AI Final Project

Spring 2022

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https://graspcoding.com/top-30-best-artificial-intelligence-project-ideas-for-fyp/

Week	Date	Topic	Note
1	**2/14~2/18**	Introduction	No class on 2/18
2	**2/21~2/25**	Machine Learning I	
3	**2/28~3/4**	Machine Learning II	HW1 announce (3/1)
4	**3/7~3/11**	Problem Solving by Searching	
5	**3/14~3/18**	Adversarial Search	HW1 due (3/15) and HW2 announce (3/18)
6	**3/21~3/25**	Markov Decision Process	
7	**3/28~4/1**	Reinforcement Learning	HW2 due and HW3 announce (4/1)
8	**4/4~4/8**	Spring Break	
9	**4/11~4/15**	Constraint Satisfaction Problems	HW3 due and Final project announce (4/12)
10	**4/18~4/22**	Bayesian Network	HW4 announcement (4/19)
11	**4/25~4/29**	Knowledge, Reasoning, and Planning	Final project proposal due (4/26)
12	**5/2~5/6**	3D Computer Vision	HW4 due and HW5 announce (5/3)
13	**5/9~5/13**	Robot Navigation	
14	**5/16~5/20**	Intelligent Driving Systems	HW5 due (5/17)
15	**5/23~5/27**	Guest Talk (TBA)	Final project checkpoint report (5/24) No class on 5/27
16	**5/30~6/3**	Guest Talk (TBA)	No class on 6/3
17	**6/6~6/10**	No class	
18	**6/13~6/17**	***Final Project Demo***	Final video and report (6/14)

Final Project Announcement

- Main Purpose
  - Apply what you learned in lectures/HWs
  - Hands-on experience of problem solving
  - Get a chance to work on **important** problems (you will choose a problem of interest)
- Work in groups of up to 3
- Grading
  - Final Project: 40%
  - 15-min recorded presentation (30%)
  - 2-page report (5%)
  - Online demo (5%)

