Abstract: My main goal in research is to make the lives of programmers easier. It’s no secret that the tools available to programmers often fall short of their needs, and I aim to bridge that gap by developing tools and techniques that make software easier to build, maintain, and understand. One particular challenge programmers face frequently is knowing what they want their code to do, but not how to do it.

In this talk, I will present a technique geared toward this challenge. It allows programmers to find source code based on input/output examples that describe the desired code behavior. The primary application of this approach is to code search - finding code in a repository that fits a specification, in this case an input/output example - and the novelty resides in the use of a constraint solver to identify relevant code. In addition to this initial target, the approach has potential applications in program synthesis, automated fault fixing, test-driven development, semantic clone detection. I will describe the core ideas underlying this code search technique, illustrate its generality, and share my vision for how this technology can be adapted and applied in many new directions.

http://www.cs.iastate.edu/~colloq/new/