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# DEEP LEARNING PROJECT: GAN ARTWORK

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A PREPRINT

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## ABSTRACT

<https://www.overleaf.com/latex/templates/style-and-template-for-preprints-arxiv-bio-arxiv/fxsnsrzpvnwv>

**Keywords** First keyword · Second keyword · More

## 1 Introduction

- What's the goal? State your problem clear and succinct.

This project will create artworks using the DNA sequence of a person as a seed. A generative adversarial network (GAN) will be trained on images of landscape paintings and be tuned to produce a customized artwork for each different DNA sequence. If successful, the algorithm will be deployed at the Iowa Neuroscience Institute to create souvenirs for research subjects.

- What are the independent variables (inputs) and dependent variables (outputs)?

Input = DNA sequence of a research subject | Output = artwork

## 2 Related Works (Optional)

- If you find it necessary to have a separate section to deep dive into other relevant works in literature, create a section titled "Related Work".
- Try to categorize your/other people's previous works and build a \*story\*. Don't just list some facts. The worst thing to do is something like: "Smith et al. did this. Johnson et al. did that. Xu et al. did this. ..." —a simple listing of papers. Instead, tell a story (like a fun history book).
- For the scope of this project, it is not always necessary.
- If you plan to transform this course project into a journal/conference submission, it should be helpful to have it written up.

See Section 2.

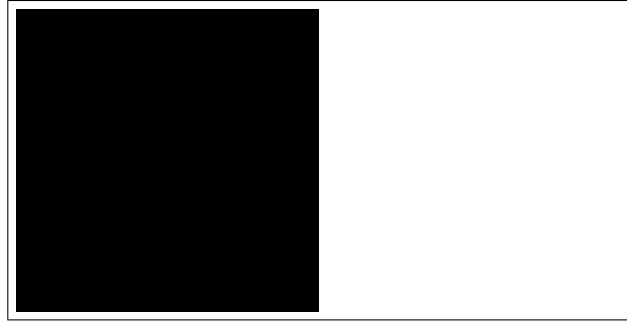


Figure 1: Sample figure caption.

### 3 Problem Definition

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The documentation for natbib may be found at

<http://mirrors.ctan.org/macros/latex/contrib/natbib/natnotes.pdf>

Of note is the command `\citet`, which produces citations appropriate for use in inline text. For example,

`\citet{hasselmo}` investigated\dots

produces

Hasselmo, et al. (1995) investigated...

<https://www.ctan.org/pkg/booktabs>

#### 3.1 Figures

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#### 3.2 Tables

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<sup>1</sup>Sample of the first footnote.

Table 1: Sample table title

Part		
Name	Description	Size ( $\mu\text{m}$ )
Dendrite	Input terminal	$\sim 100$
Axon	Output terminal	$\sim 10$
Soma	Cell body	up to $10^6$

### 3.3 Lists

- Lorem ipsum dolor sit amet
- consectetur adipiscing elit.
- Aliquam dignissim blandit est, in dictum tortor gravida eget. In ac rutrum magna.

## 4 Data

### References

- [1] George Kour and Raid Saabne. Real-time segmentation of on-line handwritten arabic script. In *Frontiers in Handwriting Recognition (ICFHR), 2014 14th International Conference on*, pages 417–422. IEEE, 2014.
- [2] George Kour and Raid Saabne. Fast classification of handwritten on-line arabic characters. In *Soft Computing and Pattern Recognition (SoCPaR), 2014 6th International Conference of*, pages 312–318. IEEE, 2014.
- [3] Guy Hadash, Einat Kermany, Boaz Carmeli, Ofer Lavi, George Kour, and Alon Jacovi. Estimate and replace: A novel approach to integrating deep neural networks with existing applications. *arXiv preprint arXiv:1804.09028*, 2018.