Autonomous University of San Luis Potosí
Engineering Faculty
Machine learning

SynthTalkOne

An AI system to synthesize and cloning human voices for use in chatbots, virtual assistants, and other applications.

- Name of participant: Fernando Antonio Ramírez Martínez
- Adviser: Juan Carlos Cuevas Tello

Types of generated sounds

- Speech (Text-to-Speech)
- Music
- Music notes (samples)
- Sound design
- ...

https://github.com/musikalkemist/generating-sound-with-neural-networks

Sound representations

- Raw-audio
- Spectrograms

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Generation from raw audio: Challenges

- Difficult to capture long-range dependencies

Pitch

Melody

Structure

Timbre

Rhythm

Harmony

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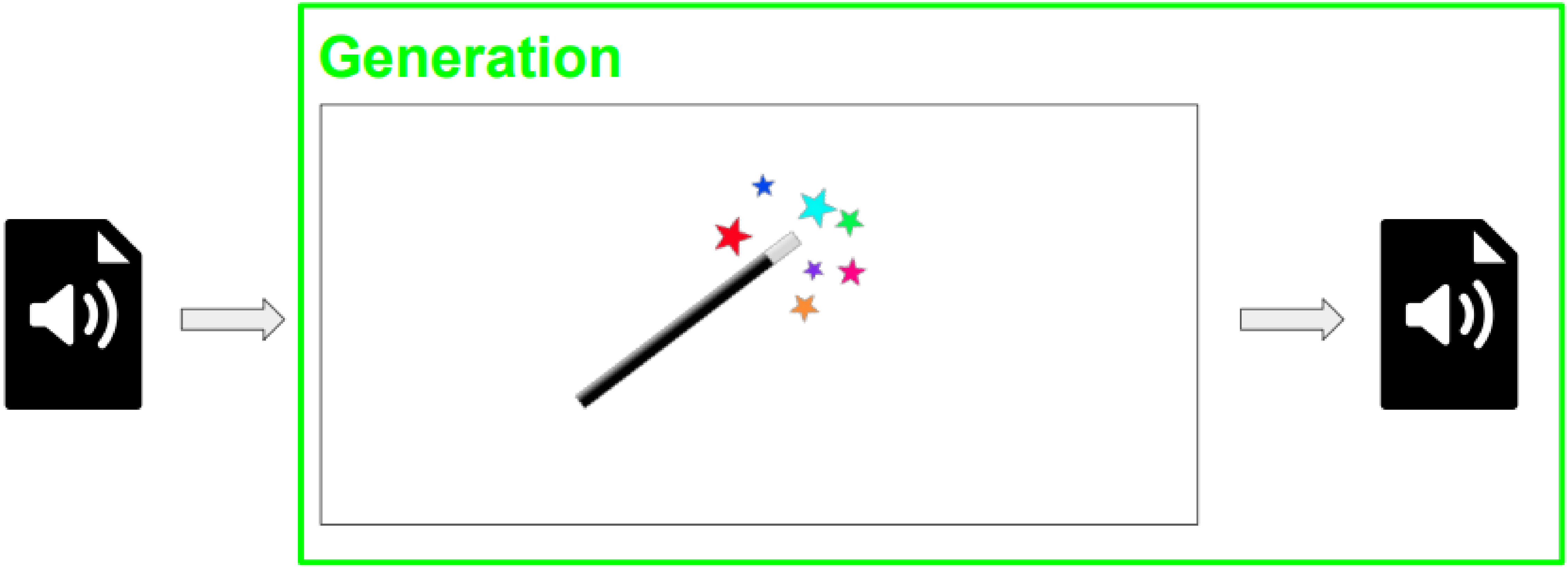
Sound generation task



