



## CCT Weekly October 2- October 8, 2011

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### Kinect Virtual Reality -- One Step Closer to the Real Thing

Since the introduction of high-definition LCD televisions, large high-resolution displays have become reasonably inexpensive, and TVs with over two million pixels and sizes of 50 inches and larger are common in the home. But despite these devices' large sizes and sharp images, the realism of the image shown on a TV falls far short of even the simple experience of looking out a window.

Why? First, we have two eyes, which normally receive slightly different images, allowing us to judge distances and perceive depth. Second, our ability to move about near a window allows us to "look around." We move close to the window to see more, and we move side-to-side to get a better view. This first capability, stereoscopic 3D, is now commonplace in the movie theater and an increasingly inexpensive option on new TVs. This second capability is more interesting.

At the LSU CCT, Assistant Professor Robert Kooima and his group have produced this effect by combining common, inexpensive, off-the-shelf technologies. A Panasonic 58-inch 3D plasma TV provides the stereoscopy. A Microsoft Kinect, disconnected from its X-Box 360 and connected instead to an ordinary workstation computer, provides the "look around." The Kinect is a depth camera. It records high-resolution distance measurements rather than colors. Given these distances, a software package called OpenNI extracts images of the people in the room and analyzes these images to determine the positions of their bodies, arms, legs, hands, and heads. Results from this analysis are used to compute the positions of the users' eyes, and an interactive 3D stereoscopic image from that perspective can then be rendered.

The combination of 3D imaging and user-centered perspective is greater than the sum of its parts, and the experience of using this system is surprising. The image on the display appears to be attached to the room rather than to the TV. As you move about, you perceive that you are moving around the displayed scene. The image becomes an extension of the room in which you stand, connected at the rectangular frame of the screen, rather than being a separate scene detached from reality by the display plane. This effect enhances the illusion that the displayed objects are 3D, solid, and separate from the display. Their presence and realism are astonishing.

"The applications of this technique are extremely broad," said Kooima. "Interactive scientific visualization at the LSU CCT benefits directly from the improved realism of the rendered image, and these benefits apply regardless of field or subject matter. We've applied it to astrophysical simulation visualization and X-ray tomography, and we've even used stereo rendering in our video game design and computer graphics courses."

Of course, despite this work, there are many ways in which viewing a display screen falls short of normal vision. The contrast and brightness of modern TVs cannot approach the range of light intensities that we perceive. Also, the varying focus of our eyes, which gives our brains subtle clues as to distances and sizes, is not exercised when our eyes are focused only upon the plane of the TV. These issues, and others, will be addressed in the future as display technology improves, and researchers at CCT will be taking the lead in applying these advances to scientific research and education.

### Pats on the back:

- Chris White and Mayank Tyagi received an award from DOE titled "Zero Mass Withdrawal, Engineered Convection, and Wellbore Energy Conversion." The award is for \$997,333 for three years.
- Thirupathi Gudi is one of the eighteen new Associates of the Indian Academy of Sciences: <http://www.ias.ac.in/academy/newassoc-2011.html>. Gudi was a CCT postdoc from 2007-2010 working with Susanne Brenner. He is now an assistant professor at the Indian Institute of Science in Bangalore, India.

### Lectures this week:

#### Wednesday –

There will be Computational Mathematics Seminar Series lecture on "[Fluid Flow Simulations of Diverse Petroleum Engineering Processes at the Rock Pores- System Components- and Reservoir Field- Scales](#)" by Mayank Tyagi, LSU. The lecture will take place Tuesday, October 4 at 3:30 PM in 338 Johnston Hall.

### CCT in the news:

#### Top NSF scientist to address evolution of information technology in science

Source: [Georgia State University](#)

CCT will be updating the faculty, staff and postdoc directories on the website with professional LSU portraits. We are asking that all faculty, staff and postdocs (no graduate or undergraduate students) who do not already have one, choose one of the three sessions below to take one. There is no need to schedule a date/time, just show up at University Relations' office during the given dates/times. It will only take 5-10 minutes per person. If you have already taken a portrait, University Relations will send us the file. University Relations ("Lakeshore House") is located near the Lod Cook Alumni Center on W. Lakeshore Dr., in between the Phi Kappa Psi Fraternity and Kappa Delta Sorority. The photo studio is on the third floor, room 314. We ask that men wear a suit jacket/blazer with a tie and that women wear a suit jacket/blazer. The photo is from the waist up, so it does not matter what you wear on the bottom. Available dates: Wednesday, October 12th- 9am-noon.

