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Undergraduate Research Program	
Project Name	Reclassification of musical melodies using filogenetic algorithms
Campus & Location in Mexico	Monterrey
Faculty	Engineering
Research Area	Computational Learning Models
Research Responsible	Dr. Edgar Acuña González
Description of the Project	Music is an important part of human history, it has been within our culture since societies begun. Nowadays, music has been established as an important multi millionaire industry and with the fast development of algorithms a point has been reached where it is known what musical structures to use to appeal the consumers and at the same time sound fresh. However, copyright infringement has been appearing more often due to the overuse of these musical formulas and artists are doubtful if their creations are really innovative or coincidentally very similar to other artists' works. There are music algorithms that try to solve this similarity problem such as Shazam's which analyzes frequencies or SoundHound's which utilizes machine- learning to match human humming to recorded melodies, but neither of them uses musical concepts known by musicologists to determine similarity, as done in courthouses. For this reason, the objective of this project is to define an algorithm that stores musical similarity concepts into single strings format to perfom an alignment similar to DNA's not only to determine quantitatively how similar are 2 melodies but also to be able to build a filogenetic tree that can track down music history from melody's point of view.
Training Provided	Elaboration of theoretical framework;Prototype development;Teamwork
Modality	Hybrid
Offered During	Summer (5 weeks);Winter (5 weeks);Semester

Student		
Read relevar         hypothesis g         Tasks/Responsibilities         experiments         project's obj	nt scientific/musical material, contribute to generation, annotate detailed failed/successful s, discuss of further steps to follow to accomplish jectives.	

Required Language Proficiency	English (Advanced)
Required Skills and Abilities	Python, music theory, genetic algorithms (any level)
Other Documents Required to APPLY for an Internship	<ol> <li>Being at least in your 2nd year of bachelor</li> <li>Accumulative grade point average (GPA) 2.5</li> <li>Official Transcript</li> <li>2 letters of recommendation of faculty members</li> <li>Resume</li> <li>Letter of intention explaining the reason why you would like to participate in the research program</li> </ol>