AstroBeats
Drum Beat Maker
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Motivation

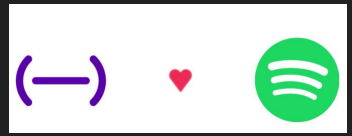
- Drum machines have defined a generation of music
- There have been many advances in music making AI
- Music makers don’t have a fast paced social platform

AstroBeats - where SoundCloud meets Twitter

- A drum machine that can create infinite drum sounds
  - User does not have to rely on expensive hardware, software or large sample libraries
- A platform for music makers of all skill levels to hang out and collaborate
- Fast paced creation
- Level playing field for creators
  - Both Amateurs and professionals will use the same tools
  - Instantly remix beats create by professionals
  - See how professionals frame an idea

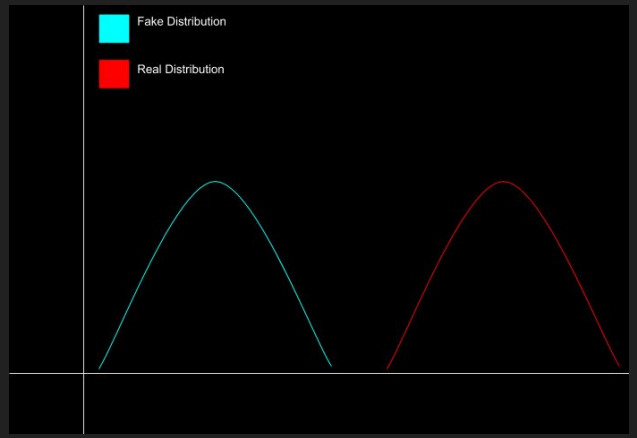
Business - Competitors

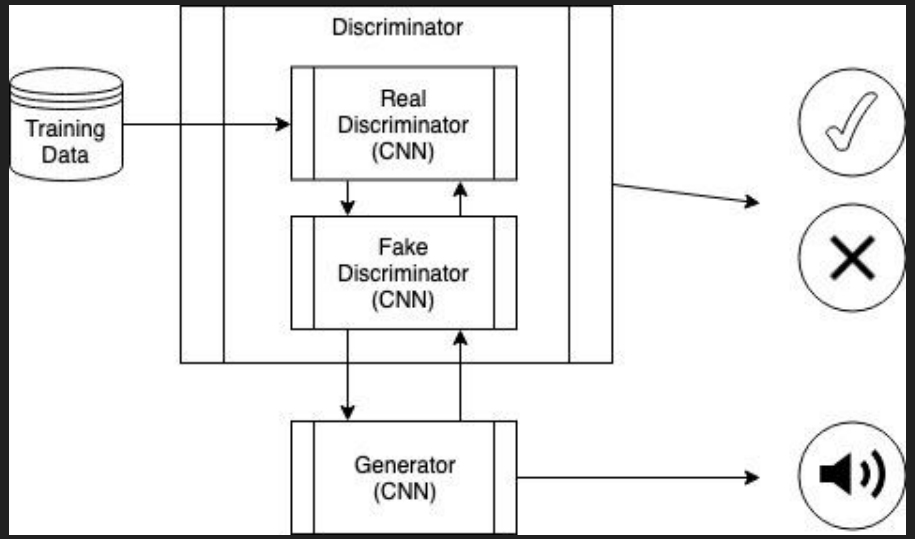
- Web
  - Soundcloud
  - Soundtrap
- Apps
  - Upfront cost ($2-$20)
  - In app purchases
  - Most are apps targeted for ipads



