

Melody Ex Machina



Gray Davidson | June 26th, 2018

Which melody was computer generated?



Which melody was computer generated?



Why?

```
graph LR; A[Why?] --> B[...is it hard to Generate Music?]; A --> C[...use Deep Learning?]; A --> D[...explore music with Neural Networks?];
```

...is it hard to
Generate
Music?

...use Deep
Learning?

...explore music
with Neural
Networks?

Data



Input



Training



Output



Music

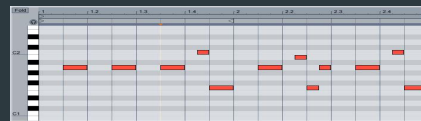
MIDI = MUSICAL INSTRUMENT DIGITAL INTERFACE

ENCODE AS NUMERICAL INPUT

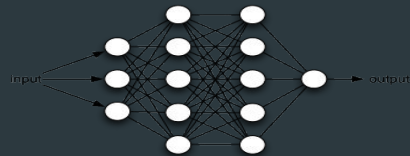
TRAIN NETWORK

PREDICT NEW NOTES

SEQUENCES OF PREDICTIONS ARE MELODIES

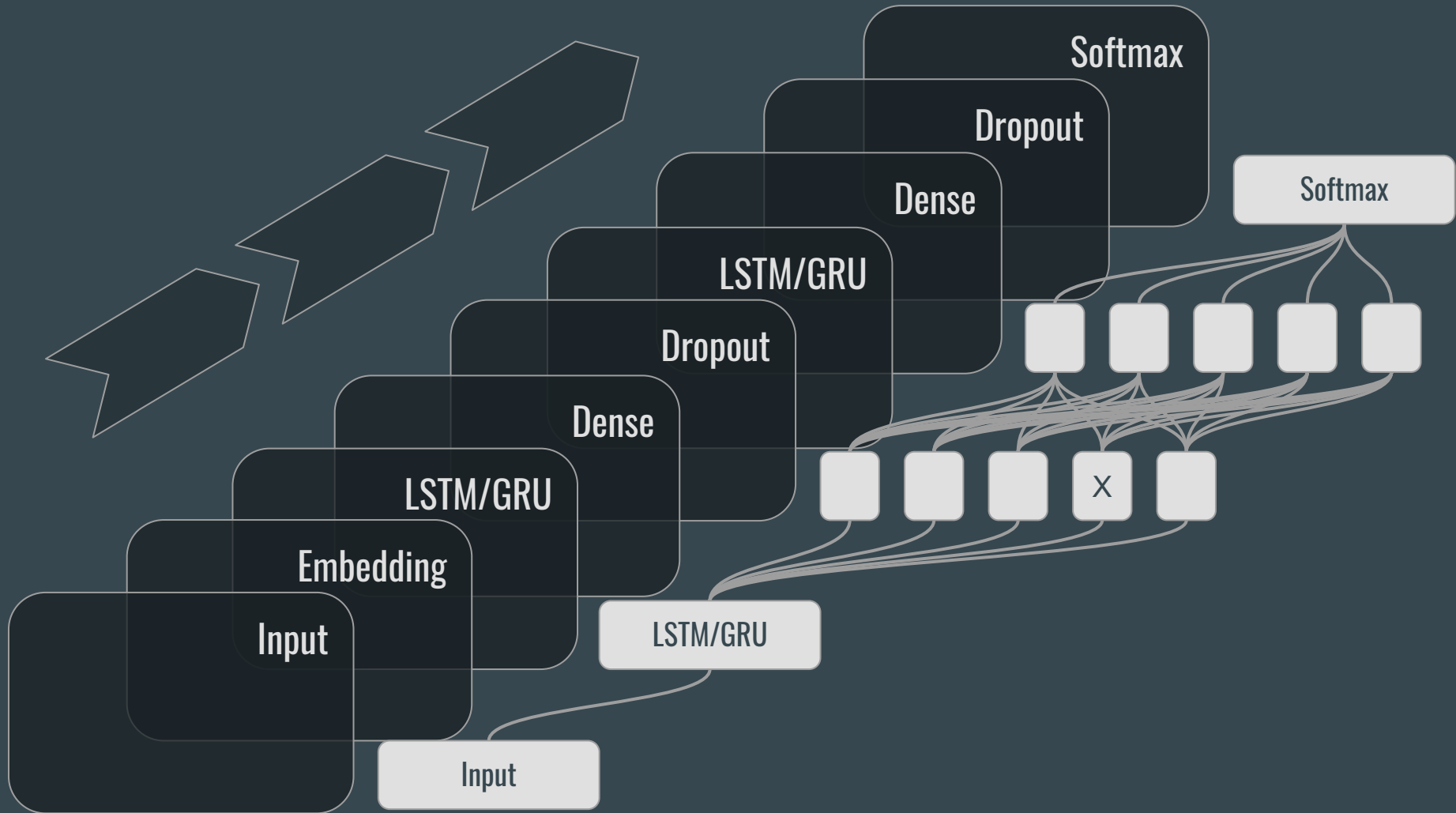


[19, 4, 4, ... 3, 45, 10, 19]



[0.01, 0.02, ... 0.00, 0.01
...0.07, 0.01, ... 0.03, 0.04
...**0.78**, 0.02, ... 0.04, 0.05]







Gray Davidson



/deepspace



/Gray-Davidson-00/
Melody_Ex_Machina

Thank you!

Tools Used



MUSIC21





Gray Davidson



/deepspace



/Gray-Davidson-00/
Melody_Ex_Machina

Thank you!

Tools Used



MUSIC21



Thank you!

Bibliography:

<https://arxiv.org/abs/1612.07837>

<https://arxiv.org/abs/1612.07837>

<https://towardsdatascience.com/understanding-gru-networks-2ef37df6c9be>

<https://arxiv.org/pdf/1609.05473.pdf>

<https://arxiv.org/pdf/1412.3555v1.pdf>

<https://arxiv.org/pdf/1511.06349.pdf>

<https://pdfs.semanticscholar.org/b2dd/d374c402c0bde0de97b3e212b608d7896616.pdf>

<https://www.quora.com/Can-music-be-generated-using-generative-adversarial-networks>

https://github.com/cipher813/Al_Jukebox/tree/master/model

<https://magenta.tensorflow.org/music-vae>