Generation

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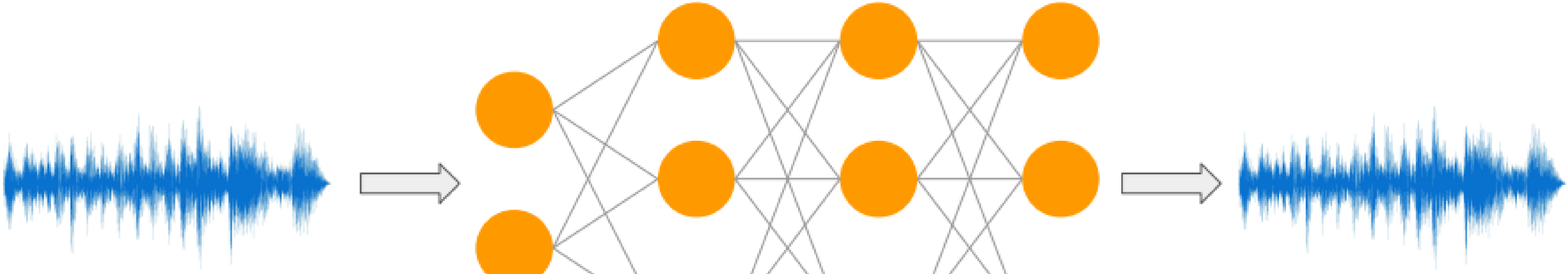
Generation from raw audio



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Use a more compact representation of sound

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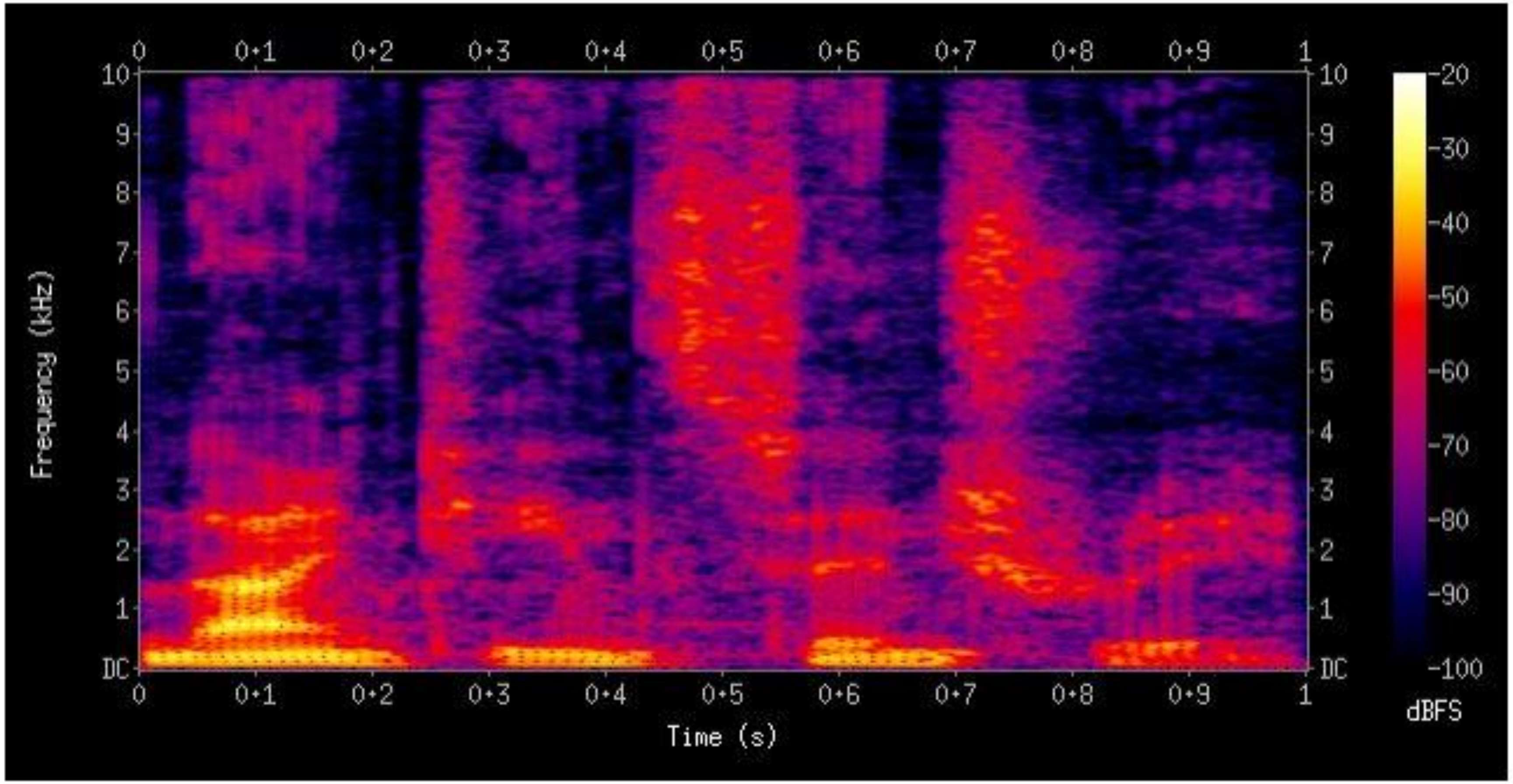

