

Readme

Work-5

功能主题——图片风格迁移

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1. 安装与启动

- npm i 安装 package.json dependencies里的库（提交项目里不包括node_modules文件夹）
- 启动mongodb，建立对应数据库hw5，启动mongoose服务
- sudo npm i -g nodemon
- 终端输入nodemon server.js启动服务端
- 进入登陆页面后可进行注册登陆并访问主页

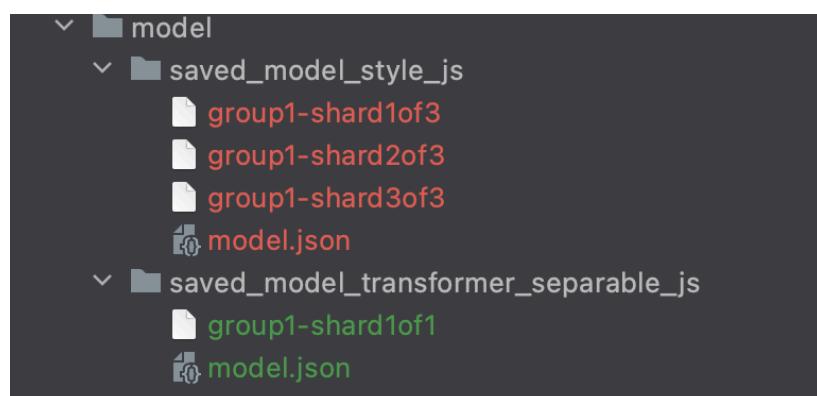
2. 实现

本项目选择图片风格迁移功能作为主题，通过Tensorflow.Js实现功能，在图片详情页面添加了风格迁移实现工具，项目提供了部分风格图片供用户选择，也支持用户上传自己的图片对网页内的图片进行风格迁移操作

- 引入tensorflow.js

```
<head>
  <meta charset="UTF-8">
  <title>DEMO</title>
  <link rel="stylesheet" href="../styles/demo_style.css">
  <script src="https://cdn.jsdelivr.net/npm/@tensorflow/tfjs@2.0.0/dist/tf.min.js">
  </script>
</head>
```

- transformer.js
 - 考虑到结合已有项目添加智能化功能，网页需要较快的加载与响应速度，本项目选择了使用较小的模型实现风格迁移
 - 模型文件



- 模型加载

```
async function loadMobileNetStyleModel() {  
  
    let mobileStyleNet = await tf.loadGraphModel(  
        '../model/saved_model_style_js/model.json'  
    );  
    console.log('loading model')  
    return mobileStyleNet;  
}  
  
async function loadSeparableTransformerModel() {  
  
    this.originalTransformNet = await tf.loadGraphModel(  
        '../model/saved_model_transformer_separable_js/model.json'  
    );  
  
    return this.originalTransformNet;  
}
```