CCT invites faculty, staff, students and special guests to its 10th Year Celebration of the center's successful growth from its birth as "LSU CAPITAL" to a vibrant center for interdisciplinary computational research, training, and economic development. The celebration is October 26, 2011 (8:30 A.M. - 5:30 P.M.) at the LSU Energy, Coast & Environment Building Rotunda Auditorium and Lobby. Lunch will be provided free of charge in the Rotunda. Please RSVP to [susie@cct.lsu.edu](mailto:susie@cct.lsu.edu) to reserve your lunch seat (deadline: October 18th). For more information, visit <http://www.cct.lsu.edu/10yr>.

The 2011 ACM ICPC South Central USA Regional Programming Contest is now accepting team entries for the October 28 and 29th event. The ACM International Collegiate Programming Contest (ICPC) provides college students with opportunities to interact with students from other universities and to sharpen and demonstrate their problem-solving, programming, and teamwork skills. The contest provides a platform for ACM, industry, and academia to encourage and focus public attention on the next generation of computing professionals as they pursue excellence. The contest is a two-tiered competition among teams of students representing institutions of

higher education. Teams first compete in regional contests held around the world from September to November each year. The winning team from each regional contest qualifies to advance to the ACM International Collegiate Programming Contest World Finals, typically held the following March to mid-April. Additional high-ranking teams may be invited to the World Finals as wild card teams. Fees are \$125.00 per team if registered prior to October 10, 2011. Registration fees are for a team of three members and one coach. Guests and alternates are an additional \$30 each. (See complete registration rules at: <http://icpc.baylor.edu/icpc/regionals/About.htm>). The South Central USA Regionals will take place on October 28 and 29th at

- o Louisiana State University, Baton Rouge, Louisiana
- o Baylor University, Waco, Texas
- o La Tourneau University, Longview, Texas
- o East Central University, Ada, Oklahoma

For more information, or to register a team, visit: <http://icpc.baylor.edu/icpc/regionals/>.

- The LSU Backgammon Club is looking for new members. All faculty, students, beginners and experts are invited to join. The club will teach and coach players of all levels and field a team from the group to compete against Harvard, Yale, Princeton and Northwestern and many other fine schools in the national program. Please contact Phil Simborg ([psimborg@sbcglobal.net](mailto:psimborg@sbcglobal.net)) if you are interested in joining.

- Register for SC11 by Oct. 17th and save up to \$250! The SC11 early registration deadline is October 17th. The fee structure for SC11 makes it even more advantageous to register early this year. Registering early can save you up to \$250 off your technical program registration (depending on your registration category). Also, registering by Oct. 17th can save you up to \$305 off tutorial registration. <http://sc11.supercomputing.org/?pg=registration.html>

- Electronic Arts Recruiting LSU Students for Internships: Electronic Arts Inc. will be visiting the LSU campus October 24-25, 2011, to recruit students for their intern positions as follows: software engineer; designer; technical artist; online software engineer; software quality assurance engineer; and business analyst, analytics. Deadline to submit resumes and apply is Monday, October 17, 2011. For more information, visit <http://www.cct.lsu.edu/eaintern>.

- Submissions for the 2012 Red Stick International Animation Festival are now being accepted thru January 6th. Visit <http://www.redstickfestival.org/competition/submissions/> for details.

- TechX2011 will be held October 5-7 at the Baton Rouge River Center. The concept behind TechX 2011 is simple - bring together the entire technology and telecommunications buying and decision making community, and provide them with network marketing and education to show them how many great companies are right here in the Gulf Coast Region. Registration is FREE! For more information and to register, visit <http://www.techx2011.com/>.

- TRIPLE EX (Excite, Explore, Experiment) - 3rd Annual Conference for Undergraduate Research, November 4, 2011 (8:00AM - 4:00 PM), LSU Union Cotillion Ballroom. The LSU Office of Strategic Initiatives and The Cain Center are sponsoring a Conference for Undergraduate Student Research. Submissions are open until October 3rd for posters and oral presentations. For more information, visit <http://www.i3.lsu.edu/tripleex>

- Save the date! Louisiana EPSCoR is hosting the greatly anticipated National Science Foundation workshop, Science: Becoming the Messenger, on November 17, 2011, at the Baton Rouge Marriott. The 1-day workshop provides targeted communications training to Researchers, Faculty & Postdocs, Students, Public Relations Officers and Communicators. The NSF's Office of Legislative and Public Affairs has assembled a team of nationally renowned communicators to provide this training. Participants will learn how to craft a message and communicate with a variety of audiences, explore new media, pick up live camera interview skills and more. There is no registration fee to attend but pre-registration is required. Registration details to come soon!