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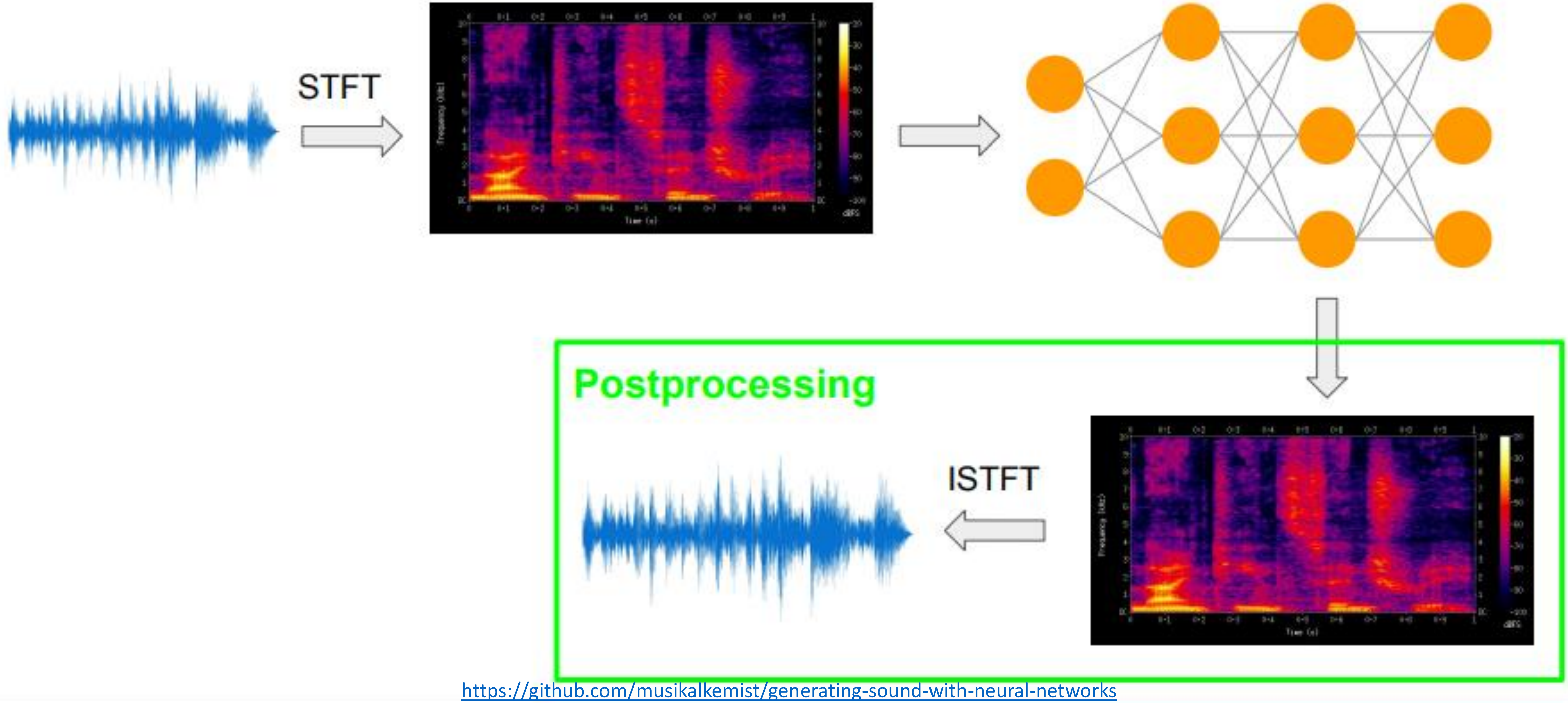
Generation from spectrograms



