The Journal of the Association for Computing Machinery at UIUC:

Banks of the Boneyard

Volume 17, Issue 4

What's inside?

Upcoming ACM Engineering House Projects

Find out which BSD is right for you.

Briefly Reminiscing

by Steve Behling

Moore's Law dictates that computational performance for a given cost doubles every 18 months. Memory capacities also invariably grow. Every now and then a faster bus is announced. In short, desktop computers get better all the time. Supercomputers push the limits of the imagination and consumer products deliver new services and greater conveniences every year.

It's a dizzying pace, and my online friends and I often discuss the machines we used years ago. We may not be able to trace back to the punch-card era of computing as many professors can, but sometimes we still feel, for lack of a better term, "old." Looking back to magazines less than eight years old I see that the best desktop PCs on the market were based on the 486 DX2 processors. At the same time, my high school's idea of state-of-the-art computing consisted of rooms filled with Apple IIe computers and early Macs. I taught myself some of Apple's BASIC dialect in those rooms and wrote my first programs. They didn't do much, but they meant a great deal to me because they were my own and not just MPs.

My friends and I still like to keep the past alive in our discussions. It's important to know your roots, after all, and the concerns that motivated them. Pong, for example, could have been based on the best processing technology and programming of its day, but for sake of cost it had no processor whatsoever. That's right—no team sat down to program Pong at all! It's all hardware, and the home version, which I found a schematic for in an old book, was centered around a custom IC and some discrete components (with potentiometers for "paddles").

While searching through ACM's equipment we found an old Video Brain computer system from 1977. It's ancient, but its discovery was as exciting as unearthing coins from ancient Rome. There's a "Master Control" key, which reminds me of TRON! There's also a pi symbol on one of the keys! It has four controller ports like the Atari 5200 had years afterward. I have no idea if the machine even works anymore, but I'm hoping it can be resurrected. It's a dinosaur, but it's also a piece of our past.

Reflections / Projections 1999

ACM@UIUC is holding its fifth annual conference this year on Oct. 8-10, 1999. We are looking for people to work on all aspects of the event: arranging speakers, planning the job fair, organizing volunteers, arranging travel and hotel accommodations, videotaping the events, maintaining the website, scheduling tours, corresponding with corporate sponsors, planning social events, directing our advertising campaign, and more! We meet every Sunday at 5 PM in room 1102 DCL.

From the ACM@UIUC Chair

by Mark Ashton

In a previous issue of the Banks, I wrote an article describing some ways students can get involved in ACM international activities. This time, I thought I would share some information about fun things we do locally. First and most importantly, if you decide you want to be more active in ACM@UIUC, don't be at all afraid to drop by the ACM office (1225 DCL) and have a friendly chat with whomever is there. You are also always welcome to attend Special Interest Group meetings, even if you are not a member (see http://www.acm.uiuc.edu/sigs for more info). If anyone gives you trouble, mail me (acm@uiuc.edu) and tell me who it was and how they made you feel unwelcome. They will be promptly given 30 days of hard labor, backing up our office computers onto 800k floppies.

Probably the most exciting thing that ACM gears up for this semester is the annual Engineering Open House. If you've ever come to DCL during EOH weekend (March 5-6th this year), you have seen our awesome, huge, awe-inspiring display. We bring together over a dozen projects from our SIGs and show them off to the public. This year's projects range from a drunk-driving simulator intended to show the harmful effects of alcohol consumption, presented by the WinDevils, our Windows Development Group, to a digital face-recognition system created by SigBio, the Special Interest Group for Biocomputing. You can check the individual SIG webpages for more information, or mail their chairpersons (see http://www.acm.uiuc.edu/sigs).

We're also starting work on our big event for Fall semester, the Reflections|Projections 1999 computing conference. This is an event that keeps getting bigger and better every year we put it on. Last year, Bjarne Stroustrop, the creator of C++, gave our keynote address. Right now is a good time to get involved in the planning of next year's conference. There are positions open and a lot of work to be done. As someone who has been involved in past conferences, I can tell you that being on the conference committee is intense and very rewarding. Mail reflections@acm.uiuc.edu if you are interested in helping make R|P '99 a big success.

Special Interest Groups aren't just about EOH projects. If you have an interest in computing, we probably have a group for it. If not, you can start your own with our help and blessing. It's that easy! If you can't find a SIG that interests you at the URL mentioned above, talk to me and we'll see about starting a new one. If there is a SIG that meets your needs, go to a few meetings and hang out. No ACM membership is required.

