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Evaluating the creativity of computational musical improvisation systems

This proposal demonstrates the SPECS creativity evaluation methodology: Standardised Procedure for Evaluating Creative Systems (Jordanous, 2011). SPECS has been used to systematically evaluate how creative four computational music improvisation systems are, using a three-step process:

1. Stating what creativity means in the context of musical improvisation
2. Deriving standards from Step 1 to test the computational systems' creativity
3. Performing tests to evaluate the systems along the standards identified in Step 2

Four jazz improvisation systems were evaluated: *Voyager* (Lewis, 2000), *GenJam* (Biles, 2007), *Impro-Visor* (Gillick, Tang & Keller, 2010) and an evolutionary jazz improvisation system (Jordanous, 2010).

For Steps 1 and 2, 14 key aspects of creativity were identified using computational linguistics techniques. In a questionnaire completed by 34 people of varying musical expertise, some of these aspects were found more important in the specific context of creativity in musical improvisation. Work submitted to CIM11 with Bill Keller reports these results.

For Step 3, the improvisation systems were rated on each of the 14 aspects, These ratings were then weighted according to their perceived importance in musical improvisation creativity, as found in the questionnaire results.

Overall *GenJam* was found to be most creative, though other systems were perceived as having higher associated value (*Impro-Visor*) or to be more spontaneous (*Voyager*).

As well as being a methodological contribution, the SPECS approach to evaluation has generated both comparative feedback on how creative various computational improvisors are and, perhaps more importantly, detailed formative feedback on how to improve each systems' creativity.

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