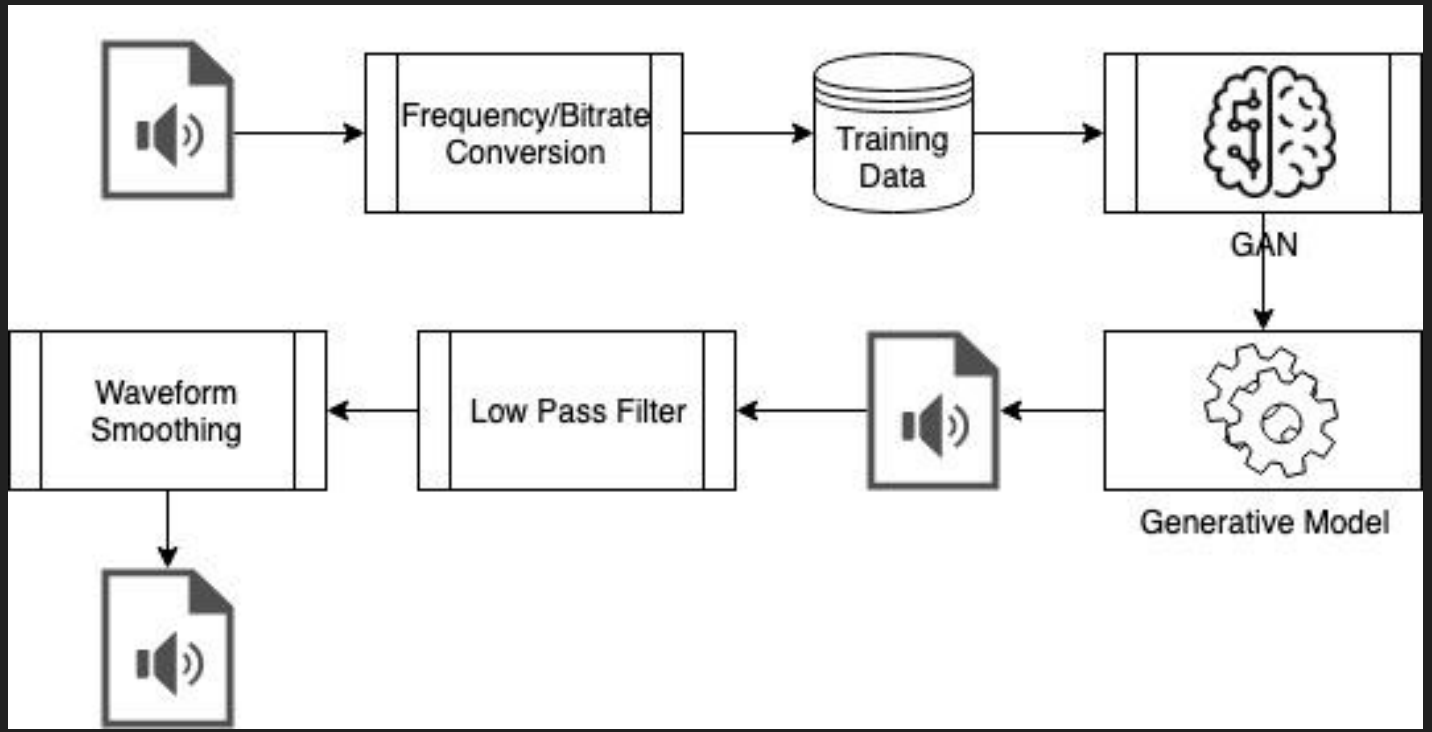
WaveGAN

- Objective: “Infinite” supply of audio samples
- Training data contains “true” unlabeled samples
- Composed of 3 CNN’s
- Generator has access to Discriminator network weights
- Generator vs Discriminator mini-max over loss function



