

Audio Recognition

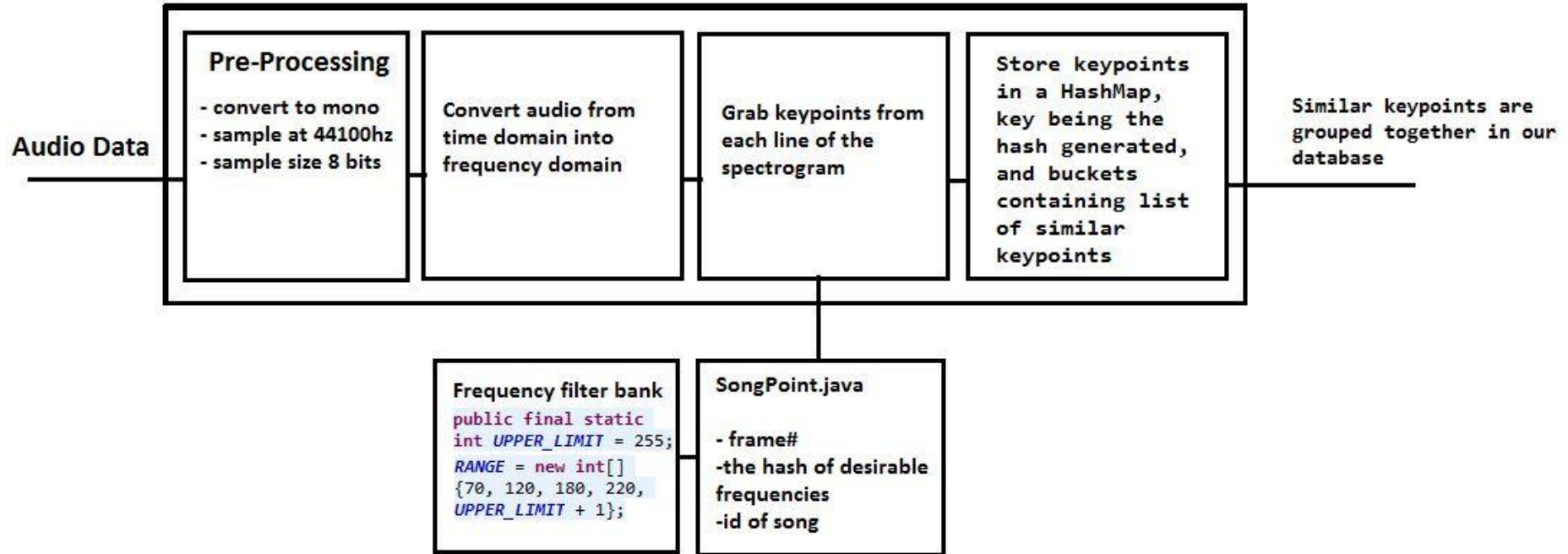
4660 Final Project

Tyler Churchill and Wyatt Trombley

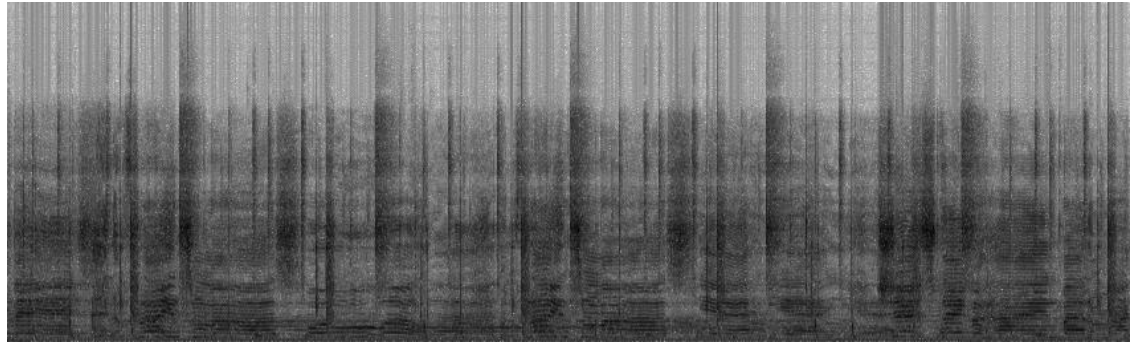
Goals

- Extract unique features from audio
- Accurately match recorded audio to known songs

