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Tap, tap, tap – student invention can name that tune

Contact   Geoff Peters, [Phone removed]; geoff.peters@gmail.com
        Marianne Meadahl, Media/PR, [Phone removed]

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The simple, rhythmic bopping of a finger has led a trio of SFU computing science students to solve a musical dilemma – how to name that unknown tune.

They've created Song Tapper, which can be found at www.songtapper.com. The website has been designed to enable users to identify songs by tapping the melody on their spacebars. The site has grown from a few hundred songs to well over 11,000 tunes and attracts as many as 10,000 hits a day. Geoff Peters, an SFU graduate and jazz pianist, says the idea developed while he and partners Caroline Anthony and Michael Schwartz brainstormed for an artificial intelligence course project. "We thought of creating an automated song lyric generator," says Peters, creator of Google Duel, another successful internet tool designed to gauge name popularity on the internet. "But instead of matching rhythms in music to rhythms in lyrics, we decided to try matching rhythms in music to other rhythms in music."Students developed an algorithm which takes a rhythm and determines a rhythmic contour, or profile of the way the rhythm changes, like a first derivative from calculus. They generated a string of characters that represent the rhythmic contour, then use approximate string matching to do the search.

The students coded and implemented Song Tapper's algorithms, then ran a test with 30 children's songs. After initial success, they turned the lab project into a website. The site also uses an automatic song-learning technique allowing users to teach the system new songs by tapping and then entering the song name.

The students have submitted a chapter about Song Tapper to a book on artificial intelligence called Ambient Intelligence for Scientific Discovery. Other potential commercial and educational applications include using Song Tapper on mobile devices for ring tone search, in schools to teach rhythm or in children's toys.