July 16-19, 2013
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Conference Abstracts

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canadienne des humanités numériques (CSDH/SCHN)
centerNet
Australasian Association for Digital Humanities (aaDH)
Japanese Association for Digital Humanites (JADH)

Digital Humanities 2013

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Designer: Karin Dalziel
Encoders and Proofreaders:
Matt Bosley
Matthew Lavin
Elizabeth Lorang
Keith Nickum
Erin Pedigo
Hannah Vahle
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and
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Welcome to Digital Humanities 2013

Katherine Walter

kwalter1@unl.edu
Co-director, Center for Digital Research in the Humanities, University of Nebrask–Lincoln

Kenneth Price

kprice2@unl.edu
Co-director, Center for Digital Research in the Humanities, University of Nebrask–Lincoln

Welcome to the University of Nebraska–Lincoln and to Digital Humanities 2013. The theme we have chosen for this year's conference is **"Freedom to Explore."** This theme seems appropriate given our Great Plains location and our belief that Digital Humanities is a new frontier in the Humanities.

In the 1840s, many pioneers traveled across Nebraska in wagon trains and hand-carts along the Great Platte River Road and wagon trails, such as the Oregon Trail–moving west to seek riches, land or religious freedom. Some people stayed, especially in response to the 1862 Homestead Act signed by President Abraham Lincoln. At that time many Civil War veterans, women and blacks homesteaded, as well as immigrants from such countries as Germany, Bohemia, Sweden and Denmark. Forty miles south of Lincoln, Nebraska today is the Homestead National Monument of America—worth seeing if you have time. Another place worth visiting is Scout's Rest, Buffalo Bill's ranch outside of North Platte.

Also in 1862, the last piece of Trans-Continental Railroad legislation was signed by President Lincoln. From Council Bluffs (just across the river from Omaha, Nebraska) entrepreneurs hastened to build the railroad west to Promontory Point in Utah. Today, the Union Pacific Railroad headquarters is in Omaha and Warren Buffett, the owner of the Burlington Northern Santa Fe (BNSF) railroad, lives in Omaha, so railroading is very much part of Nebraska's heritage. Those of you who will be going on the Nebraska History tour will see the Durham Western Heritage Museum in Omaha, located in a former Union Pacific station. If you are driving further east, we recommend visiting the Union Pacific Railroad Museum in Council Bluffs, Iowa.

For many years, Mexicans and Latinos from Central America have been migrating to Nebraska; and now Lincoln, Nebraska, is a refugee resettlement community with about 53 languages-of-origin spoken—languages of Southeast Asia, former Soviet bloc countries, the Middle East and Africa, as well as Spanish. Indian tribes in Nebraska today are the Omaha, Ponca, Dakota Sioux and the Winnebago, with other tribes having been relocated to reservations in Oklahoma or South Dakota during the nineteenth-century.

The University of Nebraska–Lincoln (UNL) was formed by the third major piece of legislation signed by President Lincoln in 1862—the Morrill Act. UNL is both a land-grant university and a university designated a "research university—very high activity" by the Carnegie Foundation. It has over 24,000 students from 130 countries. In 2010, we joined the Committee on Institutional Cooperation (CIC), a consortium of universities enrolling approximately half a million students each year, with approximately $7 billion in funded research, over 79 million library volumes, and 46,000 faculty. The CIC Digital Humanities Committee is now exploring how our institutions can collaborate on digital humanities research and teaching.

In 2005, the University approved the formation of the Center for Digital Research in the Humanities, and the commitment from this institution has been wonderful. We hope you can come to our open house during the conference and meet some of our faculty and graduate students.

Sixty plus years after Father Roberto Busa began working with IBM on the Index Thomisticus, digital humanities continues to explore and create new approaches for examining the humanities. Like our conference logo—the Western Meadowlark taking wing–DH is soaring!