Data Extraction



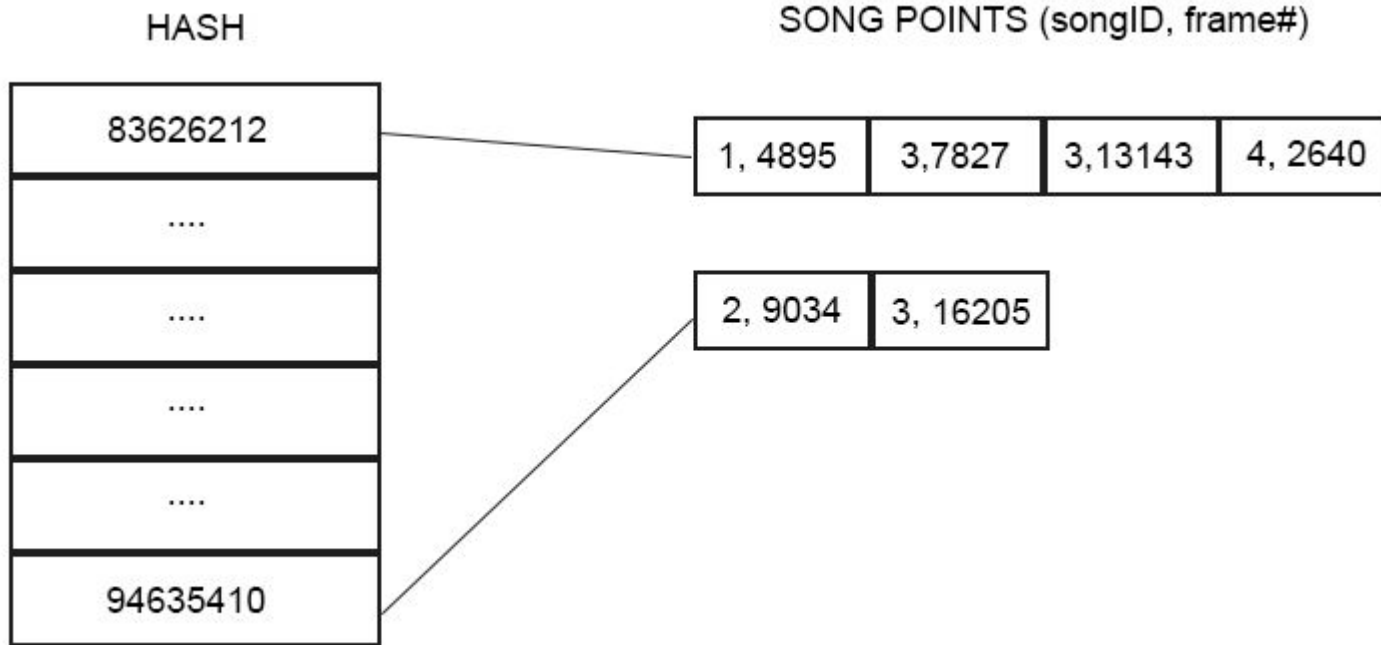
Converting the Recorded Audio to Frequency Domain