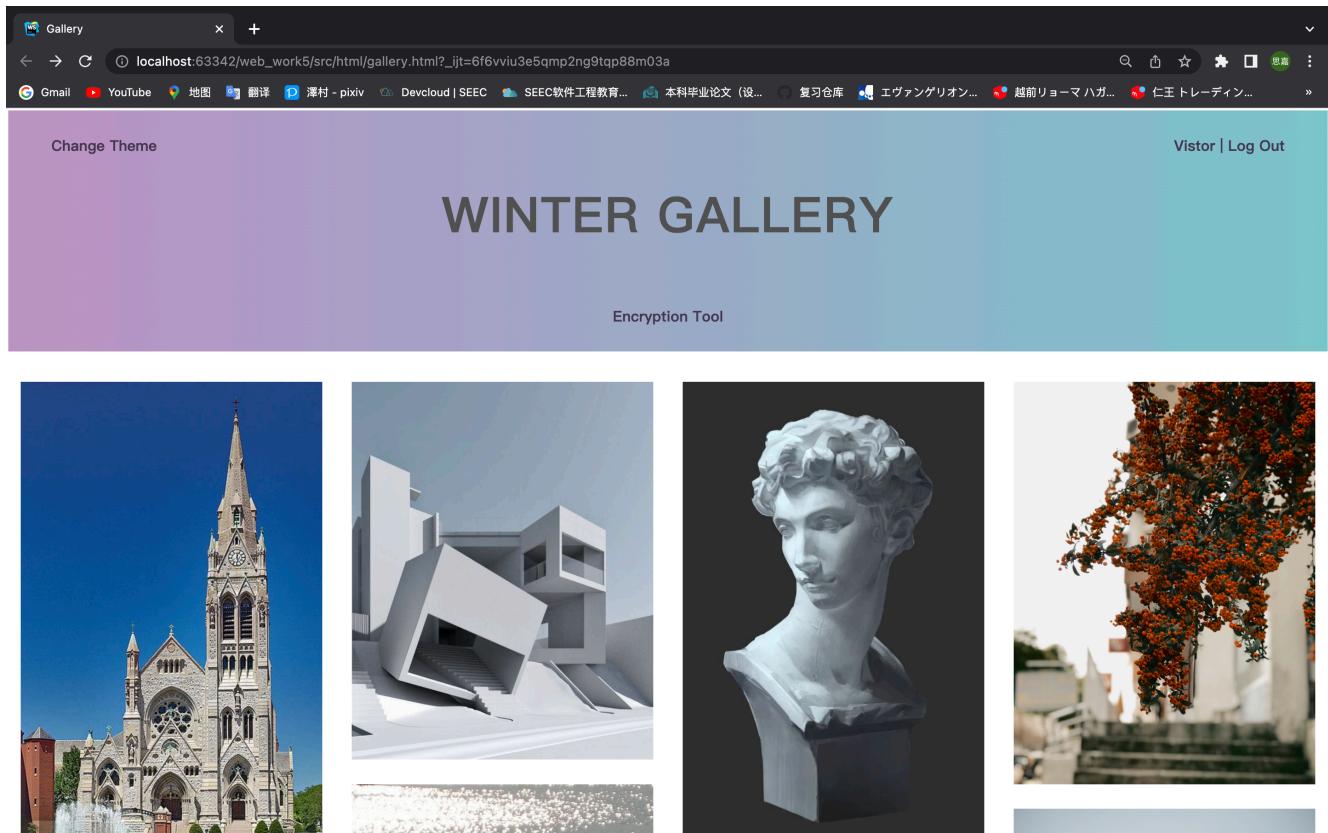
- 风格迁移

```
async function startStyling() {  
    await tf.nextFrame();  
    stylizeButton.value = 'Generating 100D representation';  
    await tf.nextFrame();  
    let bottleneck = await tf.tidy(() => {  
        return  
    styleModel.predict(tf.browser.fromPixels(sImg).toFloat().div(tf.scalar(255)).ex  
    pandDims());  
    })  
    stylizeButton.value = 'Stylizing image...';  
    await tf.nextFrame();  
    const stylized = await tf.tidy(() => {  
        return  
    transformModel.predict([tf.browser.fromPixels(cImg).toFloat().div(tf.scalar(255  
    )).expandDims(), bottleneck]).squeeze();  
    })  
    await tf.browser.toPixels(stylized, canvas);  
    bottleneck.dispose(); // Might wanna keep this around  
    stylized.dispose();  
}
```

