Assessment tasks

Complete the task below which corresponds to the internship you are applying for AND that is currently available.

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AI/ML

Task

Create a simple website where users can post an image/text/voice and it shows the results of any neural network you want.
Choose at least one of them below and surprise us!

- Face matching, Face Recognition
- Emotion detection
- Race / Gender / Age detection
- Mask, No mask / Beard, No beard / Blur, No blur
- Sentimental analysis with NLP (Emotion)
- Voice tone classification (Emotion but not mandatory)
- Body gesture or Sign language detection

We will see your approach to data collection & your model
(Since web design is out of criteria, please focus on ML model/Dataset)

Questionnaire

Please rate your proficiency in the following on a scale of 1-10:
1. Software Engineering
2. Computer Vision
3. NLP
4. Classification/Object Detection/Semantic Segmentation/Regression or any other DNN tasks
5. Deep learning framework(Torch/TF..)

Web Dev Frontend

Our tech stack is: Angular 2+, TypeScript, Bootstrap

- build an Angular / React, or Vue web app
- consume Giphy REST Api for search
- the app should deal with data using Redux design pattern on Angular/React
- user should be able to search gifs by names
- Gifs should be presented in a grid
- data pagination needs to be on. the app should fetch 10 results per call. Once the user scrolls to the end of a page, another batch of data gets loaded and presented to the user
- the app should be deployed to AWS, GCP, Azure, or Heroku
- whatever framework is used, the app should be built on Typescript (not Javascript)

Deliverables

- link to the repository where the sources are
- link to the web app

Questionnaire

Please rate your proficiency in the following on a scale of 1-10:

1. JS
2. TS
3. React.js
4. Angular 2+
5. Vue.js
6. Bootstrap
7. Wordpress
8. CSS

iOS Swift

- build a native app that captures video & audio from the camera
- adds mustache to the user' face using ARKit
- user should be able to change mustache style on the fly (embed a few mustache images)
- session video/duration should be saved into ORM

Video screen

- recordings button (leads to Recording screen)
- Mustaches list. On tap currently selected mustaches get replaced
- Stop button. It stops recording and presenting a popup to a user. A popup contains a ‘tag’ text field. Once the user enters a ‘tag’, data gets saved(video / duration / ‘tag’) into ORM or DB

Recording list screen

- A grid of the recordings
- Each row in the grid includes:
    - Preview for a video
    - video duration
    - Tag
- New recording button(leads to the Video screen)

Nice to have:

- Editing a tag on Recording list screen

Deliverables

- link to the repository where the sources are

Questionnaire

Please rate your proficiency in the following on a scale of 1-10:

1. Objective C
2. Swift
3. CoreData
4. CoreGraphics
5. AVFoundation
6. UIKit
7. REST

Deliverables:

- link to the repository where the sources are

Android

- build a native app that captures video & audio from the camera
- adds mustache to the user' face using ARCore
- user should be able to change mustache style on the fly (embed a few mustache images)
- session video/duration should be saved into ORM

Video screen

- recordings button(leads to Recording screen)
- Mustaches list. On tap currently selected mustaches get replaced
- Stop button. It stops recording and presenting a popup to a user. A popup contains a ‘tag’ text field. Once the user enters a ‘tag’, data gets saved(video / duration / ‘tag’) into ORM or DB

Recording list screen

- A grid of the recordings
- Each row in the grid includes:
    - Preview for a video
    - video duration
    - Tag
- New recording button(leads to the Video screen)

Nice to have

- Editing a tag on Recording list screen

Deliverables

- *.apk
- Screen capture of app experience
- link to the repository where the sources are

Questionnaire

Please rate your proficiency in the following on a scale of 1-10:

1. Java
2. Kotlin
3. Retrofit
4. Room
5. UIKit

6. REST Api
7. SQL

Unity

- build a Unity app that captures video & audio from the camera
- adds mustache to the user' face using AR face SDK such as ARCore, ARKit and so
- user should be able to change mustache style on the fly (embed a few mustache images)
- session video/duration should be saved into DB

Video screen

- recordings button(leads to Recording screen)
- Mustaches list. On tap currently selected mustaches get replaced
- Stop button. It stops recording and presenting a popup to a user. A popup contains a ‘tag’ text field. Once the user enters a ‘tag’, data gets saved(video / duration / ‘tag’) into ORM or DB

Recording list screen

- A grid of the recordings
- Each row in the grid includes:
    - Preview for a video
    - video duration
    - Tag
- New recording button(leads to the Video screen)

Nice to have

- Editing a tag on Recording list screen

Deliverables

- *.apk in case of Android app
- Screen capture of the app experience
- link to the repository where the sources are

Questionnaire

Please rate your proficiency in the following on a scale of 1-10:

1. C#
2. Unity SDK
3. 2d Graphics
4. 3d Graphics
5. REST Api

C/C++

- build an interactive console C++ app.
- The app should pull stickers from /search REST endpoint from giphy.com. To parse a response, grab an url to the gif, and present it to a user.
- Asio library needs to be used.
- The app should use STL for data manipulation.
- User may initiate a new search or pull the next page of the search.
- Each search page result is kept as a vector.
- The entire sequence for search results should be presented as a list of vectors.
- User should be able to ask the app for how many stickers with the same rank are presented in the list of vectors.

