## Sci-Art-Eng Distinguished Speaker Series:
## A Joint Seminar at the intersection of the arts, science and technology by thought leaders and innovators
co-sponsored by the Cullen College of Engineering,
the NSF IUCRC BRAIN Center and Kathrine G. McGovern College of the Arts

### Robotic Musicianship at Georgia Tech

The Robotic Musicianship Group at Georgia Tech aims to facilitate meaningful musical interactions between humans and machines, leading to novel musical experiences and outcomes. In our research we combine computational modeling approaches for music perception, interaction, and improvisation, with novel approaches for generating acoustic responses in physical, social, and embodied manner. The motivation for this work is based on the hypothesis that real-time collaboration between human and robotic players can capitalize on the combination of their unique strengths to produce new and compelling music. Our goal is to combine human qualities such as musical expression and emotions with robotic traits such as powerful processing, mechanical virtuosity, the ability to perform sophisticated algorithmic transformations, and the capacity to utilize embodied musical cognition, where the robotic body shapes its musical cognition. The talk will feature a number of approaches we have explored for perceptual modeling, improvisation, path planning, and gestural interaction with robotic platforms such as Haile, Shimon, Shimi and the robotic drumming prosthesis.

Gil Weinberg is a professor in Georgia Tech's School of Music and the founding director of the Georgia Tech Center for Music Technology, where he leads the Robotic Musicianship group. His research focuses on developing artificial creativity and musical expression for robots and augmented humans. Among his projects are a marimba playing robotic musician called Shimon that uses machine learning for jazz improvisation, and a prosthetic robotic arm for amputees that restores and enhances human drumming abilities. Weinberg has presented his work worldwide in venues such as The Kennedy Center, The World Economic Forum, Ars Electronica, Smithsonian Cooper-Hewitt Museum, SIGGRAPH, TED-Ed, DLD and others. His music has been performed with orchestras such as Deutsches Symphonie-Orchester Berlin, the National Irish Symphony Orchestra, and the Scottish BBC Symphony while his research has been disseminated through articles and patents. Weinberg received his M.S. and Ph.D. in Media Arts and Sciences from MIT and his B.A. from the interdisciplinary program for fostering excellence in Tel Aviv University.

**Gil Weinberg:**
Robotic Musicianship at Georgia Tech
Professor in Georgia Tech's School of Music
Founding director of the Georgia Tech Center for Music Technology

UNIVERSITY of
**HOUSTON**
CULLEN COLLEGE of ENGINEERING

Building Reliable Advances and
**BRAIN**
Innovations in Neurotechnology

UNIVERSITY of
**HOUSTON**
KATHRINE G. McGOVERN
COLLEGE OF THE ARTS

Friday, October 27, 2017
@noon

Moores School of Music,
room 108