Welcome from the Program Committee Chair

Bethany Nowviskie
bethany@virginia.edu
Scholars' Lab, University of Virginia, USA

2013 is a banner year, as we celebrate the 25th joint international conference of the Association for Computers and the Humanities (ACH) and ALLC: the European Association for Digital Humanities, organized in the past six years with a growing number of key collaborators and partnering professional organizations. These now include the Canadian Society for Digital Humanities (CSDH/SCHN), the Australasian Association for Digital Humanities (aaDH), and centerNet. As planning for next year begins, we welcome the contributions of the Japanese Association for Digital Humanities (JADH). But the conference hosted by our strong Alliance of Digital Humanities Organizations is not just an international affair: it is also wildly interdisciplinary and—like the community of practice we call "DH"—thoroughly inter-professional in character.

As in past years, the International Program Committee, aided by a host of volunteer peer reviewers, faced the problem of an abundance of riches. I would like to thank our splendid Nebraskan local organizers for accommodating a greater number of parallel sessions than usual, so that we could increase the diversity of offerings at *Digital Humanities 2013*. We look forward to hearing from all of you, and from our plenary speakers. These are David Ferriero, 10th Archivist of the United States; Isabel Galina of the Instituto de Investigaciones Bibliográficas at the National University of Mexico; and the winner of ADHO's highest honor, the Roberto Busa Award for outstanding lifetime achievements in the application technology to humanistic research: Professor Willard McCarty.

My sincere thanks go to fellow members of our stalwart Program Committee: Craig Bellamy (ACH); John Bradley (ALLC); Paul Caton (ACH); Carolyn Guertain (CSDH/SCHN); Ian Johnson (aaDH); Sarah Potvin (cN); Jon Saklofske (CSDH/SCHN); Sydney Shep (aaDH); Melissa Terras (ALLC, vice-chair); Tomoji Tabata (ALLC); Deb Verhoeven (aaDH); and Ethan Watrall (cN). I am likewise grateful to: ADHO's infrastructure committee (ably chaired by Chris Meister) for sometimes-heroic support of the conference system; to members of our Multilingual and Multicultural Issues Committee (led by Elisabeth Burr) for organizing translations of the CFP and advising the PC through the call and review process; and to the conference's local organizers (most especially Kay Walter and Karin Dalziel) for their responsiveness and invariable good cheer. I also wish to thank our 53 session chairs and other volunteers who will enrich the intellectual program in Lincoln, as well as the hundreds of active peer reviewers from around the world who generously provided up to six independent assessments for each of the nearly 350 submissions made to this year's conference.

Finally, I would like to thank ADHO's Conference Coordinating Committee (chaired by Ray Siemens), the ADHO Steering Committee (chaired by Neil Fraistat with very helpful contributions from John Nerbonne and Julia Flanders), and the wider DH community for support of a number of procedural changes I undertook this year with the endorsement and good energy of the International Program Committee. The goal of our experimentation was to advance an inclusive, fair, and welcoming peer review system, and to make a rigorous *Digital Humanities* vetting process as transparent, constructive, and collegial as possible. I hope that the openness of the system and breadth of its results are a good match for the big skies of America's heartland, and wish all of this year's attendees the freedom to explore.

Obituary for Prof. Lisa Lena Opas-Hänninen

Prof. Lisa Lena Opas-Hänninen of the University of Oulu and chair of the ALLC: The European Association for Digital Humanities, passed away in Helsinki on Feb. 2, 2013 after a long illness. She is survived by her husband, Prof. Heikki Hänninen of the University of Helsinki, and she will be remembered by generations of digital humanists.

Lisa Lena loved her work and her colleagues. She traveled a great deal in order to stay in personal contact with others in, around and beyond our disciplines. Conferences such DH 2013, which this book of proceedings describes, were her normal fields of activity, where she inevitably arrived early and stayed late, engaged everyone interested in new opportunities for international collaboration, attending innumerable meetings and talks, always with words of encouragement to younger scholars, with witty side remarks to those sitting nearby, and with invitations to discuss it all at more leisure over a drink later in the evening. The invitations were delivered in a collegial, almost conspiratorial manner! Those who accepted them were always delighted to find a good number of colleagues engaged in friendly banter and argument. We shall miss her for her contributions, for her welcoming and encouraging way, and for the feeling she gave us that we were together part of a large and important movement.

— The present and past members of the executive committees of the (Alliance of) Digital Humanities Organizations.

