



## Seminar:

# Building the WISEST AI Tool: A Machine Learning approach to automate critical appraisal at the systematic review-level



Speaker:

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## FEB 1 on Zoom

## 12:00PM PT

**Introduction:** Evidence-informed practice (EIP) stipulates that all relevant evidence should be used to make clinical, public health, and policy decisions. Systematic reviews (SRs) were developed as summaries of all available evidence. Artificial intelligence (AI) solutions have the potential to expedite and facilitate the task of critical appraisal of SRs. Databases of appraised SRs are maintained by large organisations such as the McMasterPLUS database, World Health Organisation, and NCCMT's HealthEvidence database can use our proposed tool. We aim to develop an AI tool called WISEST (Which Systematic Evidence Synthesis is best) using machine learning methods.

**Methods:** In this presentation, I will describe the development of the WISEST AI Tool: selection of quality and metadata features, data selection and collection, data pre-processing, and model building in terms of retrieval of relevant passages, question-answering, classification, and validation of the model. We used 21 quality features drawn from the established AMSTAR-2 and ROBIS tools to appraise SRs. We are currently developing the dataset by recruiting and training volunteers, who extract the key features from 2000 SRs and assess their quality using the two tools. We will use LLM derivatives of BERT to fine-tune our pretrained models, using our small annotated dataset. We will create a Q&A model as well as a Classification model. Lastly, we will evaluate the performance of our models on our validation set.

**Preliminary results:** WISEST will be provided as an open access and free to use tool on a website to encourage use in real-life settings with decision makers and users. We are working on building the dataset and have recruited and trained 22 active crowdsourced volunteers. The coders have finished the data pre-processing and are working on the Q&A model.

**Impact:** An AI tool that does the critical appraisal of SRs would dramatically reduce the financial and human resources currently needed to keep SR-appraised databases up to date. Health decision makers, guideline developers, practitioners and learners (e.g. medical students, CME learners) can use WISEST to either quality assess SRs they find in the literature, or use the tool to learn and practice quality appraisal.

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