Take a Pic, Get a Playlist

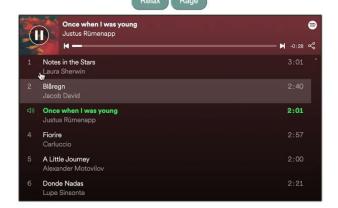## AI Recommended Mood-Based Playlists

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Overview

1. User takes a selfie or uploads photo

2. Image is sent to Vision API to detect their emotion

3. API sends emotion results back to page

4. Depending on the emotion, user is linked to a certain playlist

Demo

Incognito

Take a Pic, Get a Playlist

You look angry - do you want to ...

Relax   Rage

Once when I was young
Justus Rümenapp
-0:28

1	Notes in the Stars Laura Sherwin	3:01
2	Blåregn Jacob David	2:40
	Once when I was young Justus Rümenapp	2:01
4	Fiorire Carluccio	2:57
5	A Little Journey Alexander Motovilov	2:00
6	Donde Nadas Lupe Sinsonte	2:21

Restart ⟳

Methodology

Research

- "Music is one of the things that can be used as therapy with no side effects"

- Google Vision API can identify several moods by detecting "facial landmarks"

- Certain features and expressions define basic moods

Joy

Anger

Sadness

Resources

1. Computer & Cloud Storage

2. Visual Studio Code IDE

    a. Application - JavaScript, Node.js

    b. Web Page UI - HTML, CSS

3. Google Cloud Console (Free Trial)

    a. Vision API for Emotion Detection

    b. App Engine to deploy app

4. Spotify Music Streaming Service

Development

Client Side Code — HTML, CSS, JS

```html
<div id="cam" class="webcam">
  <h3>First, take a selfie</h3>
  <video id="player" autoplay></video>
  <button id="capture"
  type="button">CAPTURE</button>
  <canvas id="canvas" width="320"
  height="240" style="display: none;"></
  canvas>
</div>

<div id="tips">
  <h4>Pro-Tips:</h4>
  <p>-
  </p>
  <h3>Click CAPTURE when you're ready to get
  your playlist</h3>
</div>

<div>
  <h3 id="startText">Or upload a different
  one</h3>
  <form id="mainForm" role="form"
  class="form" onsubmit="return false;"
  style="display: block;">
    <div class="form-group">
      <label for="file"
      style="font-size: larger;">File</
      label>
      <input id="file" type="file"
      class="form-control" accept=".jpg,.
      jpeg,.gif,.png" />
    </div>
  </form>
</div>

<div class="emotionResults">
  <h3 id="proceedText" style="display: none;
  ">Click here once you've found a good
  photo</h3>
  <button id="emotionDetect" type="button"
  style="display: none;">
    Get My Playlist!
  </button>
</div>

<div>
  <div class="thumbnailImage">
    <div id="img-thumb"></div>
    <canvas id="canvas2" width=320
    height=240 style="display: none;"></
    canvas>
```

```javascript
if (numFaces == 0) {
  document.getElementById("detectedEmotion").
  innerHTML = 'No faces found, please try again';
} else if (highest_probability < 3) {
  document.getElementById("detectedEmotion").
  innerHTML = 'No emotion detected ... want to
  try again?';
} else if (tie.length >= 2) {…
} else if (highest_probability_emotion == "joy") {
  joyEmotion();
} else if (highest_probability_emotion == "anger")
{
  angryEmotion();
} else if (highest_probability_emotion ==
"sorrow") {
  sadEmotion();
} else if (highest_probability_emotion ==
"surprise") {
  surpriseEmotion();
}
```

```javascript
function sadEmotion() {
  document.getElementById("detectedEmotion").innerHTML = 'You seem
  sad - do you want to...';
  document.getElementById("cheerUpButton").style.display = 'block';
  document.getElementById("staySadButton").style.display = 'block';

  document.getElementById('cheerUpButton').onclick = function () {
    document.getElementById("output").innerHTML =
      '<iframe src="https://open.spotify.com/embed/playlist/
      37i9dQZF1DWYBO1MoTDhZI?utm_source=generator"
      width="100%" height="380" frameBorder="4"
      allowfullscreen="" allow="autoplay; clipboard-write;
      encrypted-media; fullscreen; picture-in-picture"></
      iframe>';
  }
  document.getElementById('staySadButton').onclick = function () {
    document.getElementById("output").innerHTML =
      '<iframe src="https://open.spotify.com/embed/playlist/
      37i9dQZF1DX7qK8ma5wgG1?utm_source=generator" width="100%"
      height="380" frameBorder="4" allowfullscreen=""
      allow="autoplay; clipboard-write; encrypted-media;
      fullscreen; picture-in-picture"></iframe>';
  }
```