Bursary Winners

Digital Humanities 2013 Student Conference Bursaries

Two of the 2013 bursary awards have been enabled by a generous donation from Patrick Juola

Hamed M. Alhoori (Texas A&M University)
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Ayush Shrestha (Georgia State University)
Dana Ryan Solomon (UC Santa Barbara)
Lindsay Thomas (University of California, Santa Barbara)

Consortium on Institutional Cooperation (CIC) Graduate Student Scholarships

The University of Nebraska-Lincoln received a generous donation to make competitive awards to the following students from CIC universities

Terry Brock (Michigan State University)
Mattie Burkert (University of Wisconsin)
Matt Burton (University of Michigan)
Trey Conatser (The Ohio State University)
Christopher Leeder (University of Michigan)
Grant Simpson (Indiana University)
Dawn Taylor (Penn State University)

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Knitic — The Revolution of Soft Digital Fabrication

Guljajeva, Varvara
varvarag@gmail.com
Estonian Art Academy, Estonia

Canet Sola, Mar
mar.canet@gmail.com
Interface Cultures, University of Linz for Art and Design

The paper points out the rapid development of digital fabrication, the influences and importance of open source in this field, and overlooked manufacturing method that is textile fabrication. By introducing our practical work and research we demonstrate the potential of craft in the era of digital fabrication. Also the works by other artists and designers involved in improving and applying obsolete electronic knitting machines are covered.

We have started our research on knitting machines in the beginning of 2012 through our art project SPAMpoetry (Guljajeva 2012) (see Fig. 1.). We have purchased an old Brother knitting machine (Fig. 2.) in order to hack the uploading system and knit poems from SPAM. The research on reverse engineering of knitting machine made us realize that the electronic knitting machine was the first digital manufacturing tool at home that has been totally overlooked in the age of digital fabrication. Hence we got an idea and motivation for developing Knitic — an open hardware and integrate it to the field of digital fabrication (Canet and Guljajeva 2012).

Fig. 1
SPAMpoetry

Fig. 2
making a workshop on application of a modified Brother KH930 knitting machine.

What is Knitic? It is an open hardware (see Fig. 3.), which controls an obsolete Brother knitting machine from

1980s via Arduino (open source micro controller). Knitic does not use a floppy emulation or knitting machine's keypad simulation, like previous hacks. Instead, the open hardware is the new 'brain' of a knitting machine that allows real-time control over the needles (see Fig. 4.). It means, one can knit as long patterns as desired and modify the pattern on the fly. Knitic has one more important advantage: it is compatible with all Brother electronic machines. Maybe also with punch-card ones, this needs to be tested though. How come? Because we do not use any Brother electronics but just sensors' output and solenoids' input of a knitting machine.

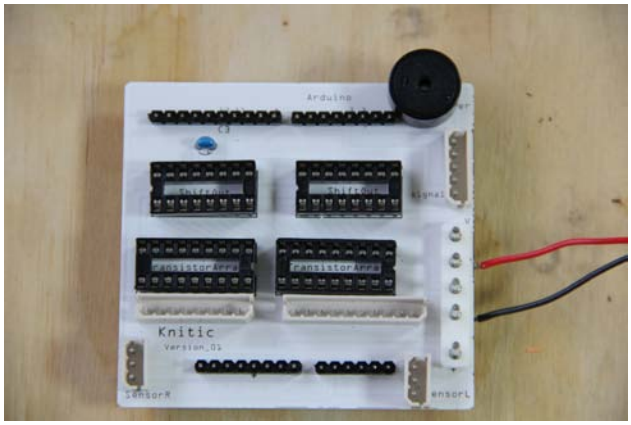

Fig. 3
PCB of Knitic

Fig. 4
Testing Knitic. Knitting machine's new brain is able to control needles according to the pattern.

Why are we developing open hardware for knitting? Digital fabrication is gaining importance. The numbers of Fab Labs, persons possessing digital fabrication tools, and open hardware are increasing. Furthermore, the number of start-ups and small-scale companies applying digital fabrication devices as their core business idea is increasing. Makers, designers and artists, who have invested in buying a 3D printer and/or laser cutter, in addition to their work are manufacturing for others, too. Now makers also replicate machines and sell, which all in all pays back the investments sooner.