STFT

Postprocessing

ISTFT

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Autoencoders: The sneaky idea

Create an architecture with a bottleneck, which ensures a lower-dimensional representation of the original data.

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Autoencoder = Encoder + Decoder

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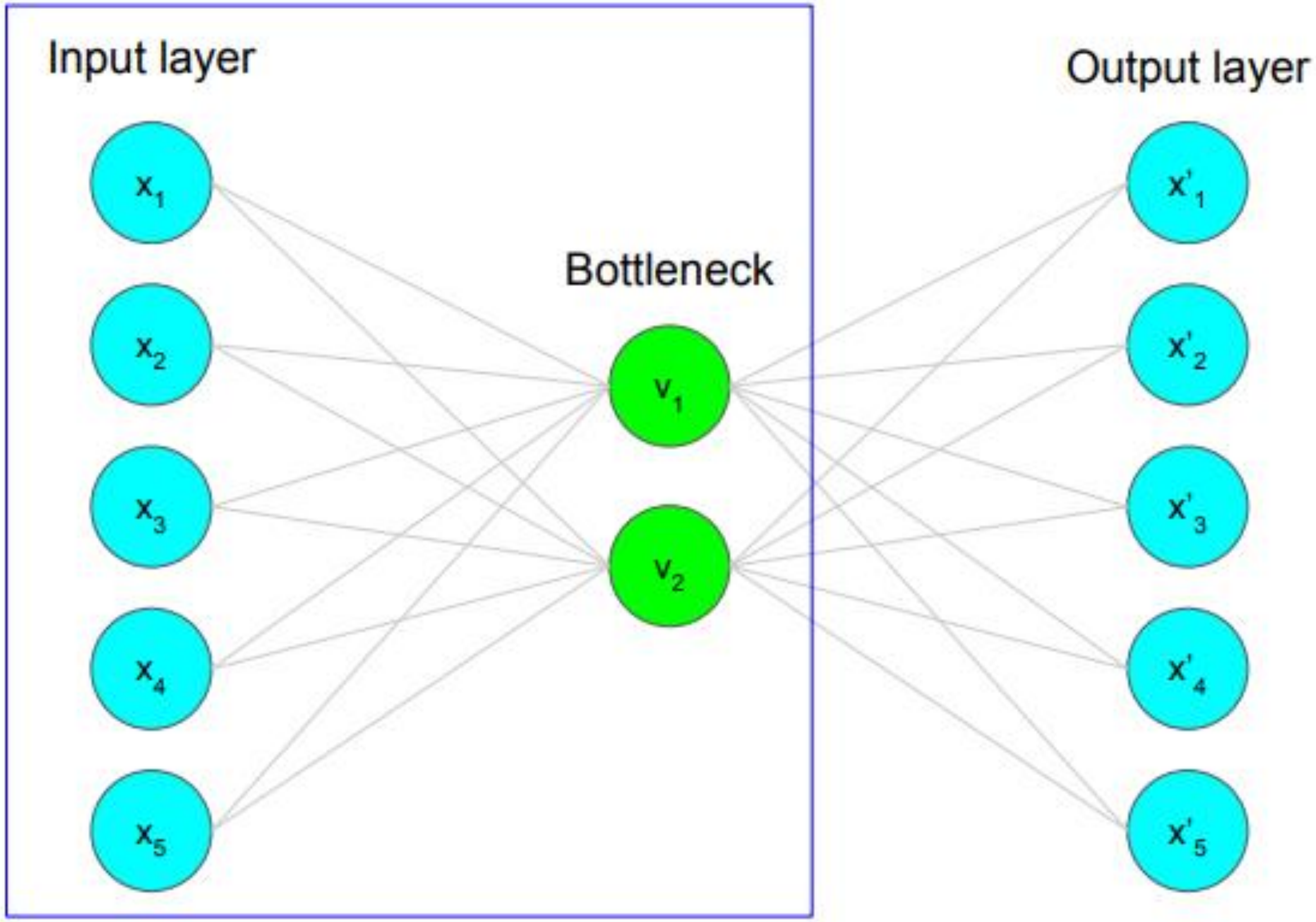