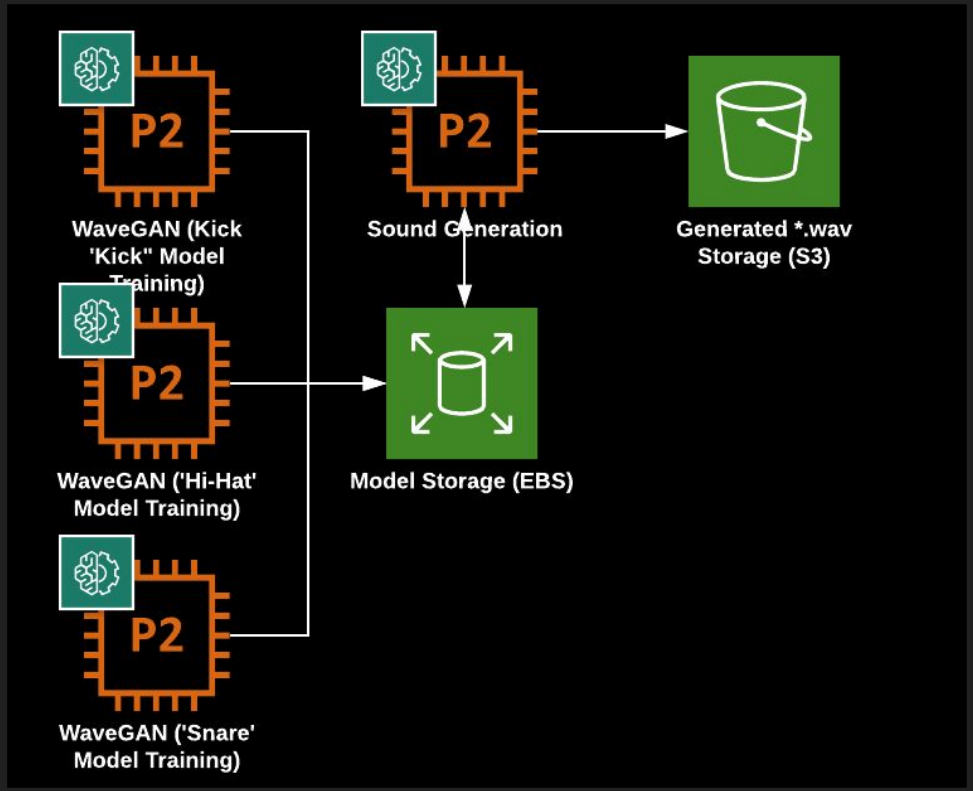


Data and Backend Application Flow



AWS Infrastructure

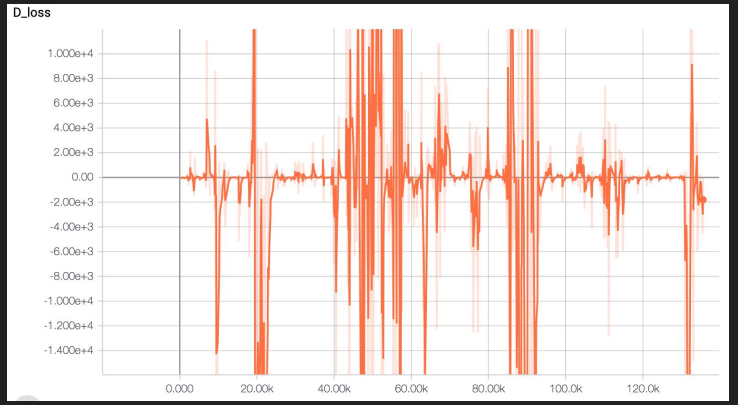
- AMI: AWS Deep Learning AMI version 21.0
- EC2 instance: p2.xlarge
- Single nVidia Tesla K80 GPU 12 GB RAM
- Training times: Approx 2-5 days under different scenarios
- Total AWS Bill:
  - $698 in compute
  - $64 in storage

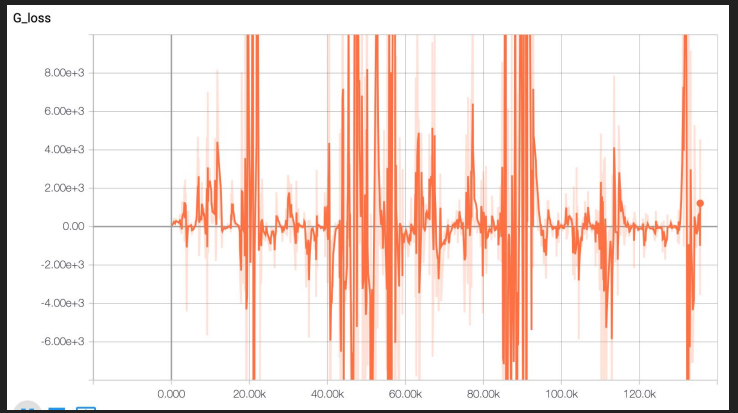


Model Training

- 770 Kick Drum Samples
- Training Time: ~5 Days
- 11.2k epochs
- GAN Discriminator/Generator Loss Function Analysis