Finally, if you want to know what goes on in ACM as a whole, you can stop by an executive board meeting at 5 PM in 1102 DCL. Just show up, introduce yourself, and listen to what we do. You'll probably see some interesting opportunities to help out. You can also subscribe to acminfo, a mailing list for active members of ACM. Just send mail to acminfo-request@acm.uiuc.edu, with the word "subscribe" in the subject line, and you will be added to the list.¡

Getting involved is the key to assuring ACM's help in pursuing your own interests. Don't be afraid to talk to us, either by stopping by the office, or by mailing someone. If you'd like to drop me a personal note at acm@uiuc.edu, I will be sure to pay attention. Enjoy your Spring semester, and get involved in the most exciting computing group on campus!

The Banks of the Boneyard is a student publication of the UIUC Chapter of the ACM, the First Society in Computing, and does not necessarily represent, in whole or in part, the views of the University of Illinois, the Department of Computer Science, or the International ACM. Partially paid for by SORF and the Department of Computer Science.
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The newsletter staff encourages ACM members to submit letters to the editor, articles, photographs and artwork for future issues of *The Banks of the Boneyard.* If you would like to contribute or participate in its creation, please email boneyard@acm.uiuc.edu.

ACM WORKSHOPS
EXPANDING YOUR KNOWLEDGE

by Steve Mycynek

Look for more ACM promotional workshops coming soon. Due to popular demand, we will be repeating the "Linux Install" and "Building Better Web Pages" workshops. This semester, we will be reaching further into the UIUC student community to spread the word that ACM is for everyone.

In addition to repeating these past successes, ACM may also host special topic nights that have a slightly narrower, more advanced focus relating to Linux and web-development. We would like to appeal to a more experienced crowd that has gotten past the basics but is unsure of where to go next. Students interested in learning how to set up web-servers and create interactive CGI forms should keep their eyes open in the next few months for these topics.

As always, ACM is still taking suggestions for workshop ideas. If there is an entry-to-intermediate level computer topic you would like to see ACM cover, email ACM@UIUC.EDU with your ideas.

SigGraph

by Brian T. Klamik

We've made some progress on the EOH Project, but not enough to see many results yet. The project is a real-time physics simulation of hovercraft. Also, Sounds & Visions is preparing, and we NEED more people to help out with the graphics work. Check out http://hh-kerensky.csh.uiuc.edu:8080/Music.asp to listen to the music and sign up for a song.

Where & When to find your favorite SIG

BSDeamons • Saturdays 2:00 PM, 1225 DCL
BUG • Wednesdays 7:00 PM, 1225 DCL
LUG • Tuesdays 8:00 PM, 1102 DCL
MacWarriors • Saturday 3:00 PM,1225 DCL
SIGArch • Thursdays 8:00 PM, L510 DCL
SIGArt Wednesdays 7:00 PM, 1225 DCL
SIGBio • Tuesdays 6:30 PM, 1225 DCL
SIGDave • Wednesdays 8:00 PM, 1225 DCL
SIGGraph • Thursdays 7:00 PM, 1225 DCL
SIGMusic Wednesdays, 7:00 PM, 1102 DCL
SIGNet • Mondays 7:30 PM, 1102 DCL
SIGOps • Tuesdays 7:00 PM, 1102 DCL
SIGSoft Wednesdays 6:00 PM, 1102 DCL
SIGUnix • Thursdays 8:00 PM, 1225 DCL
WinDevils • Saturdays 11:00 AM, 1225 DCL
SIGVR • Mondays 7:00 PM, 1330 DCL
SigWeb • Alternating Wednesday, 7:30 PM, 3211 DCL
For more information see
http://www.acm.uiuc.edu/sigs/

SigArt

by Jon Galownia

Despite being turned away by the Beckman Machine shop, construction is well under way for SIGArt's AI guided mechanical arm. In part for its amazing ability to assault its builders with astounding impunity, the arm has been dubbed, "Bandit." With the help of mechanical engineering friends, the friendly folks at Ace Hardware, a toothy hacksaw and a borrowed drill, a working prototype of the forearm has been completed. Due to the lack of union workers, the current arm is made of metal shelving units and various other imaginative pieces of hardware. However, despite the workability of the current arm, a new design using conduit piping is being planned thanks to Rachel Ortiga.

