

Bryant E. Avila

Phone Number: (551) 482-1080 | **Email:** kryogenica@gmail.com | **Location:** Hollywood, Los Angeles, California, USA.

LinkedIn: <https://www.linkedin.com/in/bryantavila> | **Personal website:** <https://kryogenica.github.io>

PROFESSIONAL EXPERIENCE

AI Systems Engineer | Full time | [DBE legal](#) | DTLA, CA | November 2024 – Present

- Joined a team that knew they had a problem but couldn't yet define a solution. Sat down with the firm's legal teams to understand their full workflow and key trigger points, then designed and shipped AI systems for searching massive case-file databases, tracking client matters, and monitoring defendant-level status. Managed multiple projects from start to finish.
- Created a Svelte+Django frontend interactive dashboard that is constantly being updated by LLM agents that are triggered when SQS detect file changes in the file systems used by the law firm.
- Architected a production-grade AI legal research platform with multi-agent reasoning, milvus RAG system, GPU-accelerated model serving, and user-isolated SvelteKit frontend instances.
- Built a comprehensive service mesh spanning 10+ FastAPI servers including agent orchestration, backend coordination, GPU load balancing managing 6 GPUs and cloud providers, task termination, SQL logging, and MCP tool servers.
- Orchestrated a multi-agent architecture using a custom in-house graph-based orchestration framework (conceptually similar to LangGraph), where a planning LLM delegates tasks to specialized agents (paralegal answerer, cross-document summarizer, database inspector), executing parallel tool calls via an MCP server and reducing research time from hours to minutes.

Machine Learning Engineer | Contract | [RivetAI](#) | Culver City, CA | June 2024 – August 2024

- Spearheaded an industry-first dataset by leveraging AWS and Azure large language models (LLMs) to generate and augment data from movie scripts, enabling content extraction and analysis.
- Employed advanced prompt engineering, minimizing paraphrasing by 7% and ensuring structured output in JSON format.
- Fine-tuned a custom mini-BERT NER transformer model, increasing entity recognition accuracy by 15% and setting new benchmarks for script data processing.

Data Scientist | Contract | [Kcore Analytics](#) | Remote | November 2023 – May 2024

- Designed and deployed an ETL pipeline (Databricks) to track real-time electoral campaign performance, improving outcome predictions by 10%.
- Preprocessed and aggregated 1TB+ of data using Spark and SQL, reducing data retrieval time by 20%.
- Applied geospatial analysis and sentiment classification on tweets through PyTorch, predicting voting outcomes at the county level through the training of a graph neural network (GNN).

Physics Research Assistant | Full time | [Levich Institute](#) | New York, NY | August 2019 – August 2024

- Developed a GIS-based [system](#) to predict and manage rat infestations in Manhattan, improving prediction accuracy by 15% using NYC Open Data.
- Built a [Matlab dashboard](#) used by 30+ researchers for neuron network dynamic simulations, enhancing scalability and noise testing capabilities.
- Optimized [integer linear programming](#) scripts through A/B testing based on graph theory with NetworkX and GUROBI in Python network repair by 10x less modifications and reduced memory usage.

Laboratory Manager | Full time | [Fashion Institute](#) | New York, NY | January 2018 – January 2024

- Led a team in setting up research labs, focusing on fabrics research and ensuring timely, efficient execution of experiments and demonstrations.
- Managed a \$100K annual budget, securing funds to integrate [3D printing technology](#), enhancing student learning, and increasing equipment upgrades.
- Spearheaded the development of [sustainable materials](#), collaborating with faculty on bacterial leather and mycelium projects, reducing growth times by 5 days and delivering results on time for semester reports.

Molecular Data Scientist | Full time | [Biochemistry Lab](#) | New York, NY | April 2016 – November 2017

- Advanced virus morphology research by analyzing terabyte-scale biochemical datasets using Relion and R, producing atom-resolution 3D models that contributed to the development of potential treatments.
- Innovated multi-processing [techniques](#) to integrate Protein Data Bank models with cryo-EM data, enhancing the accuracy of molecular structures and supporting breakthroughs in structural biology.

EDUCATION

- PhD (all but thesis) | Physics | The City College of New York | February 2019 - December 2024
- Master of science | Physics | CUNY Graduate Center | September 2019 - February 2022
- Bachelor of science | Physics | The City College of New York | February 2012 - February 2016

AWARD

My team and I secured a prestigious [National Science Foundation SBIR Phase I grant worth 275K](#) in 2023 for pioneering an artificial intelligence system to enhance transparency and predict trends in democratic elections through sentiment analysis and network theories.

PUBLICATIONS

- Avila B, et al. "[Symmetries and synchronization from whole-neural activity in the Caenorhabditis elegans connectome: Integration of functional and structural networks](#)." PNAS. 2025.
- Tommaso G, Avila B, et al. "[Fibration symmetry-breaking supports functional transitions in a brain network engaged in language](#)." Nature. 2024.
- Avila B, et al. "[Fibration symmetries and cluster synchronization in the Caenorhabditis elegans connectome](#)." PLOS ONE. 2024.
- Tommasone M, Avila B, et al. "[Scale-up of Dry Impregnation Processes for Porous Spherical Catalyst Particles in a Rotating Drum: Experiments and Simulations](#)." Granular Matter - Springer. 2023
- Khayat R, Avila B, et al. "[Cryo-electron microscopy structure of the 70S ribosome from Enterococcus faecalis](#)." Nature. 2020.
- Khayat R, Avila B, et al. "[Porcine circovirus 2 uses a multitude of weak binding sites to interact with heparan sulfate, and the interactions do not follow the symmetry of the capsid](#)." Journal of Virology. 2019.