- Post Your Part-time Jobs for FREE through Careers2Geaux: Now that school is back in session, our students looking for part-time jobs. Through Careers2Geaux, you may post any position type, including your part-time opportunities, for FREE! This system is password-protected and available to LSU students, faculty, staff, and registered alumni 24 hours a day, seven days a week. To list your position(s) in Careers2Geaux, click the Careers2Geaux link <https://lsu-csm.symplicity.com/employers> and follow the instructions for creating an account. Once you enter the information for your position, the status of your posting will remain "pending" until reviewed by a staff member. Open positions are posted for 45 days. If you have any questions, please contact Amy Caillouet, Administrative Coordinator, at 225-578-2162 or email at [amyc@lsu.edu](mailto:amyc@lsu.edu).

- Prior approval is required for Special Meal Requests. Employees who make meal purchases without prior approvals may find that they must cover the cost of any monies spent for an unapproved event out of pocket. Dine-in restaurant meals are not allowed on LaCarte credit cards. Please contact Susie McGlone ([susie@cct.lsu.edu](mailto:susie@cct.lsu.edu)) prior to any special meal with visitor(s) to file the appropriate request for approval. Prior approval could take up to two weeks, so please plan accordingly.

- Please remember to send your news concerning grants, awards, conferences, or other pertinent information to CCT Event Coordinator Jennifer Fontenot at [jennifer@cct.lsu.edu](mailto:jennifer@cct.lsu.edu).

- Follow CCT with social media to access photos and see news, events or updated information. These pages are public; you do not need an account to view the information.

- o [Facebook group](#) : LSU Center for Computation & Technology
- o [Twitter](#) : LSUCCT
- o [YouTube channel](#) : LSUCCT

#### Interest groups:

- **MAG (Mobile App-Art-Action Group):** Everyone interested in the potential for Mobile Apps is invited to come and add their vision for these revolutionary devices. Meetings are schedule October 5th, November 2nd and December 7th, 5:00-6:00 pm. For more information, visit <http://www.cct.lsu.edu/site.php?pageID=63&newsID=1402>. Contact: Jesse Allison ([jallison@lsu.edu](mailto:jallison@lsu.edu))

- **GPU:** meets weekly (Wednesdays @ 2:30 pm in 338 Johnston) and encourages participation from anyone who would like to join in the discussions. Join the mailing list: [lasigma-gpu@loni.org](mailto:lasigma-gpu@loni.org). Contact: Bhupender Thakur ([bthakur@cct.lsu.edu](mailto:bthakur@cct.lsu.edu)).

#### Upcoming events:

**October 24-25:** [Electronic Arts Recruitment @ LSU](#)

**October 24:** Cinema for the Ears

**October 26:** [CCT's 10th Year Celebration](#)

**October 28-29:** [ACM ICPC South Central USA Regional Programming Contest](#)

**Thru November 1:** [Symposium on Laptop Ensembles & Orchestras accepting entries](#)

**November 12-18:** [SC11](#)

**Thru January 6, 2012:** [Red Stick International Animation Festival "Best of the Fest" accepting entries](#)

#### Upcoming Grant Deadlines:

**Note:** Please check the [CCT deadline Web site](#), since it is updated daily.

[Partnerships for International Research and Education \(PIRE\)](#)

October 19, 2011 10:00 am

At Most \$ 4,000,000.00 available

[Sustainability Research Networks Competition \(SRN\)](#)

December 1, 2011 10:00 am  
At Most \$ 12,000,000.00 available

[Software Infrastructure for Sustained Innovation \(SI2\) Scientific Software Innovation Institutes \(S2I2\)](#).  
At least \$500,000.00 available

**Publish Date:**  
10-04-2011

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Center for Computation & Technology

2003 Digital Media Center • Telephone: +1 225/578-5890 • Fax: +1 225/578-8957

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