy risks (e.g. leaving the website up, printing the pictures of, etc). As a solution to the security risks this application is being developed for mobile devices (smart phones, tablets, etc). Thus it is much more difficult for someone other then the professor to get a hold of those pictures and names. Some people may not think this application is very important but many professors have been wanting something like this for years. In fact, some professors have been going so far as to try and create their own photo database within their college by manually taking pictures of their students. Not only does this waste time by taking days out of the term to take pictures, but it is also extremely hard to maintain. Having an application that can link to the university's already set up photo database and class rosters would be many times more efficient. Everyone benefits from this; students wouldn't have to worry about their privacy, and professors can quickly learn who their students are.

Max Mueller
Spencer Forell
CS 462
Group 34

Project Significance: Study Participant Portal

For our project, we are working with Ron Metoyer, a CS Professor here at Oregon State, to develop an application that will match participants to various research studies. At the highest level, this project will help expedite the progress of the studies. It will lead to more efficient and successful research studies that can increase the throughput of performing studies as well as the effectiveness of them. The data can be collected using less time and effort, while being more accurate to what the researcher desires. This could result in new discoveries in computer technology, software, data analysis, education, and all kinds of other advancements.

On a lower level, the software will make a researcher's life much easier. The software will keep track of participants and researchers by matching them automatically based on a set of criteria the researcher specifies. The software will do the busy work of contacting potential matches and signing them up or notifying the researcher of potential matches. The software will be the middle man, and will free up the researchers time and effort to get good results.

This software will benefit more than just the researcher though; it will also benefit the participants. It will act as a central hub for participants to see what studies are going on in their area. There are various incentives for the different studies that will draw people in to participant in them. People that may not have gone through the effort of seeking out research studies to participate in would be able to do so quite easily with the software. As a result there could be many more participants in the pool than there would be without the software.

Many researchers deal with this problem of having to spend extra time and effort recruiting participants for studies when automating this process could speed it up drastically. It wasn't until recently that Dr. Metoyer realized this when he used a similar application doing studies for other companies; however, the application is owned by a different company, so we are creating our own technology here at Oregon State to benefit him and other researches with performing studies.

Senior Capstone Project

Project Significance

Team: #35 – Transformers

Members: - Ben Zoon (zoonb@onid.orst.edu)

- Phung Phan (phanp@onid.orst.edu)

Google/General Transit Feed Specification (GTFS) data describes fixed route transit service in sufficient detail to allow transit itinerary planners to work. GTFS includes stop locations, routes, timetables, and fares, but no information about the city, county, state, country, congressional district, etc. Our client, Oregon Department of Transportation (ODOT), is interested in the development of some tools to take advantage of the existence of this GTFS data, to better understand the network, its strengths and weaknesses, and changes over time.

We will find a way to automatically gather GTFS data from the various agencies and populate it into a database. This part also grabs transit data from Google's Public Feed data page (http://code.google.com/p/googletransitdatafeed/wiki/PublicFeeds) and possibly other locations. We will also create a script to update the data in the database on a regular basis.

In addition, we will build a web interface that displays the data on a map, providing different functionality than Google Maps does. While Google Maps only allows users to see directions from point A to point B, we will make a system that shows entire transit networks over a specified area, showing the routes, route times, fares, etc. This web interface also allows user to select agencies and routes to display. (Note: there could be hundreds of agencies and thousands of routes).

As a result of this project, ODOT will be able to easily query and understand the GTFS data from various sources. This data will become instrumental in making future decisions. Furthermore, this project will provide a foundation of a technology that ODOT can expand upon to ultimately reduce costs and optimize efficiency in their department. Another secondary goal of the project is to build an open source community around the project to welcome contributions from all individuals who are willing and able to contribute to this effort in the future.

Charles Catino
Catharine Vijay
Team 36
Project Significance

College students are under a lot of pressure and constantly have a list of time sensitive things that they need to complete. The advising and term planning process is a necessary, but time consuming task to be completed each term or year, and is often overlooked. It would be beneficial to college students and advisers to have one place that they can painlessly work together to keep a student on track. Our project, the AIScheduler, will make a simple, seamless, easy to use advising process available to college students and advisers.

The AIScheduler is a web application that takes advantage of online resources to connect students with their advisers, without ever having to meet. Students will be able to fill out multiple term by term plans online and save them online for future use or adviser approval. This is a very powerful tool that has not been offered in the past. Also, the data gathered by this system will be used in future projects related to artificial intelligence to help advisers make more informed advising decisions.

The success of this project will significantly increase the efficiency of the advising process, saving time for both staff and students. This project also makes the process of filling out the plan less error prone because it will not let the student plan for a class if it is not offered during a certain term. The advisor can also easily keep track of the student's progress during the course of the year and make immediate suggestions to assist with the planning process.

This project will impact the lives of college students and advisers at Oregon State University. The impact will be subtle, but will gradually save time and resources of all parties involved, making for a much more enjoyable class planning experience.

CS 461/462/463 Project Significance
The WIRE – Team 37
Shady Glenn, Graham Wilkinson, Naveen Nanja

The Walk on the Wildside Mobile App is an Android phone application that will allow people to take self-guided tours of the Wildlife Images Rehabilitation and Education Center. Wildlife Images is a group dedicated to the preservation of native North American wildlife, their mission is not only to rehabilitate wounded animals, but also to help others relate to the natural world and create a connection between humankind and wildlife.

The center is currently only equipped to provide guided tours, limiting the number of guests which can visit per day and preventing guests from exploring at their leisure. A plan has been developed to transition to a semi-guided or self-guided tour format, allowing more annual guests and an improved educational experience. In order to accomplish this, the center will need a way to replicate the value of having a guide to provide information about each exhibit, and a means to help visitors find everything they might need during their visit.

Our application will play a valuable role in the center's plans to transition to self-guided and personalized tours of the park. Visitors will be able to navigate the center and learn about the permanent animal residents from our app instead of a dedicated tour guide, allowing more visitors to visit simultaneously without the need for additional tour guides. We will also be able to add value to the existing tour system by providing in-depth information about each animal and the facilities, available before, during, and after visits to the center. Our team's work will help Wildlife Images reach out to many more people, and provide a more personal experience with the animals there, and a better bond with wildlife.

Michael Hernandez, Gavin Lloyd, Nathaniel Brown
CS462, **Team 38**

Project Significance Document

Our goal is to create a player that allows for projecting video into several 360-degree forms. It is somewhat like projecting a video in a way that it forms an environment around the user. Being able to portray videos in such a fashion allows for many benefits. Technologically, using HTML5 and WebGL allows us to bring high quality 360-degree video to websites, better than other alternatives, such as Flash. However, and most importantly, producing 360-degree video is useful to consumers at every level. 360-degree videos offer a more realistic experience, as well as allow the user to interact with them, giving video creators many possibilities.

For example, 360-degree videos bring more realism, as actions can occur all around the user. In a video, the viewpoint of the audience is fixed, so the video creator has to change it for them if something happens outside of that range, usually in the form of a cut to the action. In a 360-degree video, things can occur from all sides of the audience, but they are able to react on their own to the changing environment, as opposed to having the view react for them. Similarly, if many things happen at once from multiple angles, users can freely choose where they would like to focus.

It is our hope that being able to create 360-degree videos will aid others by allowing them greater flexibility in expressing their creativity and ideas in video, as well as a new experience for those who watch them. With the ability for the user to change their viewpoint, video creators are able to capitalize on that and utilize it in new and exciting ways. Similarly, users can see video in a more realistic fashion, giving them an experience they will never forget.