

# **Schenk Composer: A framework for algorithmic music generation**

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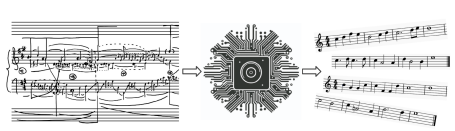
## **Unmet Need**

As artificial intelligence (AI) and machine learning become more commonplace in modern society, there is increasing demand for these tools to be incorporated in creative applications that normally rely completely on human intuition. There is a need for algorithmically-defined AI and machine learning tools that are capable of assisting creative development such as music generation. However, these tools also should be interpretable and interactive to provide users with the knowledge of how a solution was reached and to enable users to modify the variables of that solution, unlike solutions from deep learning models.

## **Technology**

Duke inventors have developed an algorithm for generating musical scores in different musical styles using a combination of form analysis and Schenkerian analysis, which allows the breakdown of music into its fundamental technical components. This is intended to be provided direct to consumers through a user-interfacing software package that allows users to modify the parameters of the algorithm and visualize the results of the system. Specifically, the algorithm employs probabilistic context free grammar and Markov chains to analyze musical scores to deterministically produce new music of a chosen style. This has been demonstrated with a web accessible software platform that allows users to intuitively interface with the algorithm to achieve different musical results. In user testing, the platform and algorithm were able to produce AI-generated music that was perceived as nearly indiscernible from human composed works.

## **Advantages**



### Duke File (IDF) Number

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IDF #:T-008230

### Meet the Inventors

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[Hahn, Stephen](#)  
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[Rudin, Cynthia](#)  
[Zhu, Yifan "Yifan"](#)

### Contact For More Info

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### Department

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Electrical & Computer Engineering (ECE)

### Publication(s)

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### External Link(s)

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- [From inventors with the Interpretable Machine Learning Lab at Duke University under Dr. Cynthia Rudin](#)

- Advanced-stage prototype software already developed
- Algorithm results are fully interpretable for determining contributions of musical scores
- Optimized production quality that tests well based off human perception