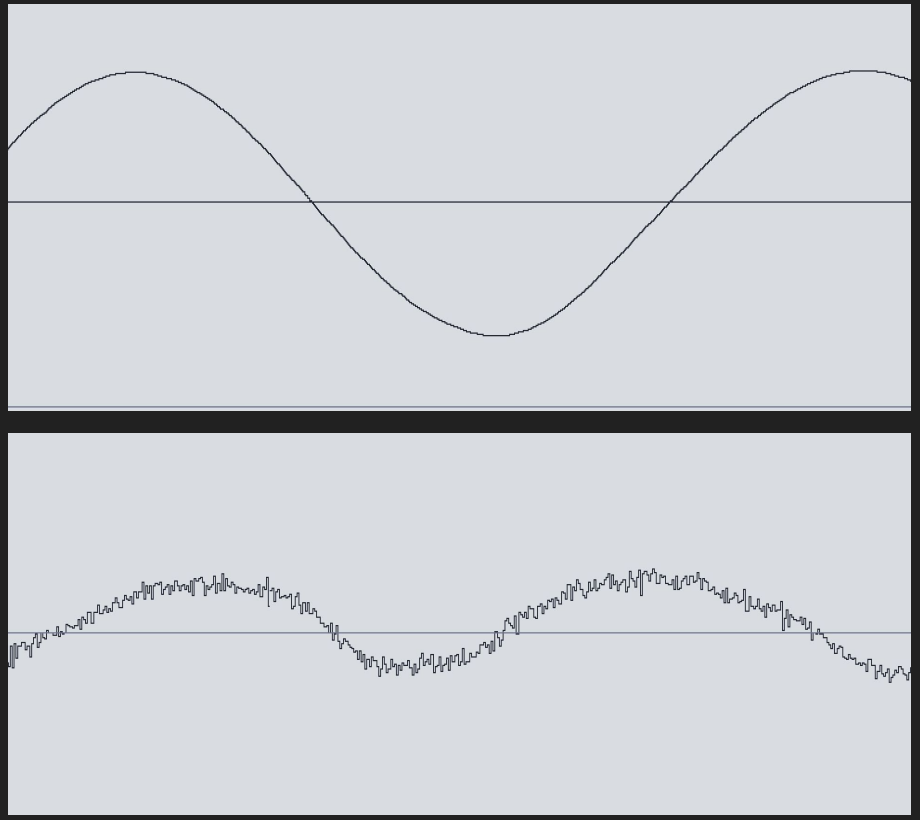
- Challenges:
  - Training Times
  - Data Processing





Data Processing

- Data Formatting
  - 44.1MHz, 16-bit WAV
  - Manual process
- Data Normalization
  - Variable amplitudes (audio volume)
- Waveform Smoothing
  - Low Pass Filter
  - Moving Average Filter

