

C. Co-author finder

Using a research paper API such as Mendeley, Gneiss is able to let the user create a data extraction program that searches all papers written by a person in the last 5 years and generate a list of co-authors of that person (a similar use case was described in a prior mashup paper [27]). To do so, the user first sends the API request and binds the value of the query parameter to a spreadsheet cell where she enters a person name. The user then drags the title, year, publication venue and authors of all papers to the spreadsheet, and filters the data to only show papers published after 2009. For each paper, the “authors” field is an array that contains a list of authors. The user uses the `flatten` formula to flatten all the “authors” arrays and put the values in an empty column. Finally, the user filters the flattened author columns to remove duplicate names and get a clean list. If the user wants, she can further use the co-author list to find more related papers by sending another web API request using the co-authors’ names.

VI. CONCLUSION AND FUTURE WORK

We have presented a novel spreadsheet model for using web service data. It allows the user to extract web service data through demonstration by drag-and-drop, and supports runtime sorting and filtering of the data to help the user refine the results. The user can store structured data as nested tables in the spreadsheet and manipulate the data using formulas. The spreadsheet metaphor allows the user to easily bind cells to parameters in a web API to enable two-way data flow. Based on the dependency between spreadsheet cells created by the user, our tool can generate parallel-running code to speed up performance. We demonstrated our tool’s ability using a series of examples throughout the paper. For future work, besides the various extensions already mentioned in the paper, we would like to support handling streaming data in the spreadsheets, such as streaming web APIs or sensor data from mobile devices. This will include designing new spreadsheet features that assist the user in working with continuous, time-series data. Also, we would like to further extend the spreadsheet metaphor to let the user create interactive web interfaces that present and visualize the resulting spreadsheet data.

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