Nathan Wendt

ML Engineer, Data Scientist

MSE Control Systems, WSU

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About me

I am a researcher and engineer with nearly four years of experience in full-lifecycle project development. My expertise lies in explainable computer vision, particularly in few-shot learning and vision transformers.

At PNNL, I made significant contributions by challenging convention and pioneering new approaches, leading to the replacement of a baseline model in a multi-million dollar project involving over 100 employees.

During a professional hiatus, I traveled, snowboarded, and ran a pop-up kitchen, while keeping current with advancements in the field, especially generative image approaches like stable diffusion. I am now eager to advance my career and contribute to your projects with my unique blend of skills and creativity.

Skills

- Pytorch, Tensorflow, OpecCV, Pandas
- Spark, Hadoop, WandB, SKLearn
- SQL, AWS, Statistics
- Neo4j, Pytorch Geometric, Cypher
- MongoDB, Java, C++, Docker

Expertise

- Computer Vision, NLU
- Few-Shot, Transformers
- Stable Diffusion
- Parallel Training, SLURM, Linux
- Hyperparameter Optimization
- Graph Databases, SQL

Publications

2019 Nathan Wendt, Chandan Dhal, and Sandip Roy, "Contol of Network Opinion Dynamics by a Selfish Agent with Limited Visibility", 2019 IFAC LSS (Accepted).

2024 Kin NG, Nathan Wendt, Jasmine Eshun, and Emily Saldanha, "Weakly Supervised Contrastive Representation Learning To Encode Narrative Viewpoint of Tweets", 2024 ICWSM (Submitted).

Experience

7/23-present Freelance

- **Prompt Engineering (DataAnnotation)**
- Design data science prompts for LLM's and provide feedback and corrections for contrastive learning.
- **Full-stack web development (CTRL)**
- Full-stack web dev utilizing Next.js, React, HTML, CSS, and Postrgres for database management.

8/19-1/23 Researcher and Data Scientist — Pacific Northwest National Labs

- **Computer Vision Transformer:**
- Developed a transformer network with a Resnet backbone to identify and localize anomalous objects in multi-band x-ray images.
- Used Population Based Training for hyperparameter optimization.
- Used ensemble of PBT models to achieve a $\sim$12% increase in TPR at 1% FPR on a difficult, weakly supervised classification task.
- **Explainability in Computer Vision**
- Implemented Deep K-nearest neighbors (DKNN) and Testing with Concept Activation Vectors (TCAV) which cluster intermediate activations of DNN's to explain model decisions, identify biases, and improve calibration.
- **End-to-End Few-Shot Object Detection with Cross Attention**
- Proposed and implemented a new model architecture for a few-shot object detection task.
- Replaced sequential models where backpropogation was disconnected with an end-to-end solution.
- Improved mAP by 15% while also improving model interpretability.

5/18-7/19 Research Assistant — Washington State University

- Master's thesis on controlling opinion dynamics within social networks.
- PCA and MAP for anomaly detection to identify manipulative agents
- Submitted publication proving controllability bounds of network opinions
- created a novel centrality metric that outperformed PageRank in capturing node influence

6/18-8/18 OSSI Intern — NASA Ames Research Center

- Tasked with building a tool to simulate cyber-physical attacks on the SMART-NAS air traffic control simulator.
- Designed, implemented, and integrated a java based software tool for cyber-attack simulations.
- Major design focuses included modularity, extensibility, and ease of use.
- Learned an extensive API and produced results within an 8 week program.