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Beyond CiSE and Back to the Future

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RECENTLY, I HAD THE PLEASURE OF ORGANIZING A SPECIAL ISSUE FOR COMPUTING NOW (CN), THE IEEE COMPUTER SOCIETY’S PUBLICATIONS PORTAL SITE (WWW.COMPUTER.ORG/COMPUTINGNOW). AS I NOTED IN A PREVIOUS ARTICLE,¹ I’VE BEEN ACTIVE IN HELPING TO LEAD AND SHAPE CN’S DIRECTION AS THE CiSE LIASON AND AS AN ASSOCIATE EDITOR FOR BOTH CiSE AND CN. WHEN CiSE’S THEN-EIC NORMAN CHONACKY ASKED ME TO PARTICIPATE IN CN, IT WAS TO APPLY MY EXPERIENCE IN EMERGING TECHNOLOGIES TO HELP THE IEEE COMPUTER SOCIETY. DOING SO HAS BEEN A REWARDING EXPERIENCE, TO SAY THE LEAST.

BUT SOMETHING FELT AMISS: SINCE JOINING CN, I’VE NOT BEEN ABLE TO PROMOTE CiSE BECAUSE MANY CHALLENGES HAVE KEPT US—THE CN VOLUNTEERS AND STAFF—BUSY. IT’S HARD TO BELIEVE THAT WE’RE NEARING THE PORTAL’S THREE-YEAR ANNIVERSARY, WHICH ITSELF IS SOMETHING TO CELEBRATE CONSIDERING THAT CN WAS AT LEAST THE FOURTH EFFORT BY THE COMPUTER SOCIETY TO DO MORE WITH MEMBER ENGAGEMENT, FIND ALTERNATE MODELS FOR CONTENT DELIVERY, AND SO ON. SO, WHEN I FINALLY GOT AN OPPORTUNITY IN JANUARY TO DO WHAT I ENJOY DOING MOST—COMING UP WITH GOOD IDEAS FOR THEME ISSUES AND WRITING AND SELECTING ARTICLES FOR THEM—I WAS PRETTY EXCITED.

A NOVEL APPROACH TO ARCHITECTURES

I’D BEEN WORKING ON ALL SORTS OF THINGS FOR CN, INCLUDING EXPLORING THE USE OF E-BOOKS, MOBILE APPLICATIONS (THE CN ANDROID APP WAS CREATED BY ONE OF MY STUDENTS, WITH MY MENTORSHIP), BLOGGING, AND SO ON. FOR FEBRUARY’S CN (WWW.COMPUTER.ORG/PORTAL/WEB/COMPUTINGNOW/ARCHIVE/FEVERARY2011), I DECIDED TO CREATE A SPECIAL ISSUE BASED ON NOVEL ARCHITECTURES, SIMILAR TO THE CiSE THEME ISSUE I CO-EDITED WITH STEVE GOTTLIEB AND VOLODYMYR KINDRADECKO IN 2008.² SINCE THEN, THE TOPIC HAS GROWN EVEN HOTTER.

HAVING ALREADY ORGANIZED THE GUEST EDITOR INTRODUCTION AND KNOWING THAT WE’D ALREADY ACCEPTED SEVERAL GOOD PEER-REVIEWED ARTICLES FOR PUBLICATION, I WANTED TO TRY SOMETHING DIFFERENT. LUCKILY FOR ME, CN’S CREATIVE STAFF (STEVE WOODS, BROOKE MINER, AND BRANDI ORTEGA) HAD ALSO BEEN ASKING ME TO CONSIDER INCORPORATING SOME ADDITIONAL CONTENT INTO MY THEME. BEING EVER THE EXPERIMENTALIST, I DECIDED TO PUT TOGETHER A HOW-TO VIDEO ABOUT HOW YOU CAN BUILD YOUR OWN