Encoder = compress data into lower-dimensional representation (*latent* space)

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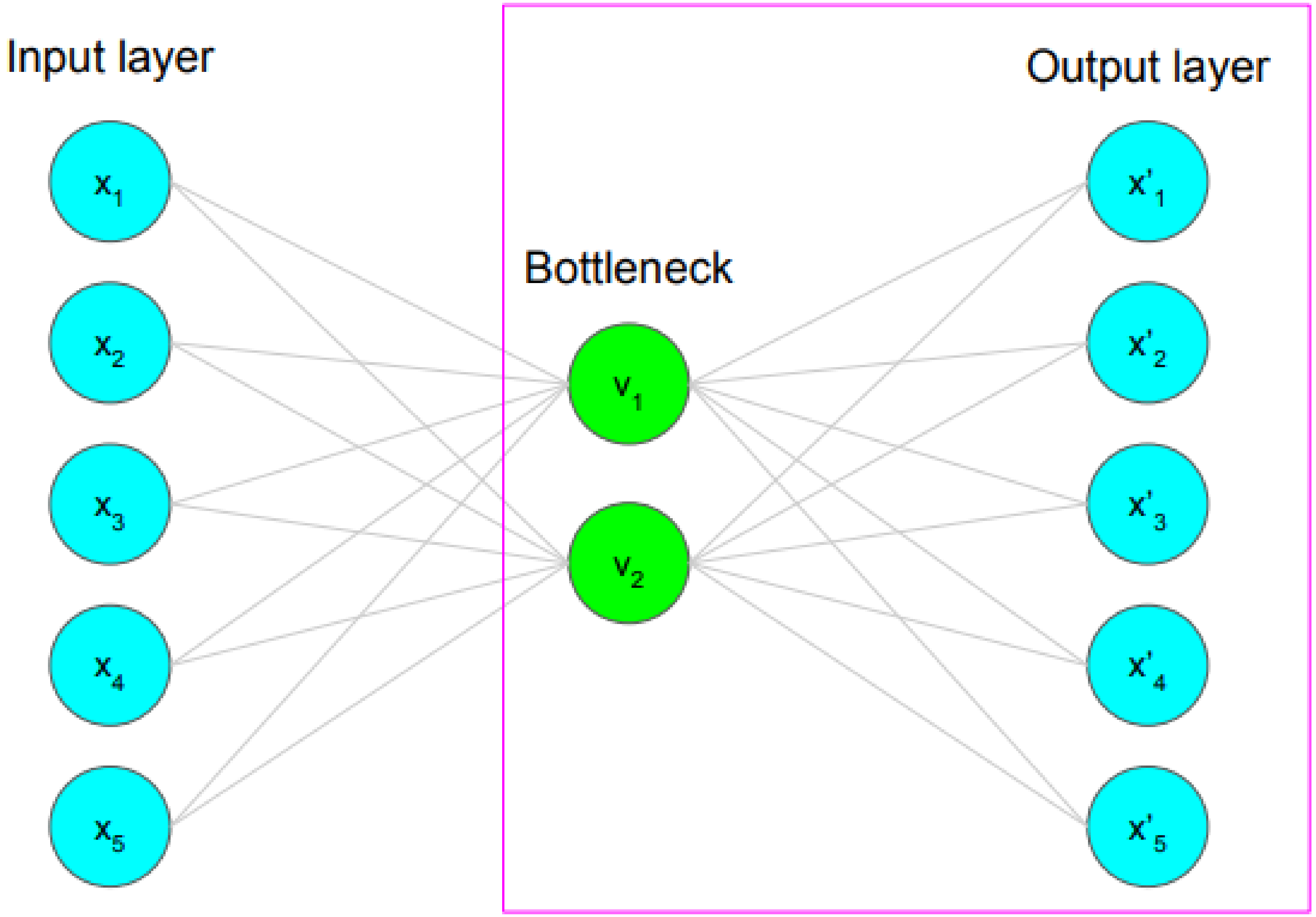