Hence, society is shifting towards personal and custom manufacturing that is strongly supported by the information age. In the words of Neil Gershenfeld the founder of Fab Labs' model: 'the real impact of digital communications and computation came in giving ordinary people control over the information in their lives; digital fabrication will likewise give individuals control over their physical world by allowing them to personally program its construction.' (Gershenfeld 2007, 241).

However, all this innovation is around certain tools, mainly laser cutters, 3D printers, and CNC machines. At the same time textile fabrication has been overlooked. In the end, it is a shame to forget early fabrication methods, which can be adjusted for digital age needs. Also, re-application of obsolete media and integration of craft are interesting and novel approaches in the field of digital fabrication.

We believe that all these results could be augmented if textile fabrication is added as an option for open manufacturing. Individuals, who are experimenting with and making their living from digital fabrication practices could have more possibilities for creation as well as business. And what is more important, more people could be involved, especially the ones who are skilled in handcrafts like knitting and sewing. Hence, introducing this overlooked manufacturing field will certainly bring innovation, as well as novel business and collaboration models.

To tell more, there is a growing community of artists and designers working with and improving hacked obsolete electronic knitting machines. For example, Becky Stern from MAKE Magazine introduced the first tutorial how to modify a knitting machine (Stern, 2010). Andrew Salamone an artist from New Year has knit a body of work on those machines. The practice of Fabienne Serriere is a good example of one-person manufacturing. She has modified a knitting machine and now produces knitted items by applying parametric design approach while making her own patterns (Serriere 2011).

In addition to that, the machine that was produced for home-use in late 1980s, actually allows to knit big-scale and custom-made items. For instance, we have knit a car Kombi on Brother KH930 machine with Knitic (see Fig. 5,) and a number of SPAMpoetry pieces. Concerning innovation, knitting has a big potential in the field of smart textiles. At the moment the most of work in this field is done on fabrics. Hence, knitting is completely unexplored field from this point of view. For example, thermo chromic and UV pigments could be applied on yarn. Also conductive yarn is a thing to try out. Hence, we see lots of room for creativity and innovation in the field of knitting.

Fig. 5
Knitted Kombi on the streets of Belo Horizonte, Brazil.

Why does open source matters? In our point of view, open code, hardware, and design are the reasons for the success of digital fabrication field. For instance, Lipson and Kurman write about the phenomena of a factory at home and one-person industries, which is not a vision or future prediction but already a reality. There are a number of proofs for such a claim, but the most vital ones are open source hardware and software, and an active community around the rising paradigm. For example, 3D printers that were for industrial use and not affordable for individuals, can now, in 2012, be purchased for 1000 euros. Obviously, an industrial machine has better specifications from an open source one, but still a self-assembled RepRap can be applied for prototyping, a small-scale and customised production, and finally for self-replication. Moreover, the price of the machine is dropping and features improving because the machine is an open hardware! There are lots of 3D printers that are open source and through the innovation and contribution of the whole community the development curve is extremely rapid.

Concerning further reasons for the advent of digital fabrication, open design as well as software play an extremely important role. Thanks to the database of designs that are available online, like Thingiverse.com, one can find a huge number of 3D models as well as share their own designs freely. Hence, even non-experts are able to start experimenting and producing desired items. In addition to that, open code is also crucial for understanding and improving the performance of digital fabrication machines.

Coming back to Knitic, we have opened all our research in order to achieve similar effect in the community of makers as described above. Our ultimate goal is to contribute with completely open source knitting machine that can be produced by laser-cutting and 3D printing its parts. Hence, an open source knitting machine will not depend on availability of discontinued Brother electronic knitting machines.

We believe that textile fabrication has a huge potential in the age of digital fabrication and customisation. Moreover, knitting is a skill that humanity has been using for ages. Hence, there are lots of experts, knowledge, learning and production material, tools, etc. On the contrary, the ability to 3D print or laser-cut is the competence of very few people. It means, introducing craft in general to the desktop manufacturing communities and Fab Labs will bring more people and gender balance to these networks. Furthermore, the encounter of different skills and disciplines will most likely constitute innovation and creativity.

