30th ISME World Conference on Music Education Workshop Proposal

Accepted for ISME World Conference, July 15-20, 2012, Thessaloniki, Greece

Workshop Title:

Real World Projects for Developing Musical and Computational Thinking

Proposers:

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Workshop Description:

Music and the arts are engaging contexts for students to learn, integrate and apply computational concepts and thinking strategies. With the recent boom in the development of web-enabled, personal, and mobile technologies in the consumer marketplace, new jobs in fields such as video game design, interactive media and social media technologies are emerging requiring experience, competency and fluency in both musical and computational thinking. At the tertiary level in the US, few computer science programs offer the specialized training in music, and few music programs offer the computational foundation needed to prepare graduates for these emerging careers. To help address this challenge, we were awarded two National Science Foundation grants to develop interdisciplinary curricular modules and models of collaboration for use in tertiary general education and upper level music and computer science courses. Recently, we have also extended this work to K-12 and community music education contexts through collaborations with middle and high school students and teachers as a means of creating new career pathways for into computer science and music.

Our demonstration will begin by sharing our process of interdisciplinary collaboration, following by exemplar integration projects and examples of student work integrating musical and computational thinking developed through our research. For the past two years, our primary environment for exploring musical and computational thinking has been through the Scratch visual programming language developed at the MIT Media Lab - http://scratch.mit.edu/. Scratch was originally conceived as an interactive environment for children and young adults to learn programming and computing concepts through developing interactive animations and games. Members of our research team have worked closely with the developers of Scratch to further refine and extend its interactive musical capabilities. As a result, middle, high school and undergraduate students in our courses and community music workshops are developing their own electronic musical instruments, composing environments, games and other interactive projects including new sensor-integrated performance controllers. These projects were designed to reflect the real-world collaboration skills, disciplinary and interdisciplinary understandings needed in the development of music and arts technologies today and in the future.