Decoder = Decompress representation back to original domain

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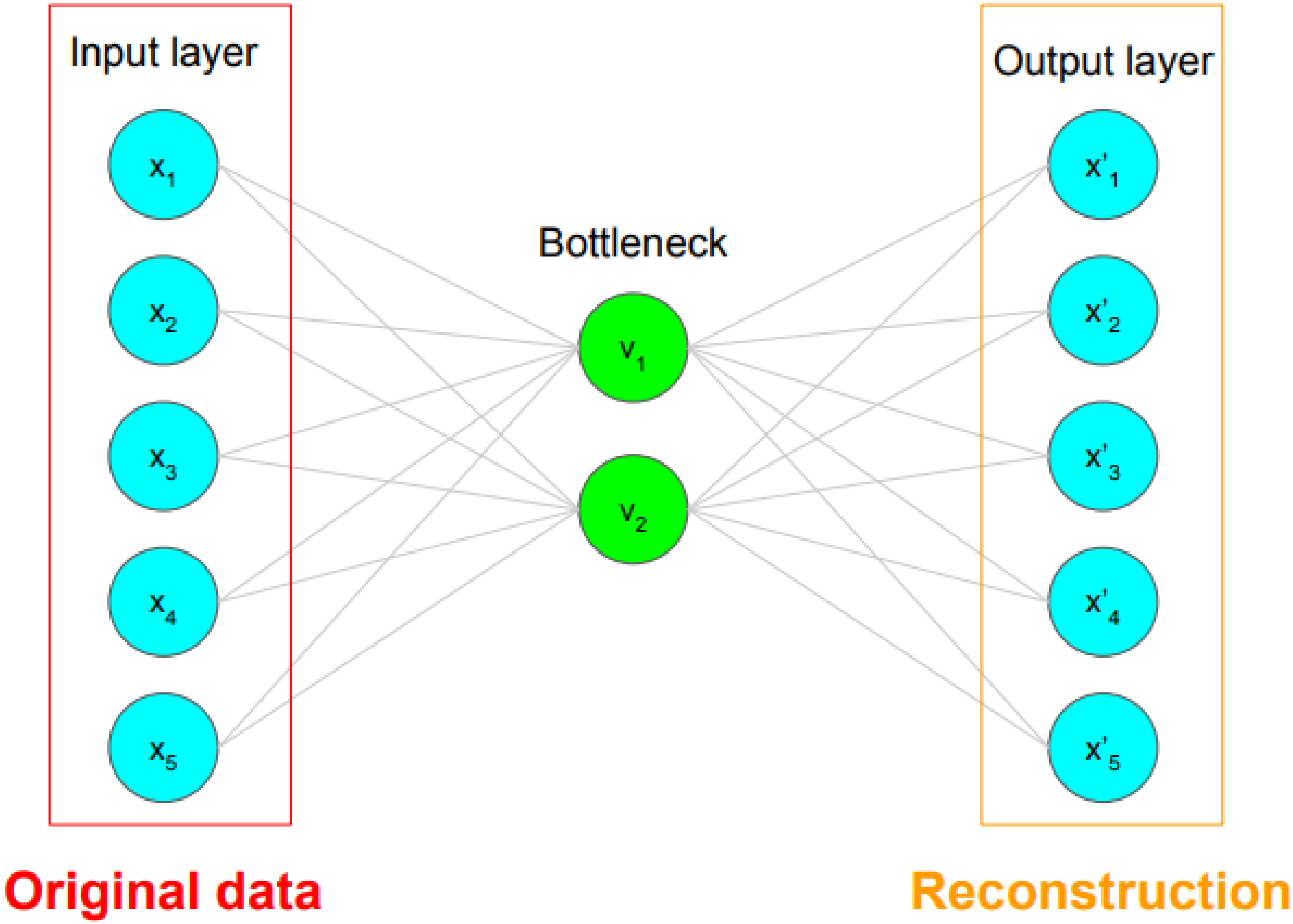