3. 界面截图

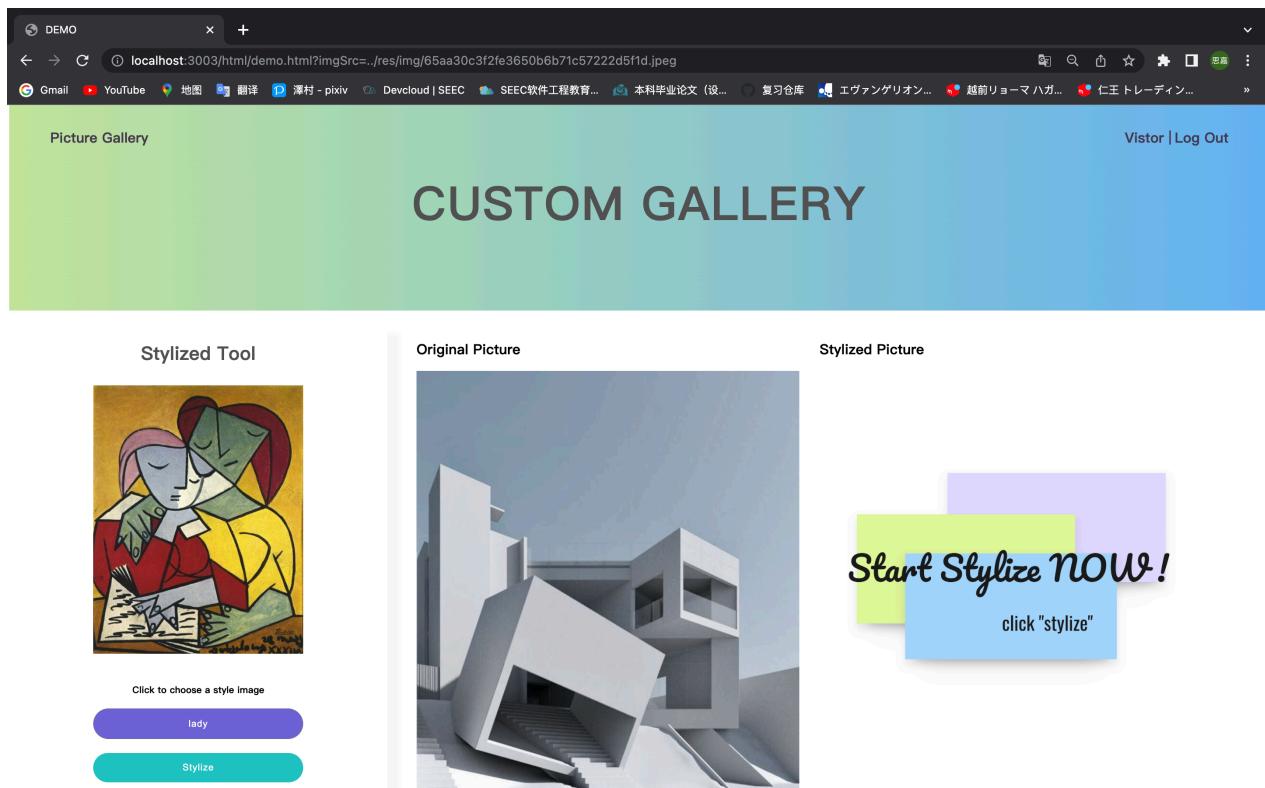
文档内仅展示风格迁移相关界面，其他界面相较上一次作业未做改动

- 主页 gallery.html