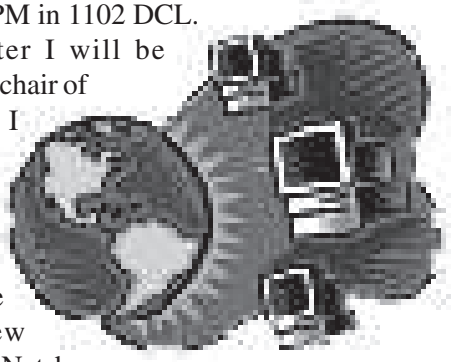
Recently, after slaving for hours, the drive mechanism for the forearm was destroyed by the unscrupulous, illustrious author of this article. Worries about the mechanical integrity of the piece were laid to rest after it was noted by Boris Dzodzo that the piece would not be "brutally raped like that" during "normal" running conditions. A trip to the local junkyard (30 delightful miles north) is hoped to bring new ideas for the drive mechanism. Design and optimization of the shoulder, hand, and base continue.

On the software side of the project, object recognition is well under way. Work on a software simulated workspace environment for training of the AI is currently under discussion, with software models of the arm already complete. As progress continues on the arm, look for a more detailed description of its workings, the algorithms used, and the contributors to the project on the SIGArt web page.

SigNet

by Jason R. Govig

SigNet is the Special Interest Group for Networking and Security. We do anything network related, from programming network applications to talking about the internet, what's new and how it works. We meet every Monday at 7:30 PM in 1102 DCL.



This semester I will be stepping down as chair of SigNet, so that I may have more free time to relax during my last semester. Joel Krauska will be adding a new dimension to SigNet by stepping up and taking my place. Joel is a graduate student and runs a networking lab which he has offered SigNet members to use. His knowledge and his lab will be a great asset to SigNet this semester.

Our ongoing project, Voodoo City, still needs people to develop net-games. If you are interested in writing a game or helping out with Voodoo City, attend a SigNet meeting or email signet@uiuc.edu.

For more information, visit our web site at http://www.acm.uiuc.edu/signet/, our news group at uiuc.org.acm.signet, or email the chair at signet@uiuc.edu.

WinDevils

by Ibrahim Merchant

This semester, WinDevils is panicking over its EOH project. For now, we at least have a code name for the project — WinDrunk. Of course everyone knows that a good code name constitutes half of the project. So, we are off to a good start!

If worse comes to worse, the WinDevils EOH presentation will be "seinfeldian" — a project about nothing.

Maybe in the next two weeks we will start on the actual EOH project.

Probably not — because WinDevils is too busy hosting MFC workshops to be bothered with anything else. So, we'll have to see.

If you are interested in attending the MFC workshops, just e-mail imerchan@uiuc.edu for more information.

http://seattle.sidewalk.com/detail/912

SigVR

by Ray Kaplan

During the last month SigVR has been working on its EOH project, a visual development environment for software development using 3D graphics. We would like to use elements from 3D graphics to make software development simpler. This is similar to how GUIs, windowing, and 2D graphics make aspects of software development easier over pure text based software development tools. Currently, we are working on viewing and editing code written in C. This project uses VRML (Virtual Reality Modeling Language) and Platinum Technology's WorldView VRML plugin to create the 3D graphics.

If you are interested in working on our EOH project, email sigvr@uiuc.edu, visit our website at http://www.acm.uiuc.edu/sigvr, or come to one of our meetings at 7:00 PM every Monday in the ACM office, 1225 DCL.

BUG

by Vikram Kulkarni

Be Users Group (BUG) is dedicated to the support of BeOS users and developers and we meet every Wednesday evening at 7 PM in front of the ACM office.

We have begun work on our GPS mapping software for the BeOS. The GPS software will be broken into at least two applications. The user interface will be in one application and will take care of processing data and reports. The other application will communicate with the GPS and provide data to the user interface and other applications. The hardware is abstracted in the GPS interface application which can relay the data to any number of applications. The user interface will provide a map window with geographical and street information. It will display basic location, speed information and will provide graphs and trip maps. A world map window will show a globe with the current GPS position. Saved trip routes can be displayed on the globe for reference. The program will also gather statistical data about a trip (ie, speed vs. time, elevation vs. speed, etc).

About the BeOS: The BeOS is an unique operating system. Unlike Windows9x/NT, MacOS, or even any flavor of UNIX (or Linux), the BeOS is not bogged down by legacy requirements. Be programmers didn't start with an old operating system and try to build upon it. They started with the idea of a MediaOS, an operating system that was designed from the ground up to cater to the needs of the power user.

With that in mind the Be programmers created the

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Familes of BSD

by Sidney August Cammeresi, IV

Many years ago, at the University of California at Berkeley, a group of people who wanted to write a freely distributable version of the popular UNIX operating system gathered together. Since all of the other flavors of UNIX at the time were derivatives from AT&T's original source code, they could not be distributed freely. They called their project BSD, which stands for either Berkeley Software Distribution or Berkeley System Distribution, depending who you ask. They put it under a license agreement that allowed use and redistribution of BSD, with or without source code, for any purpose.

