Crowdsourcing is powerful. There are countless historical examples of the “wisdom of the crowd.” At a 1906 fair in Plymouth, England, 800 people participated in a contest to guess the weight of a slaughtered and dressed ox. While individual guesses were often wildly inaccurate, the crowd’s median median guess (1,207 lbs) was accurate within 1% of the actual weight of the ox (1,198 lbs). Modern examples include Wikipedia and Waze (a community-informed traffic navigation app).

Over the last decade, crowdsourcing has been used for research projects and data collection in astronomy, genealogy research, journalism, ornithology, navigation, and many others.

In 2012, Ronald Summers’ team showed that distributed human intelligence is as good as CAD for colonic polyp detection. They employed 20 untrained anonymous workers using the MTurk service. Each worker was shown only 5 images of colonic polyps prior to participating in the study.

Not all crowds are wise! Crowds can be cruel and irrational (herd behavior, many others).

There are countless historical examples of the “wisdom of the crowd.”

What if we were able to poll and aggregate the opinions of a crowd of highly skilled experts? Imagine the possibilities!

PROBLEM

• Most radiologists in the United States (and, probably, the rest of the world) practice in small to medium sized groups.
• Most radiologists encounter difficult or unusual cases at least once/week.
• According to a survey of past MSK fellows we conducted, the vast majority of radiologists prefer to consult a colleague on such cases, rather than researching for the answer on their own.
• Many radiologists work in isolation; they do not have expert colleagues around them whom they can immediately ask for a consult.
• There are potential real and perceived barriers to repeatedly asking your colleagues for help.
  • Would my colleagues think that I am incompetent or poorly trained?
  • Would they find me too needy or resent that I am bothering them all the time?
  • My colleague who is an expert in that subspecialty may not be immediately available to help me out right now.

SOLUTION: CROWDRAD

• CrowdRad develops web and mobile apps which allow seamless peer-to-peer consultation.
• Instead of asking a single colleague for an opinion, a radiologist can poll the world-wide community of experts in a particular subspecialty and get multiple independent responses.
• CrowdRad’s backend algorithms collect and analyze the responses.
• The responses of qualified participants are aggregated and presented in a tabulated, probabilistic fashion to the participants who submit an answer. To see the collective CrowdRad answer, a participant has to first submit his/her answer.
• CrowdRad’s apps enable radiologists to tap into the collective wisdom and experience of their peers.

BENEFITS OF USING CROWDRAD

• Eliminates barriers to asking questions
  • No one available to consult
  • Embarrassed to ask too many questions/worried that colleagues would perceive as lacking sufficient knowledge
• Ability to access multiple independent expert opinions at once.
• Fast and seamless: posting a case is easier than sending a text / email to a colleague.
• Access to a huge indexed collection of interesting / unusual cases.
• CME credits*.

CONCLUSION

• CrowdRad enables radiologists to quickly and seamlessly consult expert peers from around the globe on difficult or unusual cases.
• CrowdRad removes barriers to asking questions and seeking help, thus facilitating better patient care.
• CrowdRad aggregates and tabulates multiple independent expert answers, thus facilitating a form of distributed human intelligence (crowdsourcing), thus, it is the first-in-kind platform facilitating distributed expert intelligence.
• While CrowdRad is set up to benefit radiologists, its scope can easily be expanded to address the needs of other subspecialties.

REFERENCES


Contact information:
1. Department of Radiology and Radiological Sciences, Vanderbilt University Medical Center, Nashville, TN, martin.jordanov@vanderbilt.edu
2. Meharry Medical College, Nashville, TN