**SoC Summer 2022 Final Documentation**

***\* This will be considered as your final documentation and will be made available for online usage.***

**Project Name**

**Mentor Name**

**Keywords** (Include 7 or more keywords that will help others find your documentation easily)

*Keyword1, keyword2, keyword3, keyword4, keyword5, keyword6, keyword7*

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**Brief Description**

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| Musify: Music generation with A.I, the purpose of this project is to compose music using Python and its various libraries. We learned about the basics of python, and its functions, further we also went through the libraries of python such as Pandas, NumPy, and Tensorflow. It is so great that now we can create an original piece of music using just some code. We had a vast dataset to choose from the Midi files on Kaggle. The experience was really good and I got to learn a lot of new things. |

**Progress**

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| Firstly we had an all team meet with the mentors and mentees where we had a brief discussion about the project, what it is all about and how to further proceed. We were provided with the learning material and articles to refer to.   * Week 1 Learning basics of Python * Week 2 Going through various libraries of Python used in the project such as NumPy, Pandas, etc. * Week 3 Solving some problems on the new knowledge and learning more about them * Week 4 Endsems * Week 5 Started going through little bit of Tensorflow * Week 6 Implementation of the project started * Week 7 model training and building and report making * Week 8 Submission documentation, presentation and video making   I faced various challenges as I am in my First year Btech going to be sophie soon, so all of this was very new to me. I tried to go through the lectures as efficiently as possible but was having difficulty in understanding them. But gradually I was getting a bit used to the language and was getting the gist of it.  My mentor really helped me a lot and he was considerate of the fact that I was having a hard time learning these very novel concepts. There was also a time when I was lagging behind a lot that I was scared I wont be able to complete the project, so I talked to my mentor about it and he asked me not to worry and guided me. Implementation of the project wasn’t an easy task as well, but our mentor had given us a very good idea of what it should be like and it helped a lot. I had a lot of fun (and learning) while working on this project. Music is a passion of mine and it was quite intriguing combining deep learning with that. |

**Results**

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| *A detailed description of the results you have achieved*  *Include:*  *Images of your working prototype*  *GitHub Repository (if any)*  *All files (documents or sheets) used (eg.meeting notes)*  *Simulations/ Project Video*  *Final Presentation Link*  *\*****Add these as hyperlinks with a proper name for the field***  I had used the dataset containing music notes from bach, borodin and brahms midi files on Kaggle. These are the steps that I followed while implementing the code:  STEP 1: Download the files from the repository by clicking on Code button  STEP 2: Install Libraries using pip command (In Anaconda Prompt)  STEP 3: Open code.ipynb file using Visual Studio Code  STEP 4: Run all the cells one by one and check the output  STEP 5: Wait for the model training as it takes a long time depending on the dataset used and various other factors.  STEP 6: Run the last cell and a file named as AI\_composed\_musicfinal.mid will be saved  STEP 7: Play the file AI\_composed\_musicfinal.mid  Final result I got was a beautiful composition of mixture of all the piano notes used in the dataset.            These are some of the code snippets of the project  Github repository link is:  The entire project file including the code, final output and various other file is given below : <https://drive.google.com/drive/folders/1TwXQHX1Wzurf8MCChAt3JKGd0bXhZKUS?usp=sharing>  Final video link is :  Final Presentation describing the project : |

**Learning Value**

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| I had a lot of fun doing this project. I had picked this project in the first place due to my love for music. It seemed quite interesting that we could create music using A.I. I got to learn a lot about Python, its basics including functions, various Python libraries, such as Pandas, NumPy, Tensorflow, etc. Moreover I also got a glimpse on how we can use Python to solve some real world problems as well. Overall this is a good project. |

**Software used**

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| Visual Studio code  Google collab  Jupyter notebook  Python  Anaconda Prompt  Github  Matplotlib |

**Suggestions for others**

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| I would suggest everyone to go for this project. It is a great experience and you will learn a lot!  If you want to learn about the wonders of A.I and machine learning this project would be a very good start. |

**References and Citations**

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| Article: <https://www.analyticsvidhya.com/blog/2020/01/how-to-perform-automatic-music-generation/>  Reference: [LSTMs for Music Generation | TDS | Towards Data Science](https://towardsdatascience.com/lstms-for-music-generation-8b65c9671d35)  Mohit Punasiya: <https://github.com/MohitPunasiya/Musify-Project> |

**Disclaimer**

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| Fair use of: <https://github.com/MohitPunasiya/Musify-Project> |

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