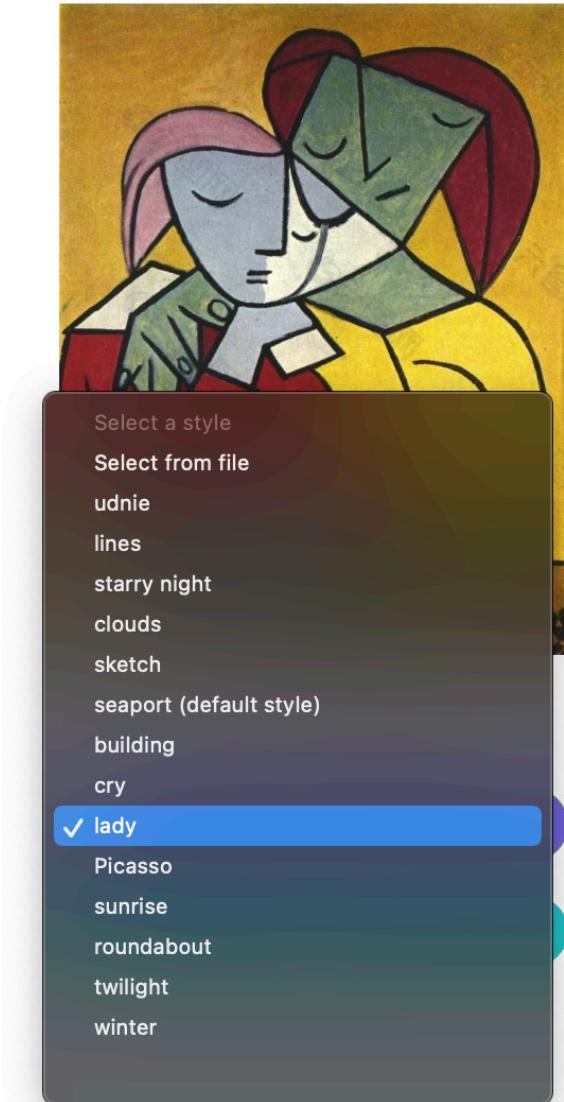
- 详情页 demo.html

- 页面



- 项目提供的可选风格图片示例

Stylized Tool



Stylized Tool



Click to choose a style image

