Personal Homepage

Project 1

Chenjie Wu

The Objective

- To take hands-on CSS, Html, Js, BootStrap.
- To create Personal Homepage for professional use

Terminology

- Figma: a handy design tool to scratch the layout of web page
- Html, CSS: to render styled web page
- BootStrap: a styling and Js library
- Js: JavaScript for non-static components in web page
- Favicon: thumbnail Icon for web tab

User Persona & Stories

Chen the Owner
John the Instructor
Sam the Recruiter
Tom the Developer

- As the owner, Chen wants to attract people's eyes.
- As an Instructor, prof. John wants to notice that the current page is **from his student**.
- As a professional recruiter, Sam wants to know about the website owner, to find if the owner is a strong match by **browsing projects** and professional experience with ease, and to **collect the resume**.
- Tom is a impatient developer, he wants to find **the details of projects of interest** as soon as possible.

Chen

HOME PROJECTS

Hi there, 👋

As a self-motivated software engineer, I have experience in Game Design, AI Design, Network Routing, Cyber-security.

1 year SDE experience, Teaching Assistant in Algorithm and Data Structure, pursuing Master degree in Computer Science at Northeastern University.

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RESUME

Projects

Recognition using Deep Networks

No traditional pattern recognition method is used. Instead, by implementing neural network in pytorch package, pattern will be recognized through deep learning network. Here, pytorch is chosen since neural network could be customized easily in pytorch, whereas Keras provides a relatively high-level API or TensorFlow requires to setup everything to startup. Mnist digit recognition data set is primarily used for training and testing deep network in this project to avoid high requirement in computing power and to achieve the product easily. Analysis of first couples of convolution neural network layers and modified deep network will also be presented in the project.

Calibration and Augmented Reality

An application to track predefined board, to use such board to find intrinsic and extrinsic parameters for camera calibration, and then to generate virtual objects with the right size and orientation in a scene according to the calibration of world coordinates and transformations (extrinsic parameters). Chessboard, Aruco board, or chessboard + Aruco board is selected as board because they are easy for computers to detect corners.

Real-time Object 2-D Recognition

A real-time object detection system to capture 2D objects is built. Implemented tasks including thresholding from scratch, cleaning up from scratch by implementing grassfire, segmentation into the regions from scratch, computing features of each region, collecting training data, classifications by different classifiers, evaluating the performance, and a video demo. We also designed a user-friendly GUI by cvui . The following are instructions about our program.

Fake Face Classification

A Regnet model with adabelief optimizer is built to detect fake face generated by StyleGAN 2 and SytleGAN 3 models.

1 of 1 — Automatic Zoom

Home Projects

Chenjie Wu

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Education

Master of Science, Computer Science — Expected May 2023
Northeastern University, **Khoury College of Computer Sciences,** Silicon Valley
- Artificial Intelligence, Computer Vision, Machine Learning, Web Dev

Bachelor of Science, Computer Science — May 2019
Rutgers, the State University of New Jersey, New Brunswick, NJ
- Computer Graphics, Game Science, Computer Security, Internet

Professional Experience

Game Development & Machine Learning Intern — May 2022 – Present
HireBeat Inc. , Jersey City, NJ
- Developed mock interview app with WebRTC real-time voice chat and Photon in Unity
- Integrated online resume scoring and deployed Unity WebGL app on Digital Ocean

Teaching Assistant — Jan 2022 – May 2022
Northeastern University, San Jose, CA
- Led weekly recitation section for 22 students, held office hours, and graded exams, assignments, and practices
- Assisted instructors in class and collaborated with other TAs for group practice in C language and data structure

Software Development Engineer — Dec 2019 - Aug 2021
Wiserun Information System Co., Ltd., Shanghai
- Led Unity3D WebGL-based project for virtual educational laboratory simulation while leading design efforts of 5 persons, and constructed a Directed Acyclic Graph evaluation system for online educational simulation service
- Reported WebGL build-framework bug, investigated building code, and contributed to fix building bug
- Built a real-time client-customizable tasks evaluation system for leveraging Addressable Asset System

Software Development Engineer Internship — Jun 2018 - Jul 2018
Westwell Lab Information and Technology Co., Ltd., Shanghai
- Applied optical character recognition technique to identify vehicle number plate, led to 93% accuracy
- Accomplished ant-colony-optimization to explore Vehicle Routing Problem with Time Windows

Academic Projects

CBIR, Real-time 2D Recognition, Augment Reality, Deep Learning — Jan 2022 - May 2022
- Created application for 2D recognition invariant to translation, scale, and rotation with 97.5% accuracy, and implemented Content-based Image Retrieval (CBIR) based on combination of 4 kinds of histograms (C++)
- Developed an Augment Reality (AR) application to calibrating cameras, and to project 3D axes and virtual objects, integrating with OpenGL and compatible with chessboard and ChArUco board (C++)
- Accomplished recognition application by using customized deep learning network in PyTorch with 98% accuracy, and created embedded space of truncated network for different data (Python)

I-SEE-U Games (C#, Unity) — Sep 2018 - Jan 2019
- Proposed and devised Turn-based adversarial navigation AIs in an informed but partially observable grid maze, based on reinforcement learning and curriculum learning
- Published research report according to the AI game: iseeugames.wordpress.com

Robot Path Planning with Digital Recognition (C++, python) — Aug 2018 - Sep 2018
- Integrated three normal neutral layers and two more convolutional max pooling layers in Neural Networks
- Implemented A* informed search, with SoftMax regression as digital recognition model and cross entropy loss as reward function, to navigate robots with 98% success in finding optimal path

Technical Skills

- Programming Languages: Java, Python, C, C++, C#, JavaScript, SQL, Shell Scripts
- Experience in AI Design, PyTorch, OpenCV, Deep Learning, Reinforcement Learning

Reflect

- Glad to have a bobblehead widget
- Styling challenges
  - Auto stretch behaviors are often not the same as expected
- Javascript import challenges CDN without modules
- Decidophobia
  - Plenty of solutions to the same issue but some might not work
- Functions tried
  - Collapse section
  - CSS animation with confetti effect
- Github Action