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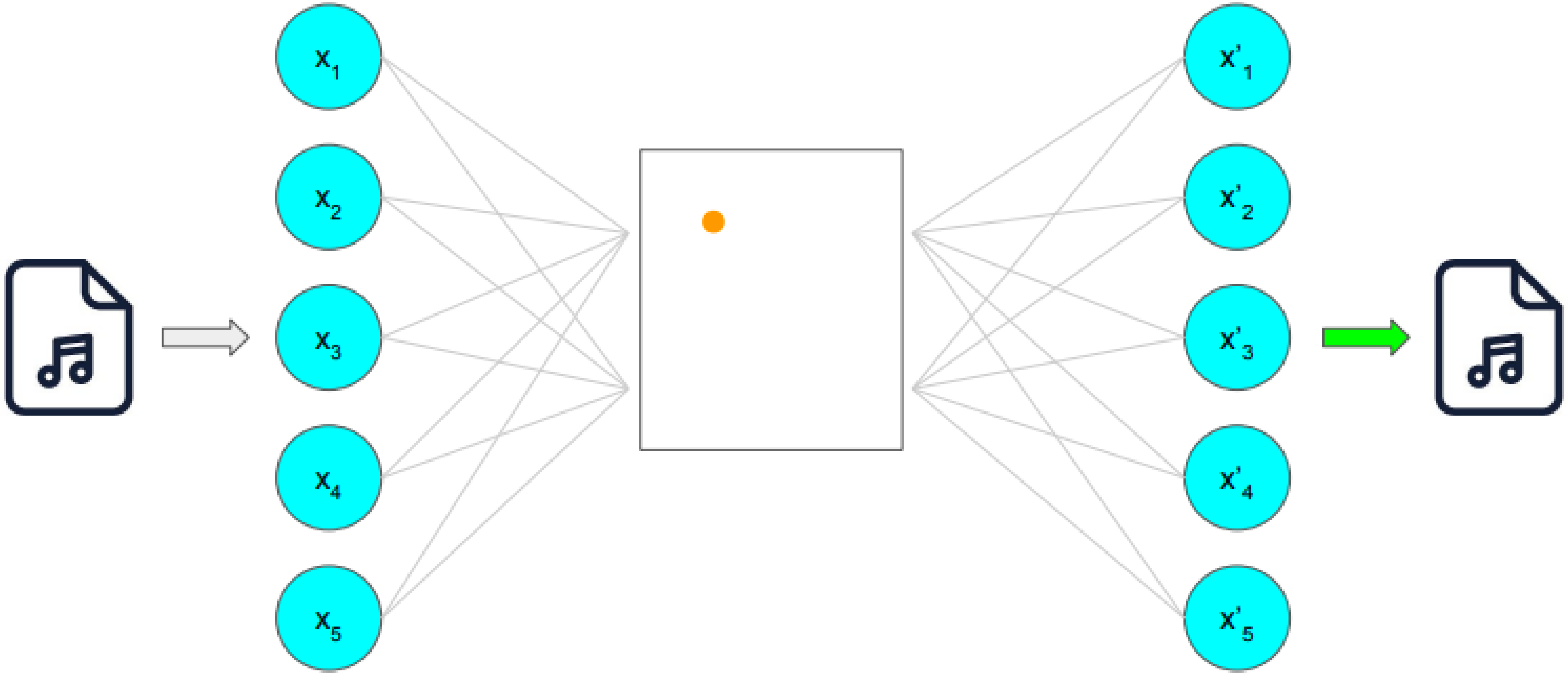
Generation with AEs