In the end, it is curious how an electronic knitting machine, the first digital manufacturing tool at home has been forgotten by digital fabrication labs and open hardware developers. Therefore, we are confident in the importance of our research project and contribution to the field of personal manufacturing. Moreover, our research and development of open source knitting machine is a perfect example of artists developing their own tools for their work. And that is what is happening in the world of open source hardware and software that affects greatly art, design, and manufacturing fields.

And finally, in our point of view it is impossible to talk about the shift of production paradigm by observing and describing the phenomenon of Fab Labs and novel open source machines that are able to produce hard-surface items, while excluding all other areas of manufacturing.

To sum up, since knitting is a well-known craft and there are lots of experts, it is a shame to run after new technology and forget good old skills. On the contrary, innovation should take advantage of existing knowledge.

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TXM Portal: Providing Online Access to Textometric Corpus Analysis

Heiden, Serge

slh@ens-lyon.fr
ICAR Laboratory, ENS de Lyon - CNRS, France

Lavrentiev, Alexei

alexei.lavrentev@ens-lyon.fr
ICAR Laboratory, ENS de Lyon - CNRS, France

This poster presents the TXM portal, a software providing online access to textometric corpus analysis. Textometry is a computerized methodology of corpus analysis combining qualitative and quantitative tools applicable in various fields of the humanities (linguistics, literary studies, geography, philosophy, history, etc.). This methodology was initially developed in France in the 1980's under the name of lexicometry and a number of software products implementing various analytical tools were developed. TXM is a new generation of open-source software built on a modular basis bringing together previous textometric techniques and state-of-the-art text encoding and corpus-building technologies (Unicode, XML, TEI, NLP) (Heiden, 2010; Heiden et al., 2010; Pincemin et al., 2010). The word search engine used for TXM is provided by the Open CWB open-source project (http://cwb.sourceforge.net) and syntactic structures can be queried using the TigerSearch engine (provided that the corpus is syntactically annotated in Tiger XML format) (Lezius 2002). Statistical analyses are performed using the R library (http://www.r-project.org). Other search engines and libraries can be plugged in the TXM platform as necessary.

The TXM software is available in the form of a desktop application (for Windows, Mac and Linux) and of a web portal application sharing a common "toolbox" for corpus building, query and statistical analysis. Most of the corpus analysis features are the same in both applications, however a special attention in the poster will be given to the features that are only available in the portal version.

It should be noted that corpus import and annotation features are only available in the desktop version. The portal version allows the administrator to upload previously compiled "binary" TXM corpora.

The major specific feature of the TXM portal is the management of user registration and access rights to the corpora with the possibility to specify access conditions for each individual text of the corpus (e.g. limitation of context size in concordances). This is important for copyrighted texts where owners may wish to prevent users from copying an entire text or a substantial part of it. User accounts and profiles can be edited by the portal administrator through the web interface. Customized web pages ("home", "help" and "contact") can be created for each user profile. Internationalization feature is available for the portal interface and user web pages (the current portal distribution provides English and French interface).

Another feature that is only available in the TXM portal version is the creation of subcorpora by selecting texts with a special interface. It allows the user to choose various criteria to select texts (depending on the metadata available for the corpus), to add or remove texts individually and to visualize the dimensions of the subcorpus in number of words or texts.

The basic tools of textometric analysis are available in all TXM versions. These include creating corpus partitions for contrastive analysis, building indexes and concordances of word or text patterns, display of one or several alternative text edition versions (including facsimile images). One can also search for collocates of a particular word. Statistical analysis tools are available for corpus partitions. These include computing specificity of word or text patterns and correspondence analysis. The results of corpus queries can be downloaded for further analysis in the form of CSV tables.

The TXM portal software is available for free under the GNU GPLv3 license from the sourceforge development site (http://sourceforge.net/projects/txm). A demo TXM portal where the various tools can be tested on sample corpora is accessible at the following address: http://txm.risc.cnrs.fr/demo. TXM portal is currently used in production to provide regular access to the Base de Français Médiéval old