Exploring Superconductors Using Generative Adversarial Networks

Rajeev Atla

John P. Stevens High School

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Outline

Introduction

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- Superconductors have the potential to change the world

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- Investigation (Device Construction)
  - Trial-and-error process
  - Labor and resource-intensive
  - Every material's phase diagram must be completely mapped out

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Objectives

- Shorten the amount of time necessary to find a novel superconductor

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- Shorten the amount of time necessary to find a novel superconductor
- Allow researchers to inform their selection of a superconductor for experimental verification through a data-driven method

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Data

- Taken from UCI (University of California, Irvine) Machine Learning Repository

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Figure: **UCI Machine Learning Repository**

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Results

- TODO

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Discussion

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- Can be used in conjunction with regression model made on this data (Hamidieh 2018) to find high-temperature superconductors
- Further studies can test the accuracy of this model by experimentally verifying superconductivity in the materials predicted

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