App Engine Server — Express

```javascript
const express = require("express");
const path = require("path");
const pjson = require("./package.json");
const port = ("port", process.env.PORT || 8088);
const app = express();
const os = require("os");
const bodyParser = require('body-parser');
const fs = require('fs');

const tempDir = os.tmpdir();
// Serve static files
const serveStatic = require("serve-static");
// Extract files from form data
const multer = require("multer");
// either of these upload definitions work
const upload = multer({ dest: tempDir });
const storage = multer.memoryStorage();

// Google cloud library for Vision API
const vision = require("@google-cloud/vision");

// Google cloud client
const client = new vision.ImageAnnotatorClient({
  keyFilename: "emotion-key.json"
});

app.use(bodyParser.raw({
  type: 'image/png',
  limit: '10mb'
}));

// AUTOMATICALLY SEND CAPTURED WEBCAM IMAGE TO VISION API
app.post("/", function(req, res, next) {
  // console.log(req.body);
  client
    .faceDetection(req.body)
    .then(results => {
      // send result data
      res.send(results);
    })
    .catch(err => {
      res.status(400).send(err);
    });
});
```

Google Vision API — Emotion Detection

```
▼ faceAnnotations: Array(1)
  ▼ 0:
      angerLikelihood: "POSSIBLE"
      blurredLikelihood: "VERY_UNLIKELY"
    ▶ boundingPoly: {vertices: Array(4), normalizedVertices…
      detectionConfidence: 0.7715107202529907
    ▶ fdBoundingPoly: {vertices: Array(4), normalizedVertic…
      headwearLikelihood: "VERY_UNLIKELY"
      joyLikelihood: "VERY_UNLIKELY"
      landmarkingConfidence: 0.5488243103027344
    ▶ landmarks: (34) [{…}, {…}, {…}, {…}, {…}, {…}, {…}, {…
      panAngle: 0.008273514918982983
      rollAngle: 2.690328359603882
      sorrowLikelihood: "VERY_UNLIKELY"
      surpriseLikelihood: "VERY_LIKELY"
      tiltAngle: 2.4183311462402344
      underExposedLikelihood: "VERY_UNLIKELY"
    ▶ [[Prototype]]: Object
    length: 1
  ▶ [[Prototype]]: Array(0)
```

```
Found 1 face.
  Face #1:
    Joy: VERY_UNLIKELY
    Anger: POSSIBLE
    Sorrow: VERY_UNLIKELY
    Surprise: VERY_LIKELY
emotion surprise at 5
```

Obstacles

Technical Limitations

- Automatically sending captured image to Vision API

- Not much documentation on Express middleware for routing requests

- Google Vision API
    - Only identifies 4 emotions - Joy, Sorrow, Anger, Surprise
    - Need to have exaggerated expressions
    - Basic likelihoods - Very Unlikely, Unlikely, Possible, Likely, Very Likely
    - Difficult to account for overlap of emotions

Reflection

Accomplishments

- Created a web application that can identify moods and link playlists

- Became familiar with using Node.js to create an application

- Gained experience with the ever-evolving Google Cloud Console
  - APIs and deploying apps with App Engine

Potential Opportunities

- Depending on identified mood, link to things other than a playlist
  - Literature, Videos, Games

- Identifying other moods with more accuracy

- Get a more precise reading on the user's mood
  - Ask a few questions - choices lead to different results
  - Neural network that predicts people's mood

- Configure application to work on mobile

Special Thanks

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THANK YOU!

Works Cited

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