Commands:

- **search <criteria> .** searches gifs by criteria
- **next.** presents the next data page. If an entire data for the criteria is presented, 'No data' text be shown and the app should go to the waiting move automatically.
- **Cancel.** Cancels ongoing search and waits for a next command

Nice to have:

- To use any C++ JSON library for parsing responses from giphy.com

Questionnaire

Please rate your proficiency in the following on a scale of 1-10:

1. C
2. C++
3. STL
4. Algorithms & Data Structures
5. Win Api
6. SQL

.NET (no internship available now)

Build the app with Windows Forms which has 2 screens. Users are able to record a video, attach metadata to it, and manage data. Data is saved in SQLite embedded into the app.

List of recordings screen

User may see past records and remove ones.
Once the user clicks a record the corresponding video starts playing in a popup

UI elements:

- grid with the records
- each record includes:
    - video preview
    - created date
    - tag (user' text)
    - delete button

- create button (leads to Record screen)

Record screen:
User initiates video recording by hitting 'record' and stops by 'stop'. Once 'stop' is clicked, 'tag' gets enabled.
'Tag' field is mandatory. Once a video is recorded and 'tag' is filled, 'save' button gets enabled.
User saves a video, 'tag', and 'created date' into SQLite database which is embedded into the app.

UI elements:

- tag text field
- save button
- back button
- record/stop button

Nice to have:
- To use LinQ for dealing with database
- To add functionality for editing a record on the ‘List of recordings’ screen

Questionnaire

Please rate your proficiency in the following on a scale of 1-10:

6. C#
7. Entity Framework
8. SQL
9. Windows Forms
10. Windows Api
11. REST Api

OSX / Swift (no internship available now)

Build the app with Storyboard which has 2 screens. Users are able to record a video, attach metadata to it, and manage data. Data is saved in CoreData.

List of recordings screen
User may see past records and remove ones.
Once the user clicks a record the corresponding video starts playing in a popup

UI elements:

- grid with the records
- each record includes:
    - video preview
    - created date
    - tag (user' text)
    - delete button

- create button (leads to Record screen)

Record screen:
User initiates video recording by hitting 'record' and stops by 'stop'. Once 'stop' is clicked, 'tag' gets enabled.
'Tag' field is mandatory. Once a video is recorded and the 'tag' is filled, 'save' button gets enabled.
User saves a video, 'tag', and 'created date' into CoreData.

UI elements:

- tag text field
- save button
- back button
- record/stop button

Nice to have:
- To make the app universal. I.e. it would run on iOS
- To add functionality for editing a record on the ‘List of recordings’ screen

Questionnaire

Please rate your proficiency in the following on a scale of 1-10:

8. Objective C
9. Swift
10. CoreData
11. CoreGraphics
12. AVFoundation
13. AppKit
14. REST

Backend (no internship available now)

MoodMe tech stack is: AWS, nodejs (serverless), typescript, MySQL, MongoDB, REST api

- use NoSQL database (Dynamo, Mongo, or any others) and Node.js(would be a classic server or serverless approach)
- import data from here: https://github.com/MoodMe/tests/blob/main/restaurants.json
- build a search REST api endpoint that returns results from the database
- REST endpoint should support data paging. i.e. the user may specify how many records and a page number are in the search results he/she wants to receive
- Postman collection or deployed Demo web app should be provided as a sign-off
- queries to DB should be optimized
- the backend (if applicable - Demo web app) should be deployed to AWS, GCP, Azure, or Heroku

Deliverables

- Api specification as one of the following
    - Postman included into the repository
    - OpenApi(former Swagger) specification
    - Text document
- link to the repository where the sources are
- api endpoint
- [optional] frontend that presents functionality on the backend & link

Questionnaire

Please rate your proficiency in the following on a scale of 1-10:

1. JS
2. TS
3. Node.js
4. Microservices
5. REST Api

6. SQL
7. MongoDB
8. ORM

AI 4 Good: animal roadkill prevention **(no internship available now)**

Task

Create a simple website where users can post an image of an animal and get the name as result. If the object is not an animal, you can either provide a feedback as “not an animal” or identify what is in the image (preferred).
If this is too complicated, you can do the AI/ML test above.

Questionnaire

Please rate your proficiency in the following on a scale of 1-10:
1. Software Engineering
2. Computer Vision
3. YOLO
4. Classification/Object Detection/Semantic Segmentation/Regression or any other DNN tasks
5. Deep learning framework(Torch/TF..)

Embedded Engineer (no internship available now)

Design end-to-end system for a dashcam which would make use of Nvidia Jetson Nano or something equivalent.

Some points to be taken care of:
1. Its an edge setting, so take account of computational power
2. Dashcam’s camera should avoid any frame latency
3. It should be energy efficient and reliable

Deliverables

1. Design end-to-end system for dashcam which is efficient for inferencing Deep Learning models.

2. Curate total cost of prototyping
3. List series of hardwares which support Computer Vision and Deep Learning on edge setting or suggest ideas of your own

Questionnaire

Please rate your proficiency in the following on a scale of 1-10:

1. System Design
2. Edge Design
3. Hardware level coding
4. Microcontroller / FPGAs
5. Audrino / Nano / etc
6. C/C++