Alejandro Rodriguez

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EDUCATION

University of Massachusetts Amherst — Amherst, MA

M.S. in Computer Science *(Data Science Specialization)* — *Aug 2022 - Dec 2023*

Current GPA: 3.5/4.0.

PhD level courses: Machine Learning, Deep Learning, Reinforcement Learning, Computer Vision, Responsible Artificial Intelligence, Advanced Algorithms, Probability and Random Processes.
Masters level courses: Systems for Data Science, Algorithms for Data Science.

University of California San Diego — La Jolla, CA

B.S. in Mathematics - Computer Science — *Aug 2019 - Jun 2022*

GPA: 3.5/4.0. Provost Honors in 2021, 2020, 2019.

RESEARCH & PROFESSIONAL EXPERIENCE

Dioscuri Capital (Private Investment Management firm) — Remote

Machine Learning Engineer Intern (Supervisor: CTO & co-founder) — *Jun 2023 - Present*

- Developed a cutting-edge few-shot semi-supervised learning (SSL) model for detecting (elusive) volatility contraction patterns in trading data over variable time scales (4-64 weeks).
- Led the implementation of this model in an advanced algorithmic investment bot, integral to a new multi-million dollar fund for key clients that the company will bring to market in 2024.
- Achieved (in backtesting) a 40% gain over benchmarks in Alpha and Sharpe ratio, due to the model's improved signal detection capabilities, even with a labeled/unlabeled ratio under 0.1.

Cleat Street (Sports Analytics startup) — Remote

Data Science Intern, Analytics Team (Supervisor: CEO & co-founder) — *Jun 2022 - Jan 2023*

- Performed algorithm design and software development of a fully-automated end-to-end data science workflow for prediction of NBA player performance, across 5 million data points per season (from 8 metrics per player, for 450+ players, over 1,400+ matches).
- Achieved 95% of milestones on time in: data modeling; development & evaluation of custom deep learning models for predictive analytics; results visualization and system deployment.
- Increased 3.0x in YoY trading volume and 1.7x in trading ROI, with a 30% reduction in trading volatility. The system has proven to be a solid foundation for the NBA bet pricing platform.

University of California San Diego, Computer Science & Engineering Department — La Jolla, CA

Undergraduate Researcher (Advisor: Prof. Rose Yu. Research area: Machine Learning) — *Sep 2020 - Jun 2022*

- Conducted research in Spatio-Temporal Multi-Resolution Tensor Learning (ST-MRTL) algorithms.
- Implemented an innovative ST-MRTL model that generates evolving and playstyle-specific shooting profiles of NBA players, reducing runtime by 50% while maintaining performance.
- Presented findings on the impact of non-spatial factors on player behavior and improvements to visual player performance profiles at the prestigious MIT Sloan Sports Analytics Conference.

AGATE: School District Program for Gifted & Talented Students — Moraga, CA

Program Student — *Sep 2017 - May 2018*

- Prototyped a deep learning generative language model for automatic generation of English poetry in the style of any given poet (author linguistic style transfer).
- Tests showed subjects couldn't tell original and generated works apart with 95% confidence.
- Won four mathematics and computer science awards at CSEF and at an ISEF-qualifying event.

PORTFOLIO

GitHub: https://github.com/alexrodpas | **HuggingFace**: https://huggingface.co/alexrodpas

Projects in: NLP, LLMs, Generative AI, Spatio-Temporal Forecasting, Time Series Classification, Semi-Supervised Learning.

VOLUNTEER SERVICE & LEADERSHIP EXPERIENCE

University of Massachusetts Amherst, Manning College of Information & Computer Sciences   Amherst, MA
Teaching Assistant: Data Analytics with Python (Prof. Matthew Rattigan)   *Sep 2023 - Present*
Hold office hours and grade assignments for a class of 50 students.

Eta Kappa Nu, University of California San Diego Chapter   La Jolla, CA
Math - Computer Science Department Chair   *Sep 2021 - Jun 2022*
Mentored 4 new inductees, organized events and served as a liaison between faculty and students.

Triton Software Engineering (University of California San Diego)   San Diego, CA
Software Developer   *Oct 2019 - Jun 2022*
Developed software applications for 3 NPOs that serve disadvantaged communities and minorities.

St. Anthony's Foundation   San Francisco, CA
Tenderloin Technology Lab Associate   *Oct 2018 - Jun 2019*
Educated 20+ residents of the Tenderloin district on technology skills for work and daily tasks.

Labdoo Balder Hub   Madrid, Spain
Founder & Director   *Oct 2014 - Jul 2016*
Founded and managed a Labdoo Hub with 10 volunteers. Improved access to education for hundreds of kids from 15 schools in 4 developing countries around the world.

HONORS & AWARDS

Eta Kappa Nu (HKN, IEEE International Honor Society) Inductee   *Jan 2021*

University of California San Diego Early Research Scholar   *May 2020*
  Selected, as a sophomore, in a cohort of only 48, to conduct research in Computer Science.

National AP Scholar with Distinction   *Jun 2019*

National Hispanic Recognition Program (NHRP) Scholar   *Aug 2018*

California Science & Engineering Fair (CSEF)   *Apr 2018*
  Finalist & Honorable Mention in Mathematics. 1st Place Award in Computer Science at a qualifying ISEF event.

Labdoo International Award   *Sep 2016*
  For "contribution helping spread education around the world". Youngest person ever to receive this award.

CERTIFICATES

Deeplearning.ai. *Natural Language Processing with Attention Models* (Coursera)   *Oct 2023*

Deeplearning.ai. *Machine Learning Engineering for Production (MLOps) Specialization* (Coursera)   *Aug 2023*

Deeplearning.ai. *Deep Learning Specialization* (Coursera)   *Dec 2018*

PUBLICATIONS

Alejandro Rodriguez Pascual, Ishan Mehta, Muhammad Khan, Frank A. Rodriz, Rose Yu, "Understanding why shooters shoot – An AI-powered engine for basketball performance profiling". 2022 MIT Sloan Sports Analytics Conference. Boston, MA. Mar 4-5, 2022. arXiv:2303.09715 [cs.LG]

Alejandro Rodriguez Pascual, "BACON - Deep-Learning Powered AI for Poetry Generation with Author Linguistic Style Transfer". 2018 CSEF. Los Angeles, CA. Apr 23-24, 2018. arXiv:2112.11483 [cs.CL]

TECHNICAL SKILLS

Advanced Math: Linear Algebra, Vector Calculus, Algorithm Analysis, Statistical Modeling, Numerical Optimization.

Programming Languages: Proficient in Python (10 years of experience), R, MATLAB, C, C#, C++, Java, JavaScript, CSS.

Machine Learning & Data Science Frameworks & Tools: Proficient in PyTorch (4 years of experience), Scikit-learn, NumPy, Pandas, matplotlib, SQL. Experience with fast.ai, Hugging Face Transformers, TensorFlow, Keras, Apache Spark.

MLOps & Infrastructure: Proficient in Jupyter Notebooks, Git & GitHub, Linux, Docker. Experience with Google GCP, Colab, Vertex AI, and TensorFlow Extended (TFX), Amazon AWS, Azure Cloud, Paperspace Gradient, Kubernetes.