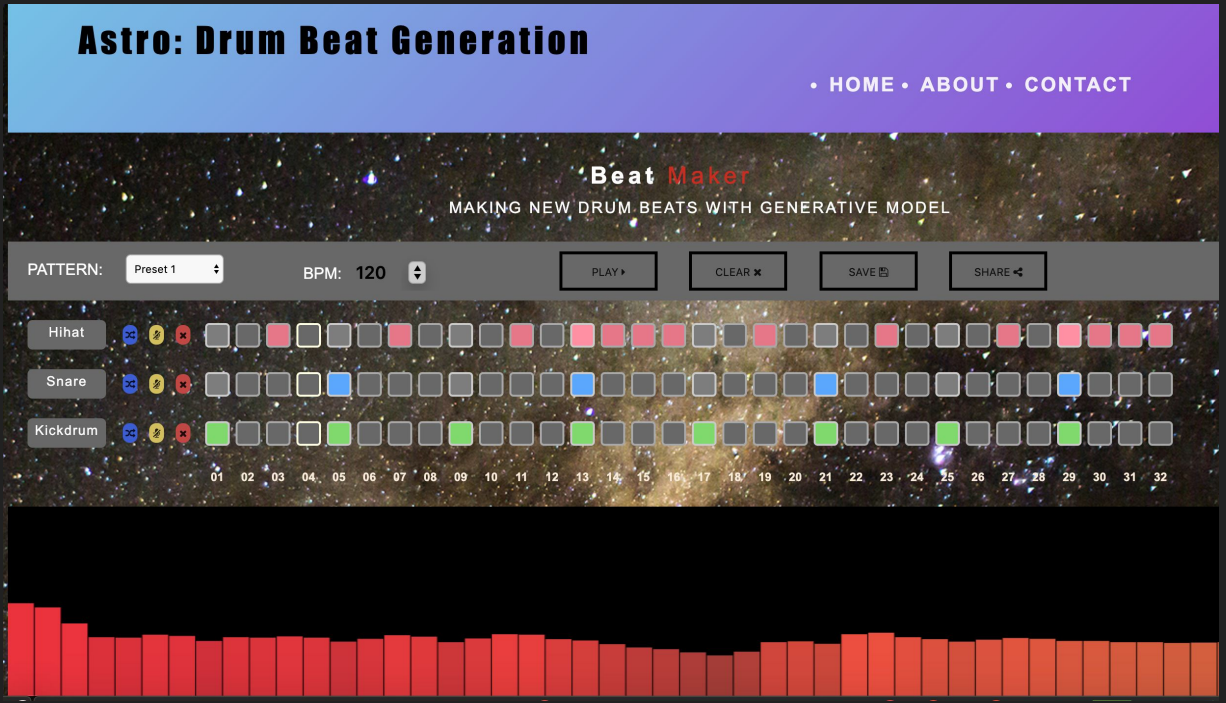


Product & User Testing

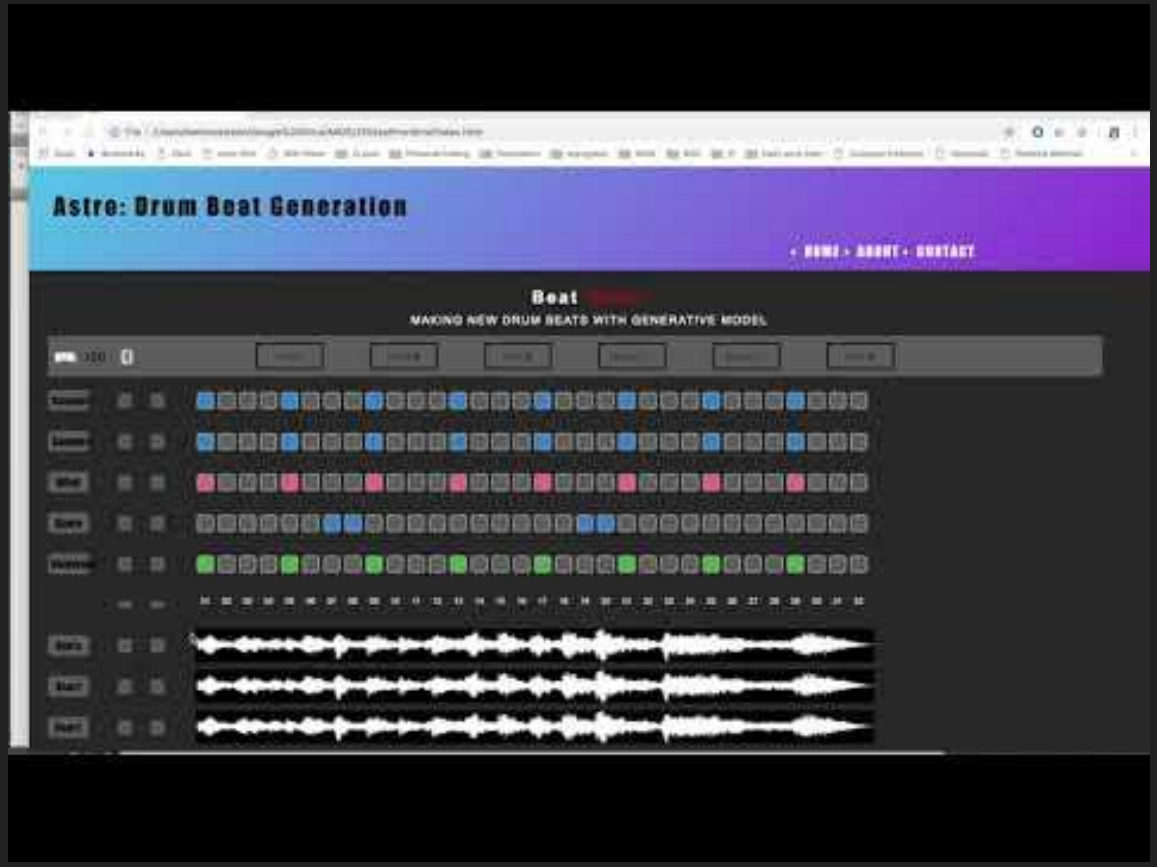
- Product - Web interface
  - Loads in sounds generated by backend
  - Provides music makers the ability to create beats
- User Testing - feedback on usability
  - Implemented aesthetic UI/UX feedbacks
  - Implemented ease-of-use functionality
  - Invested more resources to improve sound quality

Live Demo

http://www.astrobeats.com.s3-website-us-east-1.amazonaws.com/



Future Steps



Q & A

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Business/Marketing