1163-M5-1211 **Elijah Jarreau Bergevin*** (elijah.bergevin@cwu.edu), 1201 E Helena Ave, Unit 13302, Ellensburg, WA 98926, and **Sooie-Hoe Loke** (sooie-hoe.loke@cwu.edu), 400 E University Way, Samuelson Hall 208, Ellensburg, WA 98926. *Estimating Jazz Standard Key and Form with Hidden Markov and Hidden Semi-Markov Models post EM Optimization.*

With the rise of the digital age there has come an ever-growing supply of art in need of methods for analysis and cataloging. This project addresses music in notated form. Hidden Markov model (HMM) and hidden semi-Markov model (HSMM) are utilized to interpret the structures of American jazz standard repertoire. Ten charts with key modulation and ten with bisectional form are digitally converted for purpose of model optimization and model evaluation, individually. Two separate relationships are explored. First, the 24 major and minor keys of the Western musical canon are designated as hidden states. Pairs of consecutive chord symbols represent observable emissions from those keys. The initial, emission, and transition parameters of HMMs—shaped by previous work on tonal relations—are then optimized. Second, the bisectional nature of a large body of jazz standards determines two hidden states. Melodic pitch is used as an observable indicator. HMM parameters and HSMM parameters (including duration) are semi-uniformly initiated, and optimized. A discussion of results and implications for digital cataloging/retrieval as well as for composition software is included. (Received September 15, 2020)