roundabout

Stylize

Stylized Tool

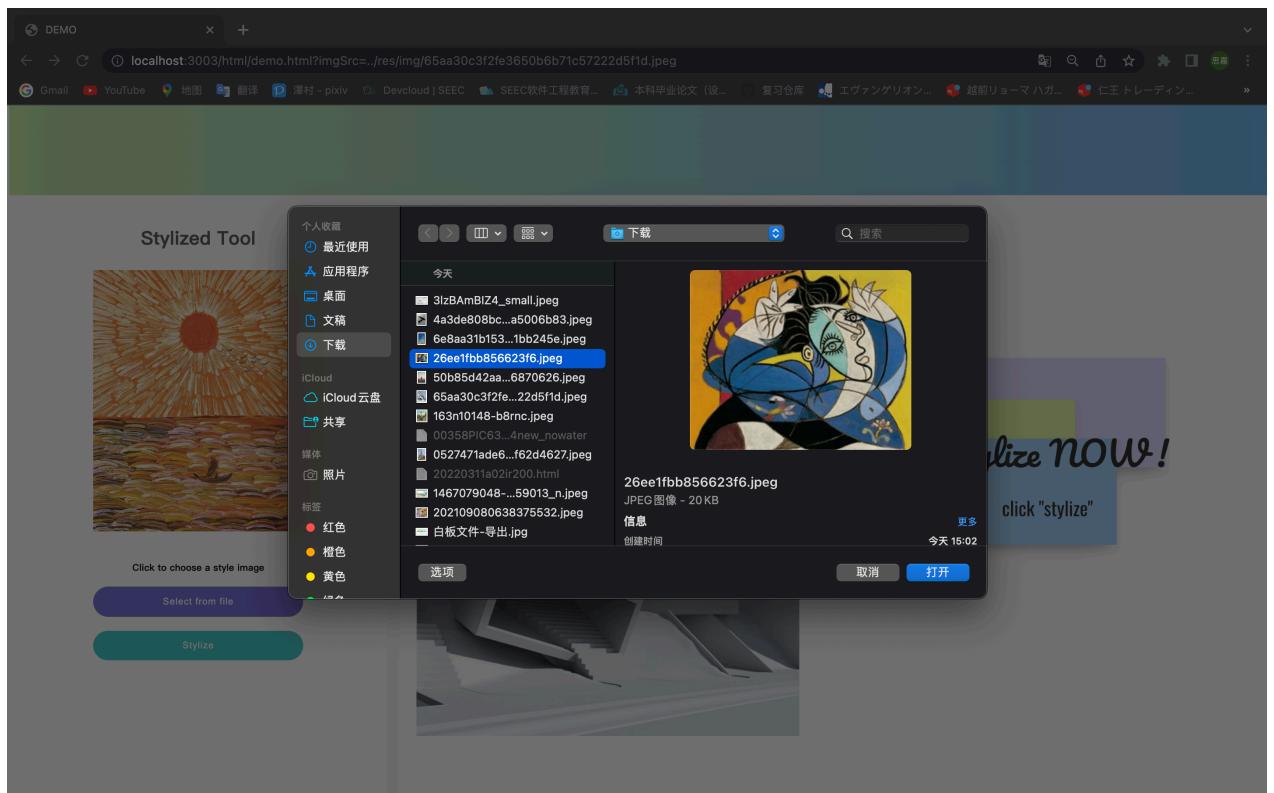


Click to choose a style image

lines

