Large language models (LLMs) are generative AI systems designed to produce human-like language in response to questions and prompts. These LLMs are trained in language by examining huge textual datasets generally collected from the internet and assessing the probabilities of occurrence for sequences of words. The dataset, or corpus, used to train a model contains trillions of words and the resulting model will have billions of parameters. But the resulting language model does not truly converse or reason. It simply predicts the order of words and spits out the most likely result. It is autocorrect on steroids.

Language models also have newer capabilities such as summarizing text and answering questions in natural language. This has become feasible without additional, explicit training. These models can pass medical licensing exams, extract drug names from medical records, reply to patient questions, and write history and physical notes. ChatGPT, one of the most popular AI applications using this technology, employs a LLM known as a generative pretrained transformer to "ingest" text and output textual sequences in response. (Nigam Shah, et.al., JAMA Online, Aug. 7, 2023).

Proponents of AI foresee a brave new world where AI-driven programs can consult a patient's entire medical file. This will include all medical health care data, every piece of medical literature ever published online. It could even provide spoken explanations and recommendations, draw sketches and annotate images.

Stanford researcher Dr. Jure Leskovec describes an upcoming "paradigm shift" regarding AI in the medical field with "generalist" models performing tasks across specialties and input type. Models currently in use in clinical medicine perform narrow tasks such as scanning a radiology study for signs of cancer or pneumonia. Generalist models are being designed to input different types of information, including records, lab results, imaging, and genetic data to "perform tasks that we instruct them to do on the fly," according to Leskovec.

But not everyone is as confident. AI tools are designed to imitate human understanding, processing and communication. But they are

LANGUAGE BARRIER
AI models are disrupting health care
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only imitations. According to the World Health Organization, the excitement generated by the exponential advances in AI has caused device developers to "toss aside" caution normally applied to the development and implementation of new technologies, particularly those in the healthcare industry.

One limitation of open AI applications is the tendency make up references. Multiple courts now require written disclosure when AI is used in any way in the preparation of any document filed with the court. Many medical journals, including JAMA, now require similar disclosures.

As with the development of electronic medical records, medical AI advances are proceeding largely without input from regulators and healthcare providers. Developers and new users are asking how LLMs, and the applications powered by them, will reshape medicine. Instead, the healthcare industry should be asking how the intended medical use will shape the training of the LLMs. (Shah, et.al.)

The biggest danger in the coming generalist AI models is verification. As Leskovec puts it, "How do we know that the model is correct — and not just making things up?" In addition, the output from even the most sophisticated application is only as good as the input. Biases in datasets will manifest in biased and inaccurate output. This phenomenon has surfaced in facial recognition AI programs.

Lawyers need to be familiar with this technology to ask the right questions and request the right discovery. Certain forms of AI are already used in every electronic medical record system, including auto-fill, clinical alerts and other clinical support tools. The implementation of next generation applications will occur quickly and probably without fanfare. Not long ago, electronic medical record audit trails and audit logs seemed exotic but today they are part of routine, initial discovery. It won't be long until all forms of AI utilized in a patient's care will be part of that discovery. CL

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