Mark Zimmerman

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Projects:

GEORGIA INSTITUTE OF TECHNOLOGY   Aug 2021 – Dec 2023
Atlanta, GA

Object Detection on BDD100k dataset
- Implemented DINO (DETR with Improved DeNoising Anchor Boxes for End-to-End Object Detection).
- Coordinated with a team to support DINO implementation with Classification backbones (EfficientNet and ResNeSt).
- Collaborated to solve problems of training limitations (e.g. memory and compute time limitations), diagnostics (e.g. deep learning model information propagation), and performance.

OpenAIs Gym based Football Game
- Implemented the training pipeline of a Multi-agent reinforcement learning environment.
- Documented an ablation study integrating concepts of COMA (Counterfactual Multi-Agent) methods with PPO (Proximal Policy Optimization).

OpenAIs Gym based Lunar Lander
- Implemented the policy infrastructure for a reinforcement learning agent and its training pipeline.
- Analyzed hyperparameter impact for Q-learning agent with replay memory, using neural net as a Q approximator.
- Programmed efficient use of hardware including multiprocessing with CPU and committing vectorized environment, replay memory, and neural net training calculations on the GPU.

Raven Progressive Matrix Solver
- Built a Knowledge-based artificial intelligence agent.
- Evaluated techniques of computer vision, statistics, ensemble learning, and metacognition for their ability to rival human capability in pattern recognition.

Work Experience:

UNIBAIL RODAMCO WESTFIELD   Oct 2013 – Jul 2021
Los Angeles, CA

Senior Recoverable Revenue Accountant | Jan 2017 – Jul 2021
- Developed tools in excel, leveraging AI and machine learning techniques, to provide for faster, more accurate analysis, review, and calculation processes.
- Wrote documentation and hosted training to support the utilization of these 10+ tools.
- Led training for all job facets from the technical to the analytical for 50+ persons since 2017, including new team members, entire departments after reorganization, and contracted parties abroad.
- Prepared analyses and summaries for upper and executive management to inform multi-million dollar business decisions.
- Collaborated with IT to develop and test process improvements, reducing manual workloads by 100+ hours.
- Oversaw cycle work done for 40+ properties and 1,000s of abstractions of tenant agreements into JD Edwards E1 performed by junior team members.

Recoverable Revenue Accountant | May 2015 – Dec 2016
- Abstracted, and maintained, the appropriate expense recovery terms into JD Edwards E1 from dozens of tenant agreement forms (lease, amendment, easement, etc.) for 1,000s of tenants.
- Reconciled, forecasted, and budgeted recoverable revenues for 1000s of tenants.
- Supported Accounts Receivable in the resolution of 100s of tenant queries and disputes related to Recoverable Revenues via a JIRA ticketing system.
- Assisted Center Management, Regional Analyst, Regional Finance Directors, and Shared Services with requests and questions relating to Recoverable Revenues.
- Identified and implemented process improvements.

AR Specialist | Oct 2013 – May 2015
- Maintained 1000s of mall tenants' ledger's accuracy through thorough research and analysis.
- Communicated discrepancies in billings and payments received intelligibly and diplomatically.
- Collaborated interdepartmentally and with peers to achieve the above for over a thousand tenants at once.

Education:

GEORGIA INSTITUTE OF TECHNOLOGY   Atlanta, GA
- Master's in Computer Science - Machine Learning
- GPA: 4.0/4.0

EL CAMINO COLLEGE   Torrance, CA
- Attended Supplementary Computer Science and Technology classes
- Preparation for Master's program - no credential obtained
- GPA: 4.0/4.0

UNIVERSITY OF CALIFORNIA, LOS ANGELES EXTENSION   Los Angeles, CA
- Completed Certificate of Accounting
- GPA: 3.94/4.0

UNIVERSITY OF CALIFORNIA, RIVERSIDE   Riverside, CA
- Completed Bachelor of Science in Mathematics
- GPA: 2.78/4.0

Skills:

Languages: Python, C++, Java, C#

Libraries: NumPy, PyTorch, Ray.RLLib, Sklearn, MatPlotLib, Gym, Pandas, Pillow, OpenCV

Technologies: Visual Studio, VS Code, Git, Anaconda, Docker, Unity, Jupyter Notebooks, CUDA, LaTex, Inkscape, Linux, Windows, Microsoft Office

Studies:

Artificial Intelligence: Graph search, Heuristic search, Adversarial search, Bayesian Networks, Markov Chains, K-means clustering, Decision trees, Ensemble learners, Bagging, Boosting, Gaussian mixture models, Hidden Markov models

Game Artificial Intelligence: Pathfinding, Navigation mesh, Fuzzy logic, Procedural content generation, Finite state machines, Ballistic trajectory prediction

Knowledge-based Artificial Intelligence: Semantic networks, Generate and test, Means-ends analysis, Production Systems, Case-based reasoning, Representation concepts like frames or scripts, Leveraging context, constraints, and primitive concepts to contain combinatorial explosion, Classification, Diagnosis, Meta-reasoning

Reinforcement Learning: Markov decision process, Temporal difference learning, Policy/value iteration

Machine Learning: Supervised Learning (e.g. Neural Networks, Support Vector Machines, K-Nearest Neighbors), Optimizers (e.g. Random Hill Climb, Annealing, Genetic, and MIMIC), Unsupervised Learning (e.g. K-Means, Expectation Maximization), Dimensionality Reduction (e.g. Random Projection, Independent Component Analysis, Principal Component Analysis, Linear Discriminant Analysis)

Deep Learning: Regularization, Hyper-parameter Tuning, Model Topology, Convolutional Neural Networks, Addressing Data Bias, Recurrent Neural Network, Long Short-Term Memory, Attention, Transformers, Generative Adversarial Networks

Algorithms: Runtime Analysis, Dynamic Programming, Divide an Conquer, Graphs, Flow, RSA, Modular Arithmetic, Linear Programming