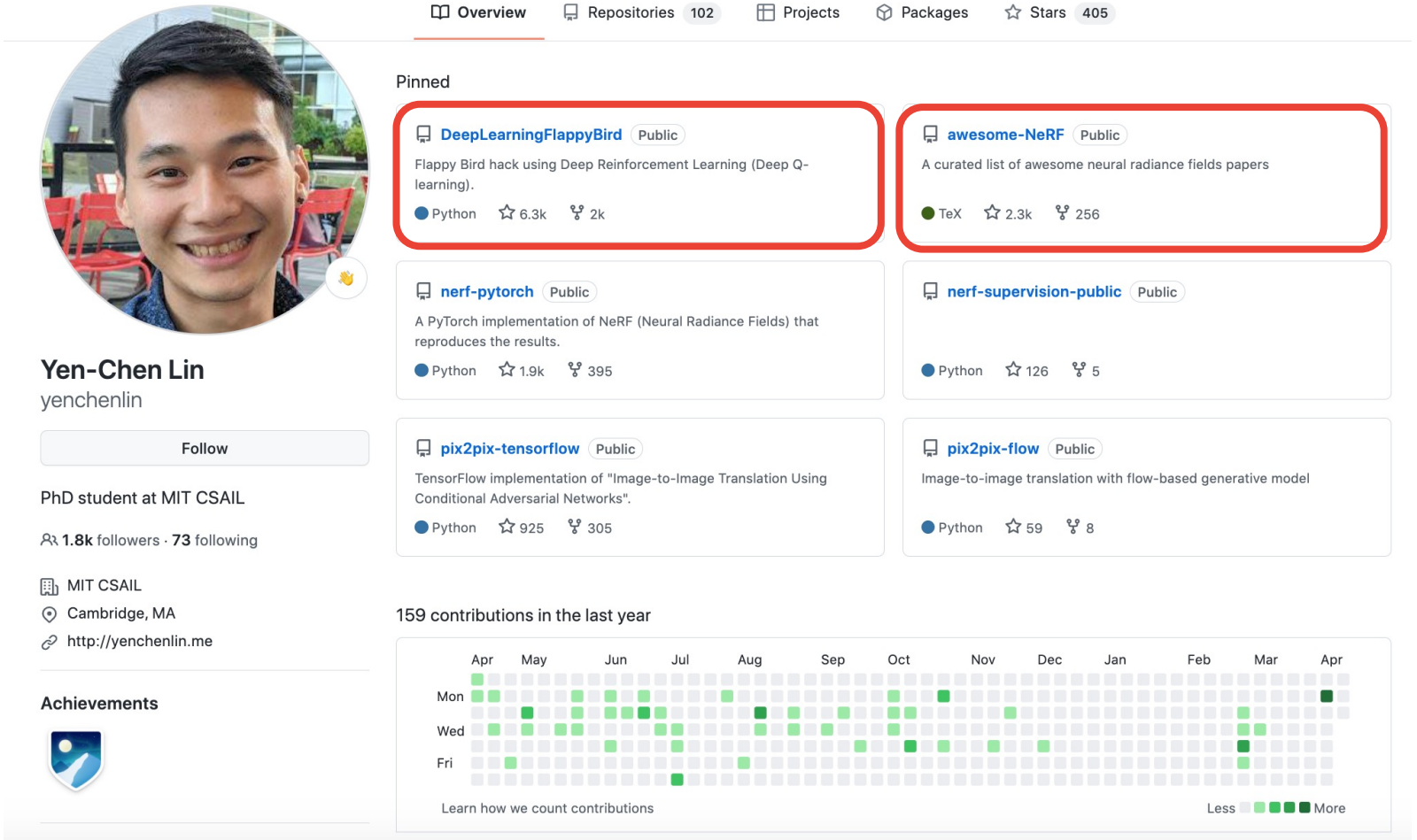
Three Milestones

- Final Project Proposal
  - Due: 4/26
  - Link
- Checkpoint Report
  - 1-page slide that summarizes your progress
  - Please prepare your slide on Google Slide and share your link on this link
  - Due: 5/24
- Final
  - A 15-min recorded presentation of your final project
  - A 2-page written report (a report template has been uploaded)
    - Online Latex editor: Overleaf
    - learning how to write a report using Latex
  - Due: 6/14

Final Project Examples

- AAAI'22 AI for Social Impact
  - https://aaai.org/Conferences/AAAI-22/aiforsocialimpactcall/
- Kaggle Competition
  - https://www.kaggle.com/competitions
- Stanford AI
  - https://github.com/stanford-cs221/sample-projects
  - https://stanford-cs221.github.io/autumn2019/2018/project-list.html
- NYCU Spring 2021 AI Final Project
  - https://docs.google.com/spreadsheets/d/1HaPaR3Emus4O6Qukdj8QRcN-SAhd43Ok_xfhe7z1f2o/edit?usp=sharing

Github Repo



https://github.com/yenchenlin

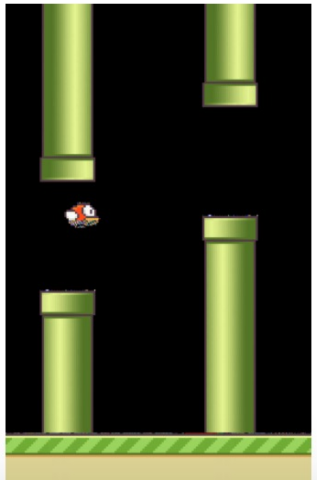
master · 3 branches · 0 tags · Go to file · Code

yenchenlin Add LICENSE — 5a08d40 on 19 May 2018 — 59 commits

assets	Initial commit	6 years ago
game	Fix deep_q_network last 4 images bug	6 years ago
images	Update network png	6 years ago
logs_bird	Initial commit	6 years ago
saved_networks	Remove redundant model	6 years ago
.gitignore	Remove *.pyc files.	6 years ago
LICENSE	Add LICENSE	4 years ago
README.md	Update README.md	6 years ago
deep_q_network.py	Update deep_q_network.py for Tensorflow 1.0	5 years ago

README.md

Using Deep Q-Network to Learn How To Play Flappy Bird



About

Flappy Bird hack using Deep Reinforcement Learning (Deep Q-learning).

game · deep-learning · deep-reinforcement-learning

Readme
MIT License
6.3k stars
287 watching
2k forks

Releases

No releases published

Packages

No packages published

Contributors 6

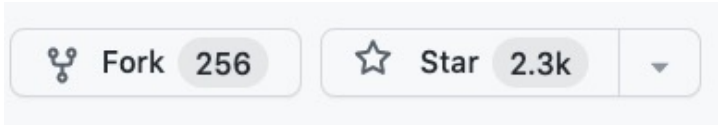
Languages

Python 100.0%

Fork 2k · Star 6.3k

"This project follows the description of the Deep Q Learning algorithm described in Playing Atari with Deep Reinforcement Learning [2] and shows that this learning algorithm can be further generalized to the notorious Flappy Bird."

https://github.com/yenchenlin/DeepLearningFlappyBird



main · 1 branch · 0 tags · Go to file · Code

yenchenlin Merge pull request #83 from krahets/volsdf ... a1f44f4 on 4 Mar · 286 commits

.github	Update pull_request_template.md	14 months ago
citations	Merge pull request #83 from krahets/volsdf	last month
.gitignore	Update gitognore	16 months ago
LICENSE	Initial commit	17 months ago
NeRF-and-Beyond.bib	update readme	2 months ago
README.md	Merge pull request #83 from krahets/volsdf	last month
how-to-PR.md	Create how-to-PR.md	13 months ago

README.md

Awesome Neural Radiance Fields

A curated list of awesome neural radiance fields papers, inspired by awesome-computer-vision.

How to submit a pull request?

