



Introduction to Artificial Intelligence

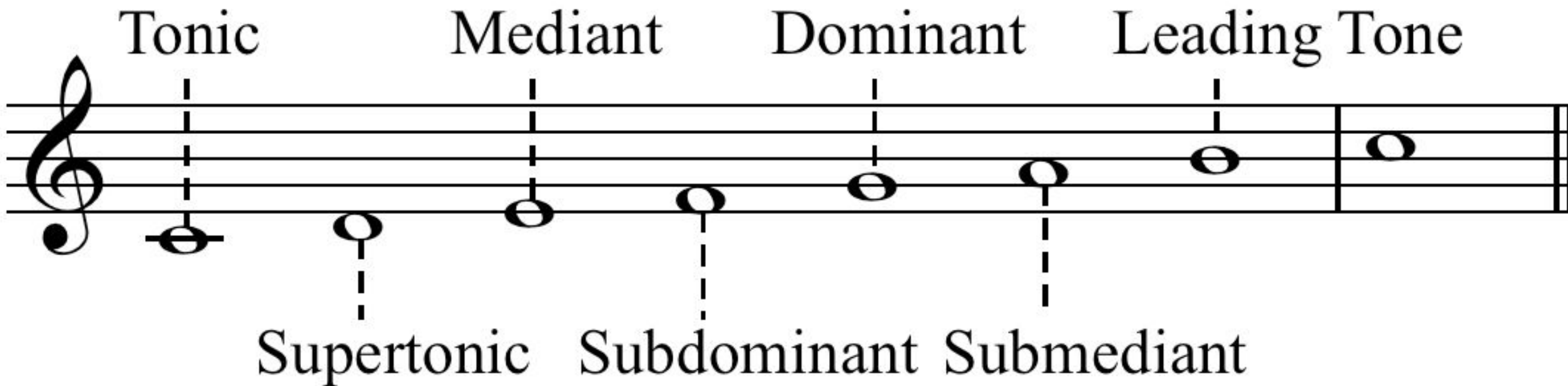
Week 8



Music Generation

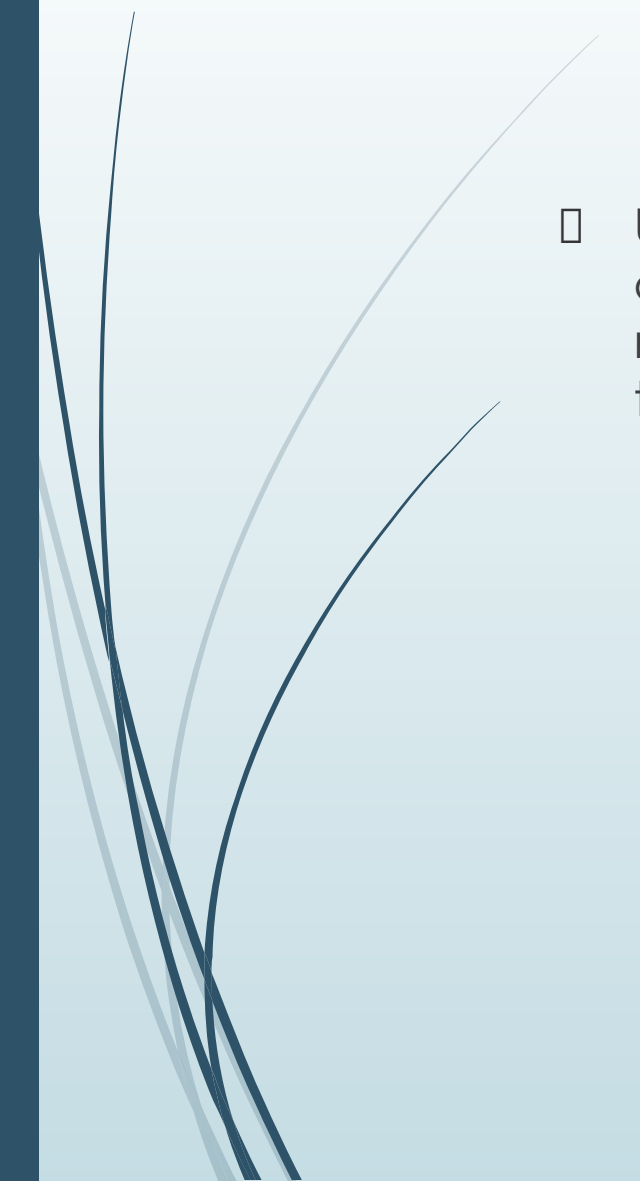
Scale Degree

▣ **Scale degree** refers to the position of a particular note on a scale relative to the tonic, the first and main note of the scale from which each octave is assumed to begin. Degrees are useful for indicating the size of intervals and chords, and whether they are major or minor





Exercise

- Use evolutionary algorithm to generate sequence of tonic, subdominant and dominant triads for C major in MIDI format. Suppose that possible MIDI note levels are in the range [60;90]. All generated chords should begin in the same octave.
- 



Recommendations



- You can use any programming language. Some languages allow to use special musical libraries. For Java JFugue or JMusic can be used for MIDI generation, Python is also popular in this field.

Answer

- Output may look like this

Standard tuning

$\text{♩} = 120$

E-Gt

mf

The image shows a musical score for E-Guitar in standard tuning, 3/4 time, with a tempo of 120 beats per minute. The notation is in treble clef and shows a tonic chord (E2, G2, B2) played in the first measure. The dynamic is marked *mf*. Below the staff is a guitar tablature with three lines labeled T, A, and B. The fret numbers are 0, 5, and 7 for the T, A, and B strings respectively. A yellow square highlights the 7th fret on the B string.

String	Fret
T	0
A	5
B	7

- And sound like this



- MIDI values for tonic chord: 60, 64, 67 or 72, 76, 79
- MIDI values for subdominant chord: 65, 69, 72 or 77, 81, 84
- MIDI values for dominant chord: 67, 71, 74 or 79, 83, 86