Edgar Navarro

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Education & Awards

San Diego State University San Diego, CA
B.S. in Computer Science, Minors in Mathematics, Statistics. GPA: 3.85/4.00 *Aug. 2020 – Dec 2023*

Best Paper Award, IEEE CogMI 2023 - Ensuring Trustworthy Neural Network Training via Blockchain[1]

CAHSI Local REU Fellowship Award - Effective Topic Modeling Techniques for Domain-Specific Applications[2]

Skills

Programming Languages: Python, C++, Java, C#, SQL, JavaScript
Frameworks/Libraries: TensorFlow, PyTorch, OpenCV, Unity, NLTK, Gensim
Tools/Platforms: Git, Docker, Jira, Raspberry Pi, Arduino, AWS Services, Azure services

Professional Experience

Full Stack Engineer San Diego, CA
ClipIt Savings *May 2024 – Present*

- Developed a blockchain-based couponing system for CPGs, retailers, and clearinghouses. This system ensures transparent and immutable tracking of coupon creation, redemption, and reconciliation. Rigorous testing demonstrated the platform's resilience to fraudulent activities, ensuring coupon integrity throughout the lifecycle. This innovation significantly reduced the risk of coupon fraud and discrepancies, as evidenced by its performance in scalability, accuracy, and security experiments.

Web Developer San Diego, CA
Digital Innovation Lab, SDSU *Aug 2023 – May 2024*

- Developed and integrated a sophisticated web application feature enabling dynamic content generation based on user-specific data. Achieved this by implementing a secure LinkedIn OAuth authentication flow, and deploying RESTful APIs to fetch, analyze, and present personalized insights leveraging OpenAI's GPT model.

Blockchain Research Fellow Boise, ID
Boise State University, NSF REU *May 2023 – Aug 2023*

- Developed a blockchain-based system to enhance neural network training integrity. Conducted rigorous experiments resulting in a notable increase in model verification accuracy, with accuracy rates exceeding 80% in a system with 50% malicious nodes, ensuring Byzantine Fault Tolerance (BFT) and resistance to Sybil attacks. This system effectively reduced the risk of model manipulation and data poisoning, as evidenced by its performance in experiments I constructed testing scalability, accuracy, and robustness.

Data Science Research Fellow San Diego, CA
San Diego State University, Data Science Lab *Feb 2023 – Jun 2023*

- Developed a domain specific topic modeling pipeline, leading to a significant enhancement in model accuracy by 15% over traditional methods. Utilized tokenization, lemmatization, and stemming with Python, NLTK, and Gensim. Published findings elucidating the comparative effectiveness of various topic modeling methods.

Software Developer Intern San Diego, CA
San Diego Zoo Wildlife Alliance *Apr 2022 – Aug 2022*

- Re-designed an advanced species classification system using PyTorch, achieving an 18% increase in identification accuracy compared to previous methods. This was accomplished through the integration of convolutional neural networks for feature extraction, image segmentation for precise species isolation, and effective data pooling techniques. Additionally managed and optimized real-time camera trap data, enhancing monitoring efficiency and data reliability.

[1] Navarro,E. et al., IEEE CogMI 2023 - Ensuring Trustworthy Neural Network Training via Blockchain.
[2] Navarro, E. & Homayouni, H., KDD-UC 2023 - Effective Topic Modeling Techniques.

Projects

Smart Home Camera (Python, C++, Raspberry Pi)

- Developed a cutting-edge gesture-recognition system for smart home control, resulting in over 20+ possible control functions. Achieved this through the integration of OpenCV for advanced image processing and MQTT for seamless IoT communication, using Python and C++ on a Raspberry Pi platform.

Pestilence Game (C#, Unity)

- Engineered advanced AI algorithms for intelligent game characters in Unity, increasing the total distinct AI behaviors and interactions to 50+. Utilized sophisticated pathfinding algorithms, decision trees, and finite state machines to create intricate behavior patterns, resulting in more dynamic and responsive character interactions.

SleepBetter Sleep Aid Bot (Python, C++, AWS)

- Engineered a sleep optimization bot that dynamically adjusts bedroom conditions for optimal sleep quality. This was achieved by integrating sensor networks and automated control systems using Python, along with AWS IoT services for real-time environmental adjustments