Table of Contents

- Survey
- Papers
- Talks

About

A curated list of awesome neural radiance fields papers

nerf

Readme
MIT License
2.3k stars
145 watching
256 forks

Releases

No releases published

Packages

No packages published

Contributors 34

+ 23 contributors

Survey

- Neural Volume Rendering: NeRF And Beyond, Dellaert and Yen-Chen, Arxiv 2020 | blog | github | bibtex

Papers

- NeRF: Representing Scenes as Neural Radiance Fields for View Synthesis, Mildenhall et al., ECCV 2020 | github | bibtex

Faster Inference

- Neural Sparse Voxel Fields, Liu et al., NeurIPS 2020 | github | bibtex
- AutoInt: Automatic Integration for Fast Neural Volume Rendering, Lindell et al., CVPR 2021 | github | bibtex
- DeRF: Decomposed Radiance Fields, Rebain et al. Arxiv 2020 | bibtex
- DONeRF: Towards Real-Time Rendering of Compact Neural Radiance Fields using Depth Oracle Networks, Neff et al., CGF 2021 | bibtex
- FastNeRF: High-Fidelity Neural Rendering at 200FPS, Garbin et al., Arxiv 2021 | bibtex
- KiloNeRF: Speeding up Neural Radiance Fields with Thousands of Tiny MLPs , Reiser et al., Arxiv 2021 | github | bibtex
- PlenOctrees for Real-time Rendering of Neural Radiance Fields, Yu et al., Arxiv 2021 | github | bibtex
- Mixture of Volumetric Primitives for Efficient Neural Rendering, Lombardi et al., SIGGRAPH 2021 | bibtex
- Light Field Networks: Neural Scene Representations with Single-Evaluation Rendering, Sitzmann et al., Arxiv 2021 | bibtex

Faster Training

- Depth-supervised NeRF: Fewer Views and Faster Training for Free, Deng et al., Arxiv 2021 | github | bibtex
- Direct Voxel Grid Optimization: Super-fast Convergence for Radiance Fields Reconstruction, Sun et al., Arxiv 2021 | github | bibtex

Unconstrained Images

- NeRF in the Wild: Neural Radiance Fields for Unconstrained Photo Collections, Martin-Brualla et al., CVPR 2021 | bibtex
- Ha-NeRF😆: Hallucinated Neural Radiance Fields in the Wild, Chen et al., Arxiv 2021 | github | bibtex

https://github.com/yenchenlin/awesome-NeRF

Neural Radiance Field

https://www.matthewtancik.com/nerf

Open-sourced Project (CARLA)

https://youtu.be/S2VIP0qumas

carla-simulator / carla Public

Sponsor | Notifications | Fork 2.3k | Star 7.6k

Code | Issues 602 | Pull requests 29 | Discussions | Actions | Projects 1 | Security | Insights

master | 164 branches | 47 tags | Go to file | Code

MattRowe18 and bernatx add UE4 warning — 8854804 on 19 Nov 2021 — 5,439 commits

.github	Merge branch 'dev'	8 months ago
Co-Simulation	fixed bug checking safe blueprints	8 months ago
Docs	add UE4 warning	5 months ago
Examples/CppClient	Disable camera smoke test	11 months ago
Import	Fixed bugs of importing assets (#2068)	3 years ago
LibCarla	Fixes rpc error	5 months ago
PythonAPI	changing to version 0.9.13	5 months ago
Unreal/CarlaUE4	fix props not getting packaged on linux	5 months ago
Util	content version	5 months ago
.gitattributes	Remove git lfs	5 years ago
.gitignore	Raycasting (#3483)	2 years ago
.pep8	Add PythonAPI module	4 years ago
.readthedocs.yml	Fix readthedocs navigation and page order	3 years ago
.travis.yml	replace deprecated platform dist with distro linux distribution call	2 years ago
CHANGELOG.md	changing to version 0.9.13	5 months ago
CMakeLists.txt	Change cmake version from 3.9 to 3.5	3 years ago
Doxyfile	Fdomf/jenkins-wa (#1963)	3 years ago
Jenkinsfile	Fix documentation git address	6 months ago
LICENSE	Update license	4 years ago
Makefile	Replace Linux build system	4 years ago

About

Open-source simulator for autonomous driving research.

carla.org

simulator | research | ai | computer-vision | deep-learning | cross-platform | deep-reinforcement-learning | artificial-intelligence | ros | self-driving-car | ue4 | autonomous-driving | autonomous-vehicles | imitation-learning | unreal-engine-4 | carla | carla-simulator

Readme
MIT License
7.6k stars
236 watching
2.3k forks

Releases 24

CARLA 0.9.13 Latest
on 17 Nov 2021

+ 23 releases

Sponsor this project

carla-simulator CARLA

https://github.com/carla-simulator/carla

Visible Impact

- A contribution to a Github repo or a written blog that summarizes recent progress of a topic are ways to demonstrate your impact
  - https://github.com/yenchenlin
  - https://github.com/yenchenlin/awesome-NeRF
  - https://dellaert.github.io/NeRF/
- Find a topic of interest and start contributing :-)