|  |  |  |
| --- | --- | --- |
| Systematic Review\* Automation Tool Journal Club  (\*and other synthesis types, too!) | | |
| Date: | 15 July 2022 |
| Presenting: | Anna Mae Scott |
| Tool reviewed: | ExaCT – extracts characteristics of studies from RCTs |
| Reference: | Kiritchenko et al, “ExaCT: automatic extraction of clinical trial characteristics from journal publications”, BMC Medical Informatics & Decision Making, 2010 |
| Cost? | Free |
| Online or desktop? | Online  <https://exact.cluster.gctools.nrc.ca/ExactDemo/intro.php> |
| Tool used for… | Data extraction |
| Tool description from the SR Toolbox: | ExaCT is a prototype machine learning and text mining tool that helps to automatically extract study characteristics (known as data elements within the tool) from the full-texts of RCTs. It also aims to help efficiency compared with manual data extraction.  <http://www.systematicreviewtools.com/tool.php?ref=ExaCT> |
| Reason for reviewing the tool: | Extracts 21 items across 5 categories; data extracted feeds into a typical Table 1 in a SR (included study characteristics)   1. Publication info: first author, DOI, date) 2. Meta information: funding source, trial rego 3. Enrolment: eligibility criteria, sample size, start date, end date, early stopping 4. Intervention and comparator: dose, frequency, route, duration 5. Outcomes: primary + timepoints, secondaries + timepoints |
| How the tool works: | 1. Upload the URL of the html version of the article 2. I uploaded a pubmed (PMC) version of an article and on the JAMA version of the same article (previously included in a SR)   PUBMED: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6584323/>  JAMA: <https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2705079>   1. NB: the JAMA version got a “could not read” warning, so abandoned that idea; tested another URL for another RCT on JAMA site 2. Ran it through the entire process – the only bits of data that were missing were country (ExaCT doesn’t extract this) and individual arm numbers (ExaCT extracts the number for the overall trial) – rest were all picked up and all correct 3. Not quite sure how to convert this to a table, but possibly copy/paste into Excel and do a transpose?  * NB: see also below, a link to the Twitter thread with instructions |
| How the tool was tested: | * Trained on 78 randomly chosen RCTs from key medical journals, then an additional 54 * Tested on 50 full text RCTs from 25 medical journals * Tested on: RCTs, English language, full-texts have to be available in html, drug studies in humans, parallel arm studies |
| Test results: | * Of 1050 test tasks: 992 at least partially correct extraction (of those, 696 fully correct extractions), 58 incorrect   See full publication here:  <https://bmcmedresmethodol.biomedcentral.com/articles/10.1186/s12874-021-01354-2> |
| Discussion points: | * Could be an excellent way to “triage” whilst doing the screen * Does not currently work on observational studies; RCTs only * For RCTs, it works best if you are using the full-text RCT in pubmed / PMC * You need to setup an account to use the tool: Email Svetlana Kiritchenko to have an account set up ([svetlana.kiritchenko@nrc-cnrc.gc.ca](mailto:svetlana.kiritchenko@nrc-cnrc.gc.ca)) * Gives multiple options to “clean up” the extractions it does; and highlights the corresponding text, which is very helpful * If you disagree with the tool’s judgement about a particular bit of extraction, you can highlight a section of the text, right-click add to and it’ll copy/paste into the section you choose * Exporting to xls needs reformatting but looks good with a bit of transposing and cleaning up * Twitter thread with instructions and printscreens: <https://twitter.com/2weekSR/status/1548841900446076928> |