COMPUTER AT HOME TO DEVELOP GENERAL-PURPOSE COMPUTATION ON GRAPHICS PROCESSING UNITS (GPGPU). AFTER ALL, I’VE BEEN BUILDING MY OWN COMPUTERS FOR YEARS IN LOYOLA UNIVERSITY’S EMERGING TECHNOLOGIES LABORATORY AND WAS ACTIVELY WORKING ON BUILDING SMALL-FORM-FACTOR COMPUTERS FOR VARIOUS SYSTEMS AND EMBEDDED PROJECTS THAT I DO IN MY LABORATORY AT HOME. THEN, I REALIZED THAT I DON’T NEED TO STOP AT A DISCUSSION ABOUT THE COMPUTER. I COULD ALSO DESCRIBE HOW TO GET STARTED WITH GPGPU DEVELOPMENT. THIS SORT OF NONLINEAR PRESENTATION IS SOMETHING THAT WOULDN’T WORK IN PRINT ALONE. THEN AGAIN, I WAS GLAD THAT I HAD SOMETHING IN PRINT THAT SERVED AS A FOUNDATION FOR AN INTERESTING ONLINE THEME.

OUTCOMES AND OPPORTUNITIES

TO MY DELIGHT, THE THEME WAS A RESOUNDING SUCCESS, AT LEAST BASED ON OUR WEB ANALYTICS. WE APPEARED TO BREAK CN’S ALL-TIME TRAFFIC RECORD. MORE IMPORTANTLY, THERE WAS A SUBSTANTIAL NUMBER OF CLICK-THROUGHS TO CN’S MONTHLY NEWSLETTER. NEEDLESS TO SAY, THIS WAS INCREDIBLY EXCITING FOR ME AND MADE ME WANT TO DO IT AGAIN. A KEY LESSON LEARNED IS THAT AUGMENTING A THEME ISSUE INTENDED PRIMARILY “FOR GEEKS ONLY” WITH ACCESSIBLE CONTENT (A SIMPLIFIED NARRATIVE AND A HOW-TO VIDEO) SEEMED TO BE EXACTLY WHAT MANY READERS WANTED.

IN ANY EVENT, AS I WAS INSTALLING THE NVIDIA DRIVER, SDK, AND CODE SAMPLES ON MY HOME-BREWED COMPUTER, I WAS DELIGHTED TO SEE A PLETHORA OF EXAMPLES THAT CiSE READERS WOULD ACTUALLY CARE ABOUT. AMONG THESE ARE THE N-BODY SIMULATION, A SMOKE PARTICLE SIMULATION, AND NUMEROUS OTHER NUMERICAL ALGORITHMS AND SCIENTIFIC SIMULATIONS THAT DON’T ALWAYS HAVE A VISUAL COMPONENT, BUT ARE NEVERTHELESS EXCITING TO GEEKS LIKE ME AND LIKELY TO MOST CiSE READERS.

SO, AS THE VIDEO SHOWS (SEE WWW.COMPUTER.ORG/PORTAL/WEB/COMPUTINGNOW/ARCHIVE/FEVERARY2011), THERE I WAS IN MY HOME OFFICE RUNNING A LARGE N-BODY SIMULATION ON A SMALL-FORM-FACTOR COMPUTER. BEING AN EARLY MID-CAREER

¹ CN’S ALL-TIME TRAFFIC RECORD (WWW.COMPUTER.ORG/PORTAL/WEB/COMPUTINGNOW/ARCHIVE/FEVERARY2011).
² CiSE’S N-BODY SIMULATION (WWW.COMPUTER.ORG/PORTAL/WEB/COMPUTINGNOW/ARCHIVE/FEVERARY2011).
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Scott Hemmert is a senior member of the technical staff at Sandia National Laboratories, where he leads the advanced supercomputer interconnect research. He’s also a member of the joint Sandia/Los Alamos National Laboratory Alliance for Computing at Extreme Scale (ACES)

As my videos for CN’s special issue exemplify, the opportunities to share and discuss such experiments are broader and more exciting than ever. I hope you’ll check out my theme issue in CN, if only to see what a successful foray into value-added content—beyond our already excellent articles—might look like for CiSE. If you’d like to discuss ideas on these topics, feel free to contact me through my Web page at www.thiruvathukal.com.

References

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