End of Programme/Project Report

Programme Information

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<th>Programme Title</th>
<th>Digging into Data Challenge</th>
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<td>This document is partly based on a joint report co-authored by Professor Chen (Oxford) and Professor Coles (Utah) for DiD Montreal Event.</td>
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Document Purpose

To report achievements against the Programme Business case with particular emphasis on lessons learnt to inform future programmes
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1. Programme Summary

The overall aim of this project was to answer a methodological question, i.e., “whether or not advanced visualization techniques can provide a useful interface that enables users (e.g., linguistic researchers, literature scholars ...) to use their enormous domain knowledge dynamically, while utilizing the computational and memorizing capability of computers. In particular, can data visualization help users make new observations and generate new hypotheses?” The proposal defined four objectives, addressing general corpus data visualization as well as an in-depth study on visualization in poetry research.

2. Key highlights and benefits achieved

Under an international Digging Into Data Challenge program, our team of computer scientists, a linguist, and poet/scholars from the University of Oxford and the University of Utah have been working to create, through computation and visualization, a richer understanding of how poems work: one that relies on computational tools yet embraces qualitative and quantitative components and explicitly engages human readers and perspectives and research needs specific to the humanities in general and to literature, especially poetry, in particular. This new tool, PoemViewer, by approaching poems as complex dynamic systems, represents a significant step toward providing literary scholars freedom to explore individual poems, bodies of poetry, and other texts of their choosing in ways traditional scholarship and other text analysis software cannot. In addition to displaying familiar poetic features, such as texts, word frequencies, grammatic classes, and sentiment, Poem Viewer provides a unique capability for visualizing poetic sound, including various sonic relationships and changes as they occur in a poem over time.

Poem Viewer, designed and developed by Dr. Alfie Abdul-Rahman (Oxford) and Mr. Eamonn Maguire (Oxford), provides poetry scholars with a “magic lens” for observing many different attributes of a poem along its textual structure, and for comparing a poem with other poems or texts in such a multi-dimensional attribute space. In the sciences, this is often referred to as multivariate data analysis, while in poetry, such an observational and comparative study is commonly conducted in closing reading, typically with little help from any digital technologies. There have been several attempts to create such technologies, most notably Myopia (Chaturvedi et al. 2012). However, the existing techniques can only depict a few attributes simultaneously, and they commonly require manual encoding of individual features by users. While tools like Myopia are useful for literary scholars to disseminate their knowledge about a pre-selected poem pedagogically, they provide limited freedom for scholars to make their own observations or to come up their own interpretations (as Laura Mandell called “my utopia”).

Poem Viewer enables scholars to gain access to an advanced web-based visualization tool designed specially for supporting close reading (i.e., as computer scientists would refer it to as “multivariate data analysis in poetry”). It provides the flexibility for depicting up to 26 attributes with a rule-based user interface for minimizing effort required for specifying complex visual encoding of the attributes. Its capability for identifying and visualizing sonic elements automatically has been found particularly useful for revealing the development of sonic relationships in a poem across time. The latest version of Poem Viewer features automated translation of a poem to its phonetic representation, powered by Oxford Dictionaries API. This allows readers to select and upload any poems they wish for visualization. This represents a significant move forward for literary scholars, making the tool useful not only for lower-level pedagogical applications but for the pursuit of serious research.

In fact, our work has already led the poets on the team to rethink poems and how they work on a number of different levels. Specifically, the need to consider poems as comprising quantifiable elements subject to visualization has led us to think of the poem as a fluid (or fluids) moving via its
linguistic elements, devices and figures through a self-defined space. At this point, the two poetry scholars on our team are working on an MLA presentation that will focus entirely on the literary insights gained from their engagement with the project and with PoemViewer. Professor Katharine Coles (Utah) is pursuing ideas on sound and image in time, and Dr. Julie Gonnering Lein (Utah) is working in a focused way on sound and time.

3. **Review of programme objectives**

We have achieved the overall aim, carried out R&D to address the four objectives, and achieved an outstanding in-depth study on poetry visualization. It was a rewarding collaboration. The team jointly delivered two publications and a piece of public-domain software. The project was reported in the JISC Inform online magazine, together with a video interview of Professor Katharine Coles, co-PI of this project.

10. Poem Viewer: http://ovii.oerc.ox.ac.uk/PoemVis/

The Oxford budget covered mainly the employment of Dr. Alfie Abdul-Rahman as a research officer. Please ADD some figures.

Please DELETE How the programme has performed against planned targets and tolerances including final spend and any objectives not realised
4. Lessons report

There were two major challenges: (i) the distance between Oxford and Salt Lake City, and (ii) the “professional gulfs” between computer scientists and poets. We addressed both challenges successfully by making concrete arrangements for collaborative activities (e.g., visits, seminars, workshops, brainstorm meetings, video recording, joint publications, and software life-cycle) in addition to emails, phone calls and video conferences. Several purposely organized events, such as those listed below, played a crucial role in making the collaboration work.

- Collaborative Research Visit by Professor Katharine Coles, Professor Chris Johnson and Dr. Julie Gonnering Lein (Utah) to Oxford during 10-13 June 2012.
- Collaborative Research Visit by Professor Min Chen, Dr. Alfie Abdul-Rahman and Mr. Eamonn Maguire (Oxford) to Salt Lake City during 21 October - 9 November (AAR), and 21 - 27 October (MC & EM), 2012.
- Digital Humanities Workshop, in Salk Lake City, on 25 October 2012.
- Collaborative Research Visit by Professor Katharine Coles (Utah) to Oxford. 16 April 2013.
- Seminar: Poets In The Lab - Professor Katharine Coles, in Oxford, on 16 April 2013.