The stereotype of the fossil collector naming new species from fragmentary bones is well entrenched in both the public and scientific psyches. New advances in technology, however, have allowed today’s paleontologists to address a variety of questions once beyond our imagination. Among these advances are powerful computers for detailed shape analysis, the use of isotopes for rebuilding environments, GIS technology for examining spatial distributions, and high resolution CT scans for anatomical studies. My lab uses these technologies and others to study the evolutionary history of several groups of animals, from burrowing lizards to bison. I will show you a few of the projects that students in my lab, from freshman undergraduates to masters level, are working on, as well a few of the research projects we have on the horizon.