Stylize

○ 上传风格图片



Stylized Tool

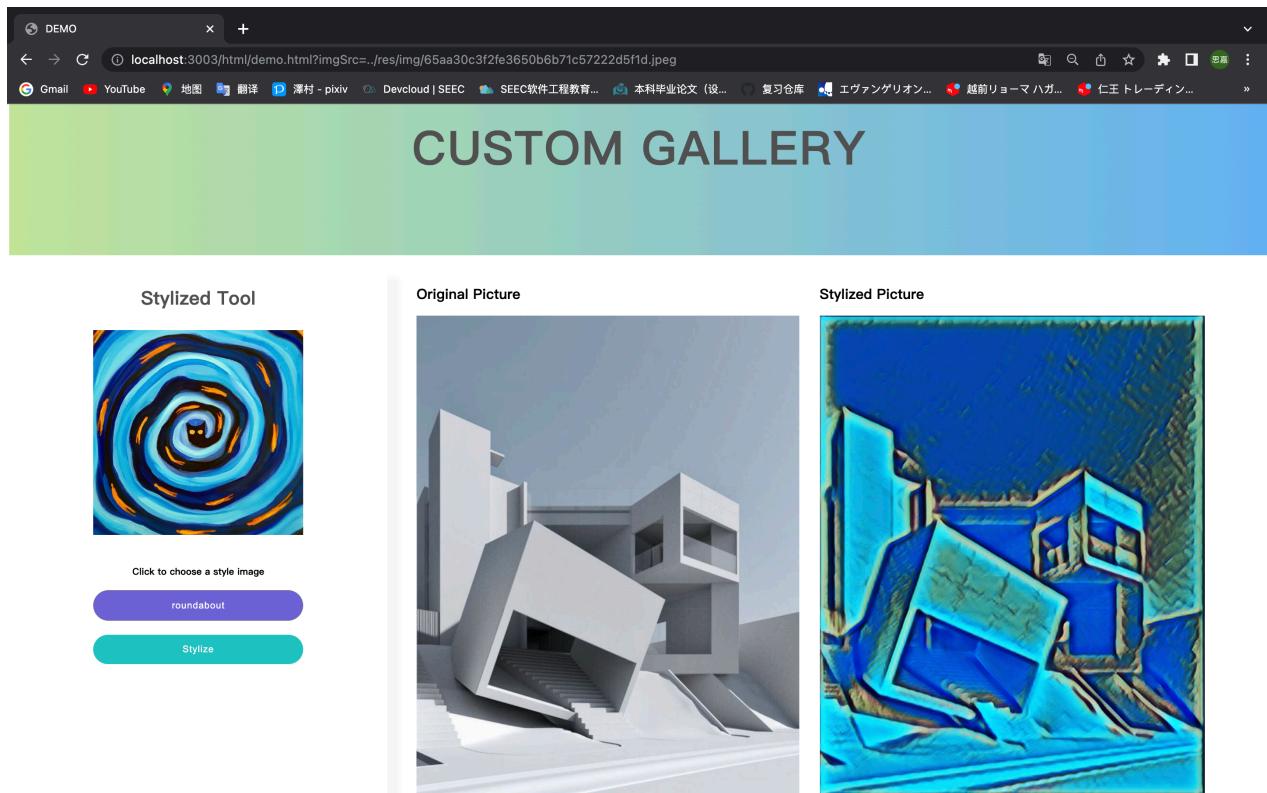
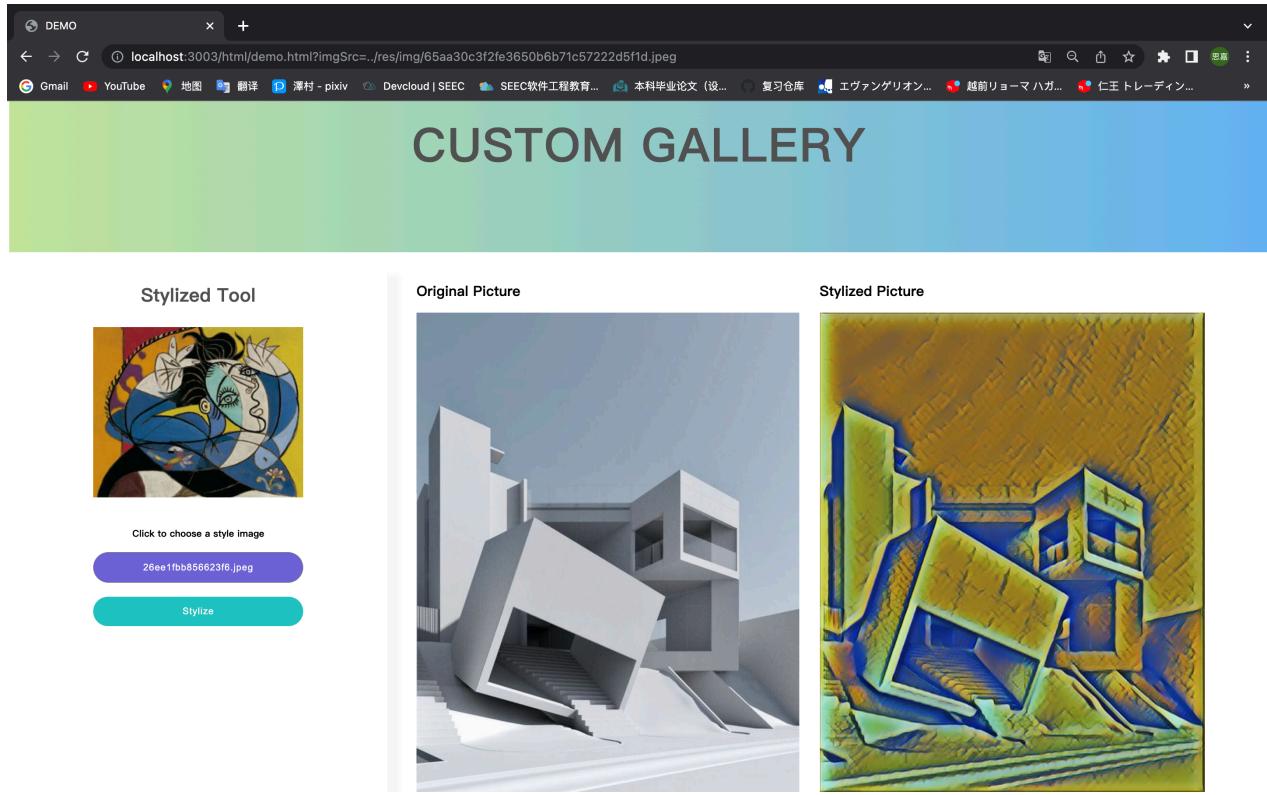