There were many versions of BSD released, but they all ran on workstation hardware; however, after the release of 4.4 BSD, a group of people decided to port BSD to the popular Intel 386 processor. They called their project 386BSD and promptly released version 0.1. Soon after, however, AT&T filed lawsuits against people using BSD code, claiming that it had used stolen code from the original UNIX. Development of 386BSD stopped then for a couple of years, until the suits were finally dismissed.

There are now three main free forks of the original BSD code. The most popular is FreeBSD. FreeBSD focuses exclusively on Intel hardware, although an effort is underway to port it to PowerPC. It is likely the fastest available BSD for Intel since the development team can focus on Intel- specific speed improvements.

Another version is NetBSD, which focuses on supporting as many platforms as possible. It is in the spotlight recently for being the first free UNIX to have preliminary support for USB as well as adding support for shared libraries to its VAX port.

Finally, there is OpenBSD. About four years ago, a member of the NetBSD project, Theo de Raadt, was forced to leave the project due to political difficulties and personality conflicts. He took the current state of the NetBSD code and started his own project with that called OpenBSD. Although in its early days, OpenBSD was essentially NetBSD plus more stuff, it is now completely unique. OpenBSD's developers place the utmost importance on security, and many people think that OpenBSD is the most secure free UNIX. It also emphasizes the use of strong cryptography and for that reason, the project is maintained in Canada due to U.S. export laws regarding cryptographic software.

Which BSD is right for you? If your main concern is security, OpenBSD is likely to fit. If need speed and have Intel hardware, FreeBSD is probably the better choice. If you have exotic hardware, either NetBSD or OpenBSD will suit your needs.

If you would like to learn more about the different BSD variants, UNIX in general, or are intested in help, advice, etc. on upgrading your computer from an operating system like DOS, Windows, or MacOS, or from a UNIX-like operating system like GNU/Linux or the Hurd, then come to the meetings of the ACM's newest SIG, the BSDaemons. The BSDaemons meet every Saturday at 2 PM in the ACM office.

BeOS *from page 4*

BeOS. The BeOS is a fully 'buzzword compliant' operating system. It is a microkernel based operating system that supports symmetric multiprocessing, preemptive multitasking, virtual memory, protected memory. It has a modular, dynamically loaded, multithreaded I/O system and is pervasively multithreaded. The Be file system, BeFS, is a 64-bit, multithreaded, journaling file system with integrated attributes, indexing, and MIME-type based identification. The BeOS also has external file system support. The BeOS also sports antialiased fonts, OpenGL, messaging, scripting, replicator services, and integrated Unicode font support. It is posix compliant and has a bash shell. It runs on PowerPC and Pentium processors.

For more information about the Be Users Group see:
http://www.acm.uiuc.edu/bug/
For more information about the GPS project see:
http://www.acm.uiuc.edu/bug/projects/jason/.
For more information about Be, and the BeOS see:
http://www.be.com

by Erik Gilling

SigSoft is continuing to work on our EOH project. We have coded the main server data objects of our game and are now working on the mechanics of the game engine. Some of our members are working on a portable way to handle graphics and input in the client. If you have experience with DirectX or Macintosh graphics programming and would like contribute the graphics system please come to one of our meetings. As always, our meetings are Wednesdays at 6:00 PM. Any questions can be directed to me at sigsoft@uiuc.edu

macWARRIORS

by Rick Roe

Welcome back, everybody!

MacWarriors is the group for Macintosh-related interests; we meet every Saturday at 3 PM in the ACM office (1225 DCL). We've got an exciting semester coming up—new hardware and software, Engineering Open House, partnerships with Apple, and lots more—so be sure to stop by!

First, there's plenty of new stuff in the Mac industry to talk about... At last month's Macworld Expo, Apple introduced faster iMacs in five new colors, slick new PowerMac G3s, and the much-awaited Mac OS X Server. The Expo also had lots of great news for Mac gaming: id Software's John Carmack praised the new Apple hardware and support for OpenGL, many popular games had Mac versions announced, and Connectix showed off its new Virtual Game Station—an emulator that lets PowerMacs run PlayStation games.

How does this fit into the campus Mac community? Apple and MacWarriors will be hosting a number of events to promote the new machines, and we may be receiving a few interesting donations soon. We've already had a demo of the new G3 and OS X Server (don't worry, there'll be more), and coming up later this spring there'll be an iMac Gaming Day here on campus (lots of iMacs + the latest games + lots of students = lots of butt-kicking). By the time you read this, ACM may have its own copy of Mac OS X Server (complete with development tools and WebObjects) to tinker around with, too.

