# SUMMARY

Research Assistant with 4 years of experience in Machine Learning, and Natural Language Processing. Proficient in training LLMs, Machine Learning algorithms, and building Simulation models. Strong communication skills through professional engagements. Proven ability in programming and large-scale data analytics to derive valuable insights. Collaborative team member with a track record of successful collaboration on international research projects.

# WORK & RESEARCH EXPERIENCE

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| **Aaru, Inc** | New York City, NY |
| *AI Software Developer* | July 2024 – Present |
| • Improved the performance of multi-agent LLM systems by designing and implementing state-of-the-art algorithms in complex Agent-Based Simulation environments.  • Designed simulation environments integrating survey and historical data to model political and business scenarios, enabling the generation of actionable insights and predictive analytics.  • Conducted innovative research in machine learning and Natural Language Processing while collaborating with interdisciplinary teams to develop innovative AI-driven solutions for real-world challenges. | |
| **Virginia Modeling, Analysis, & Simulation Center (VMASC)** | Suffolk, VA |
| *Graduate Research Assistant* | Sep 2022 – Present |
| • Trained the Large Language Model (LLM) GPT-3.5's to create ABM Simulation models, by improving its ability to generate NetLogo interface and procedural code elements through few-shot prompting.  • Developed a conversational Chatbot expert in a custom domain enhancing answer fidelity by 90% by fine-tuning the LLM Llama2 7B on a dataset of 330 news articles.  • Trained and fine-tuned Machine Learning classification models (RFC, ANN, and BERT) to identify types of frustration in textual data, achieving an average accuracy of 70%.  • Designed and maintained detailed documentation of models, algorithms, and reports on GitHub repositories.  • Presented poster at a research conference in Pittsburgh, and attended others in Arlington, VA, and Oxford, OH. | |
| **Old Dominion University** | Norfolk, VA |
| *Social Media Data Analyst (Consultant)* | Jul 2021 – Jan 2022 |
| • Geolocated, filtered, and estimated the tone of 7.3 million Tweets through fine-tuning fifteen NLP models (spaCy, BERT, RoBERTa) and Statistical Analysis. Models were highly reliable, with a mean accuracy of 72%.  • Extracted, cleaned, and pre-processed 15.5 million Tweets in multiple languages with Twitter’s API and Python.  • Collaborated with teams from Norway, Colombia, Greece, and USA on a $1.4M USD Minerva research initiative. | |
| **Universidad del Norte** | Barranquilla, Colombia |
| *Social Media Data Analyst (Research Assistant)* | Nov 2020 – Jun 2021 |
| • Trained a Natural Language Understanding (NLU) model with IBM Watson to semi-automate the identification of actors, factors, and relationships from news articles, achieving a final accuracy of 70%.  • Gathered, filtered, and cleaned geo-tagged 4,680 Tweets on migration using Twitter's API and Python.  • Conducted a lexicon-based Sentiment Analysis of Tweets to spot xenophobic trends. | |

# SKILLS

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| NLP: scikit-learn, Transformers, spaCy, Hugging Face, OpenAI GPT-4 | Deep Learning: Pytorch, Keras, ANN |
| Machine Learning: Classification, Regression, Clustering, PCA, NumPy | Data Analysis: Python, Pandas, R, SQL |
| Data Visualization: Tableau, Power BI, R Shiny | DevOps: Git, GitHub, Docker |

# EDUCATION

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| **Old Dominion University** | Norfolk, VA |
| M.Sc. Modeling and Simulation Engineering - GPA: 3.7 | Aug 2022 – Dec 2024 |
| **Correlation One** | New York City, NY |
| Data Science for All (Bootcamp) | Mar 2022 – Jul 2022 |
| **Universidad del Norte** | Barranquilla, Colombia |
| B.Sc. Industrial Engineering - GPA: 3.6 | Jan 2017 – Mar 2022 |