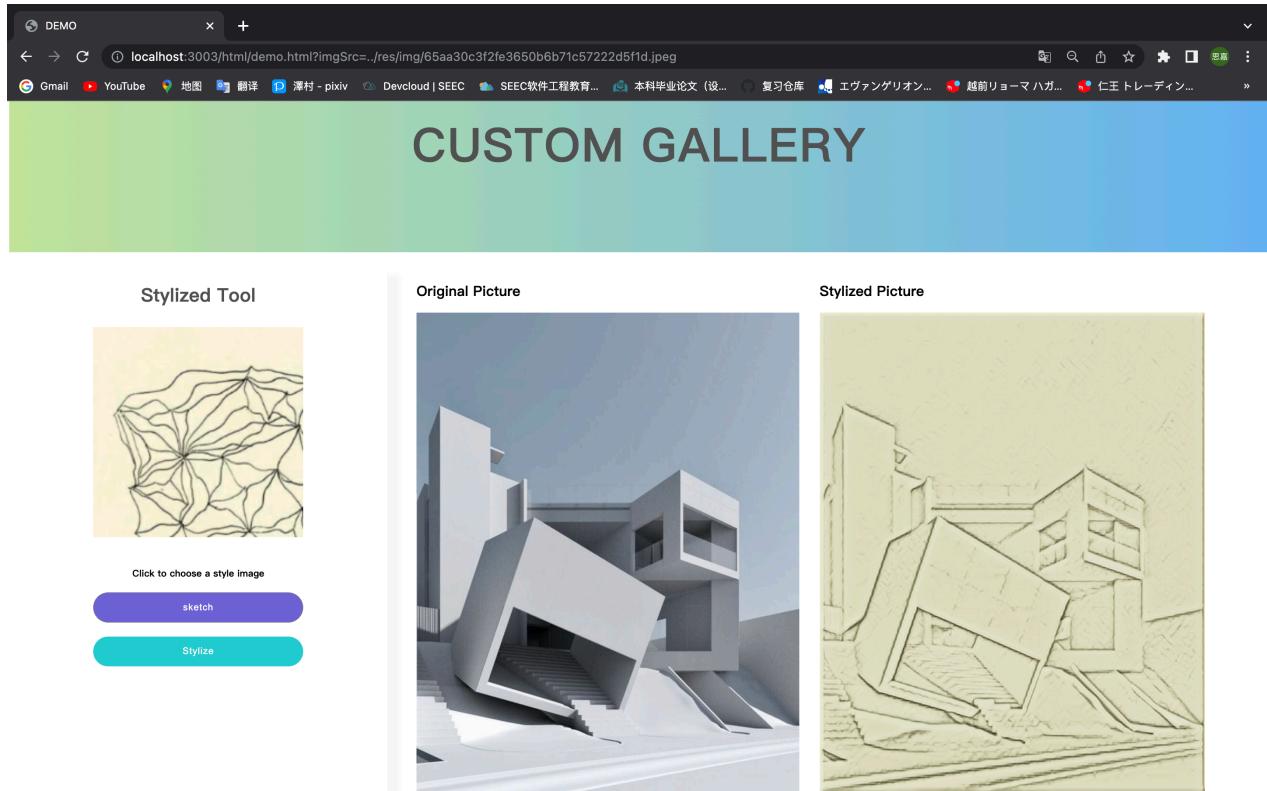
Click to choose a style image

26ee1fbb856623f6.jpeg

Stylize

- 风格迁移





4. 参考

- <https://codelabs.developers.google.com/codelabs/tensorflowjs-teachablemachine-codelab/index.html?hl=zh-cn#0>
- <https://www.tensorflow.org/js/tutorials?hl=zh-cn>
- <https://github.com/reinakano/arbitrary-image-stylization-tfjs>