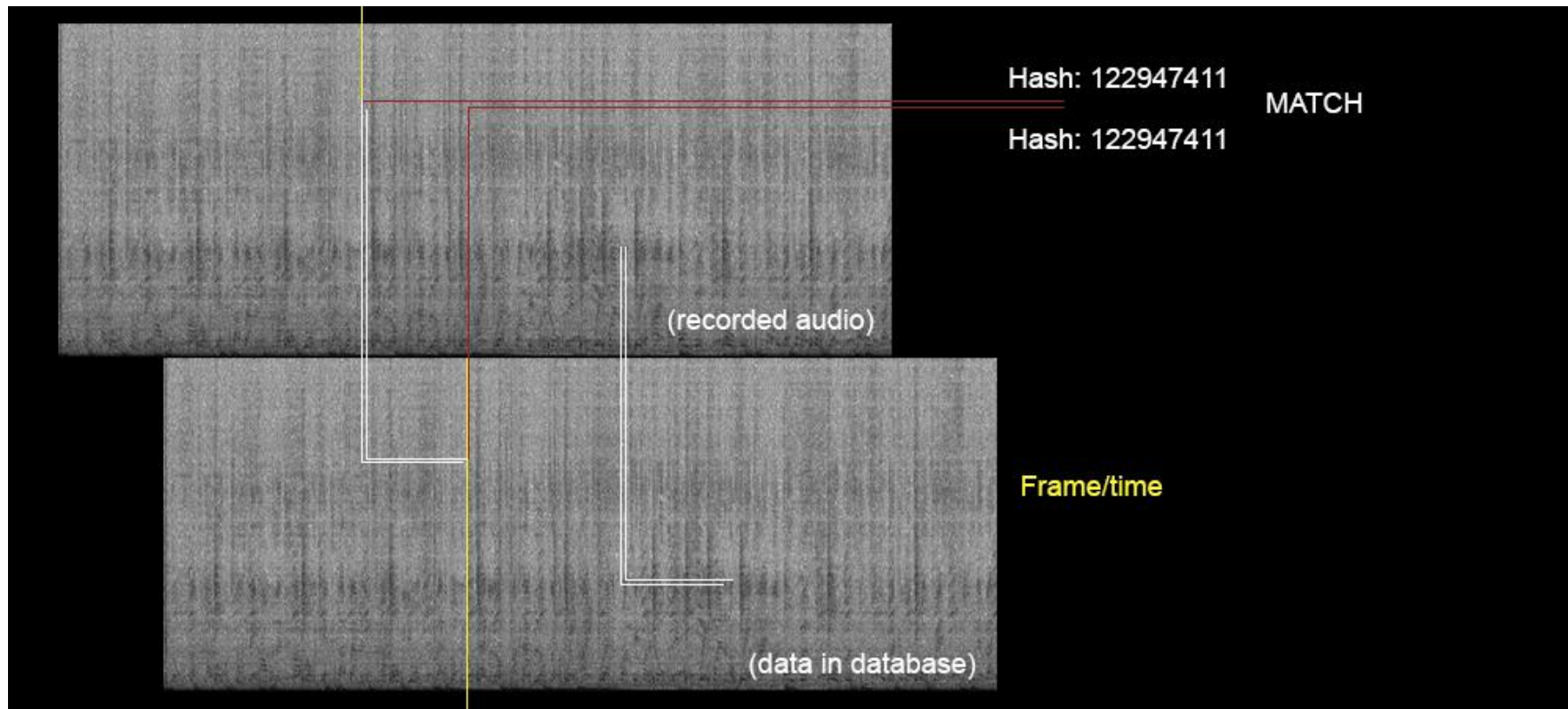
Grab Keypoints With Filter Bank



Database Layout



Matching Data



Data Validation

If we pass the real file we analyzed through the algorithm, we should get a definitive match

```
FILENAME: TheLottery-CircaSurvive.wav
samplesize: 1024
April-Tesseract.wav
Score: 51
BattleRoyal-DopeDOD.wav
Score: 14
CantSleep-VanikK-flay.wav
Score: 33
FlyingtoMars-Foriegn Beggars.wav
Score: 50
GetOut-CircaSurvive.wav
Score: 24
KeyholeintheSky-Rishloo.wav
Score: 57
Modus-ForeignBeggars.wav
Score: 19
PerfectMoment-Tesseract.wav
Score: 24
PolarBear-Puscifer.wav
Score: 35
StrangeTerrain-CircaSurvive.wav
Score: 30
TheLottery-CircaSurvive.wav
Score: 24427
TotheWolves-MandroidEchostar.wav
Score: 28
ViolentBounce-ISeeStars.wav
Score: 36
```

Best guess TheLottery-CircaSurvive.wav
(search took 1707ms)

```
FILENAME: TotheWolves-MandroidEchostar.wav
samplesize: 1024
April-Tesseract.wav
Score: 41
BattleRoyal-DopeDOD.wav
Score: 15
CantSleep-VanikK-flay.wav
Score: 25
FlyingtoMars-Foriegn Beggars.wav
Score: 35
GetOut-CircaSurvive.wav
Score: 25
KeyholeintheSky-Rishloo.wav
Score: 36
Modus-ForeignBeggars.wav
Score: 20
PerfectMoment-Tesseract.wav
Score: 23
PolarBear-Puscifer.wav
Score: 35
StrangeTerrain-CircaSurvive.wav
Score: 31
TheLottery-CircaSurvive.wav
Score: 28
TotheWolves-MandroidEchostar.wav
Score: 21442
ViolentBounce-ISeeStars.wav
Score: 31
```

Best guess TotheWolves-MandroidEchostar.wav
(search took 1517ms)

Comparing length of recording

3 seconds

```
Started recording...
Stopped recording...
samplesize: 1024
April-Tesseract.wav
Score: 3
BattleRoyal-DopeDOD.wav
Score: 2
CantSleep-VanikK-flay.wav
Score: 3
FlyingtoMars-Foriegn Beggars.wav
Score: 2
GetOut-CircaSurvive.wav
Score: 2
KeyholeintheSky-Rishloo.wav
Score: 2
Modus-ForeignBeggars.wav
Score: 2
PerfectMoment-Tesseract.wav
Score: 2
PolarBear-Puscifer.wav
Score: 12
StrangeTerrain-CircaSurvive.wav
Score: 3
TheLottery-CircaSurvive.wav
Score: 2
TotheWolves-MandroidEchostar.wav
Score: 3
ViolentBounce-ISeeStars.wav
Score: 2
```