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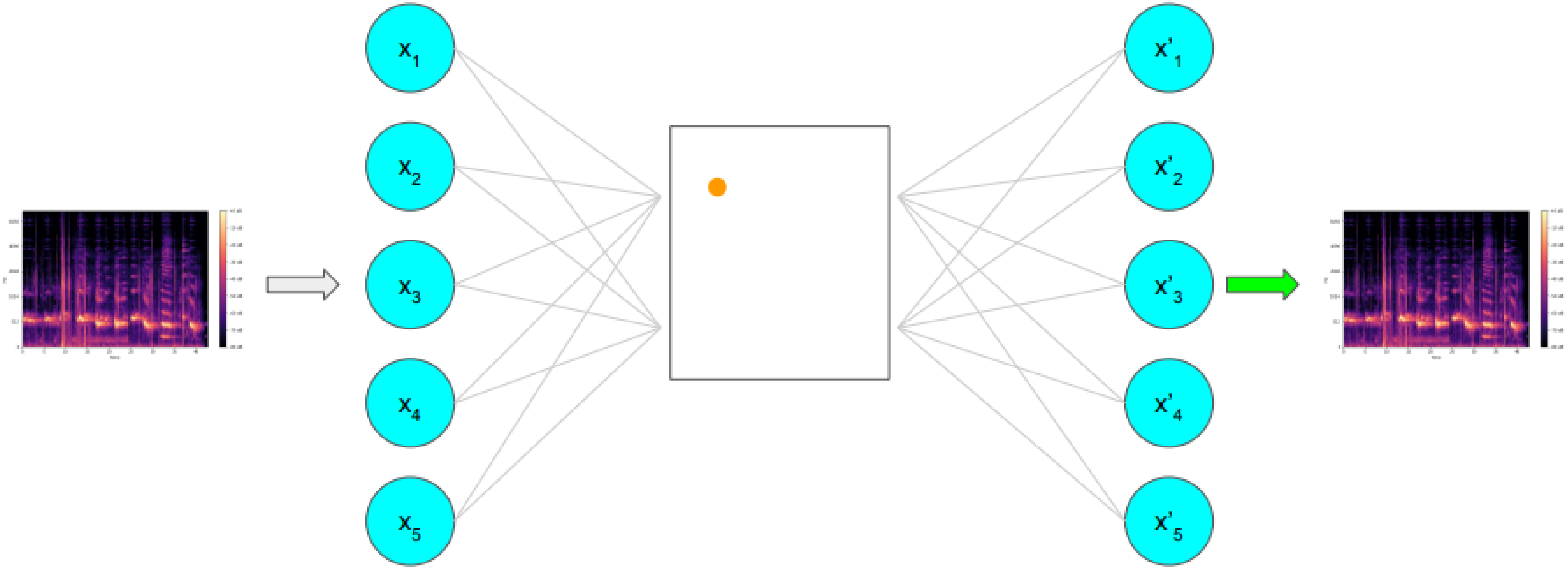
Generation with VAEs



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This content of this slides was obtained by the following repository:

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