MacWarriors still looking for people to help out on our Engineering Open House project. We'll be showing off some of the lesser-known capabilities of the Mac OS by creating speech-aware desktop games in AppleScript. Since Apple will be lending hardware and software for our booth, we might also throw in some OS X support. We're also creating MacWarriors T-shirts for the event. Interested? Come to a meeting or contact rroe@acm.uiuc.edu.

Think different. Join MacWarriors.

SigOPs

Space Shooter Targeting System & Embedded OS Design

by David Wentzlaff

Just when you thought it was safe to wander the halls of DCL; you are targeted by a laser pointer and BAM! You're shot. Due to this year's EOH SigOPs has decided to split into two groups. Can you handle it!? We are designing a Space Shooter Targeting System and embedded OS. The Space Shooter Targeting System will consist of a color camera that autonomously guides an electronic turret combined with a Space Shooter that shoots foam disks. The Targeting System will aim a laser pointer and allow a human to illuminate the target. Then the laser light and the Targeting System will target the point and shoot. To implement this aspect we will be designing an embedded operating system to control both the movement and the Targeting System. This embedded operating system will also be expandable to other applications in the future. SigOps meets Tuesdays @ 7 PM, so if you want to build a Missle..err.. I mean a Space Shooter Targeting System, or just want to learn about OS's come to our next meeting.

SIGUNIX

Frank Tobin

SigUNIX has begun a new semester and year. It looks to be a bright one for this general-UNIX users group, even as we say farewell and good luck to Tony Sintes, our newly-graduated previou chairman.

We will be jumping into EOH by designing a of the modern UNIX desktop system, featur modular monitoring program with a front-end w that we are currently developing. The purpose of our effort in creating a highly-configurable application is to lessen the time we spend each day checking changes in various news and events, such as unread email, updated webpages, the EWS machine with the lightest load, and to merge the remaining applications that are used for monitoring. We are continuing to merge the data-gathering portions of the program with an in-development dynamic user-interface.

This semester we also plan to hold several short UNIX-help sessions. We would like the to have users post questions before the meeting to a forum, and then these questions will be answered during the next help session. Details will be forthcoming.

If anything about SigUNIX interests you, or if you would like to learn and talk about every waking moment, stop by the ACM office on Thursday at 7 PM. Also, like last semester, we are holding weekly programming sessions on Sundays at 3 PM in the Sparc labs in DCL. For more information, you may subscribe to newsgroup uiuc.org.acm.sigunix, or email me at ftobin@uiuc.edu, and I'll add you to the mailing list.

SIGDAVE

by Nick Michels

I was there at the dawn of the third age of SigDave. It began in the year 1996 with the founding of the last of the Dave Morgan projects, located at the Association For Computer Machinery. It was a group for programmers, developers, newbies, and the most experienced from all over the world. It could be a boring place, but we accepted that risk because SigDave was our last, best hope for a distraction. Under the leadership of its most recent commander, SigDave has been seeking a dream, a dream of amazing projects. Where people from all majors could work side by side with mutual respect. A dream that was in danger as never before by the loss of interest in the short term. SigDave was the last of Morgan's creations. Its story unfolds every Wednesday at 8pm.

acm student chapter university of illinois urbana-champaign

membership form

membership form

Return or mail this form to:
1225 Digital Computer Lab, MC-258
1304 W. Springfield Ave.
Urbana, IL 61801

name:

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electronic mail:

curriculum:

UNIVERSITY STATUS

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- ☐ ph.D.
- ☐ faculty / staff
- ☐ postdoc
- ☐ alumni
- ☐ other

special interest groups

bsdeamons	bsd users group
bug	be users group
lug	linux users group
macwarriors	mac users group
sigarch	architecture
sigart	artificial intelligence
sigbio	biocomputing
sigbiz	enterpreneurship
sigdave	short-term distractions
siggraph	graphics
sigmicro	microcomputers
sigmusic	music
signet	networking and security
sigops	operating systems
sigsoft	software development
sigunix	unix programming
sigvr	virtual reality
sigweb	web development
windevils	windows programming

MEMBERSHIP TYPES

return form with check or money order payable to the ACM at UIUC

- ☐ $40 for eight semesters
- ☐ $22 for four semesters
- ☐ $12 for two semesters

ACM NATIONAL MEMBER

- ☐ yes — #
- ☐ no
- ☐ currently applying

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