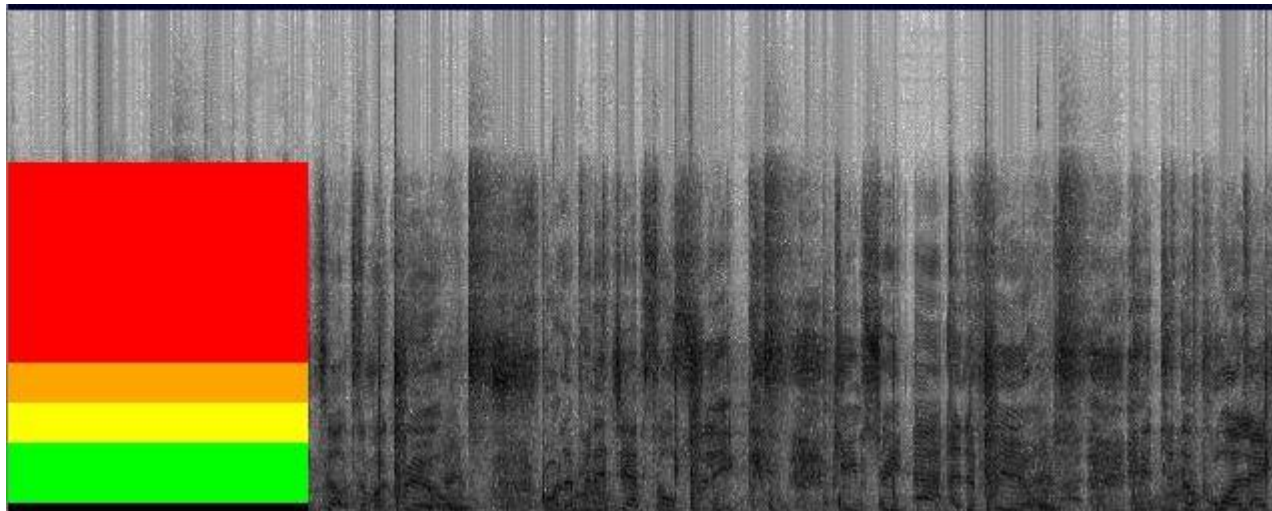
```
Best guess PolarBear-Puscifer.wav
(search took79ms)
```

12 seconds

```
Started recording...
Stopped recording...
samplesize: 1024
April-Tesseract.wav
Score: 6
BattleRoyal-DopeDOD.wav
Score: 3
CantSleep-VanikK-flay.wav
Score: 4
FlyingtoMars-Foriegn Beggars.wav
Score: 5
GetOut-CircaSurvive.wav
Score: 4
KeyholeintheSky-Rishloo.wav
Score: 6
Modus-ForeignBeggars.wav
Score: 5
PerfectMoment-Tesseract.wav
Score: 3
PolarBear-Puscifer.wav
Score: 34
StrangeTerrain-CircaSurvive.wav
Score: 5
TheLottery-CircaSurvive.wav
Score: 3
TotheWolves-MandroidEchostar.wav
Score: 4
ViolentBounce-ISeeStars.wav
Score: 4
```

```
Best guess PolarBear-Puscifer.wav
(search took150ms)
```

Accuracy With Background Noise



(person talking in background while recording,
10 second recording) -- Positive match

```
Started recording...
Stopped recording...
samplesize: 1024
April-Tesseract.wav
Score: 2
BattleRoyal-DopeDOD.wav
Score: 2
CantSleep-VanikK-flay.wav
Score: 2
FlyingtoMars-Foriegn Beggars.wav
Score: 16
GetOut-CircaSurvive.wav
Score: 2
KeyholeintheSky-Rishloo.wav
Score: 2
Modus-ForeignBeggars.wav
Score: 3
PerfectMoment-Tesseract.wav|
Score: 2
PolarBear-Puscifer.wav
Score: 2
StrangeTerrain-CircaSurvive.wav
Score: 3
TheLottery-CircaSurvive.wav
Score: 2
TotheWolves-MandroidEchostar.wav
Score: 2
ViolentBounce-ISeeStars.wav
Score: 2
```

Best guess FlyingtoMars-Foriegn Beggars.wav
(search took113ms)