RYAN KNOBEL

956-960-5263 | r.knobel27@gmail.com | rknobel.com | linkedin | github

SUMMARY

Self-driven learning enthusiast with over 5 years of collaborative and technical writing experience.

EDUCATION

University of Texas Rio Grande Valley
Bachelors of Computer Science, Minor in Applied Statistics   *GPA: 4.0*

University of Texas Rio Grande Valley
Masters of Computer Science   *GPA: 4.0*

PROJECTS

My Portfolio   **Web Application**
NextJS, TypeScript, React, Framer, PyTorch, PixiJS/WebGL, WASM

- Designed and implemented custom RL environments, trained a DDQN agent in PyTorch and exported policy to ONNX
- Maintains responsive interaction (**< 50ms input latency**) while running real-time AI inference via onnxruntime-web
- **< 1 second** Largest Contentful Paint through optimized asset loading
- Procedural background generated using fractal Brownian motion (FBM) and rendered via WebGL using PixiJS
- Full project completed in **2 weeks**

Learning Music through Machine Learning   **Solo GenAI Project**
Pytorch, Cuda, PrettyMidi, NumPy, Keras

- Trained and fine-tuned an LSTM-based Generator with hinge loss and a PatchGAN-style discriminator
- Represent MAESTRO data as multi-channel piano-rolls with overlapping samples
- Automated check-pointing and periodic sample generation to ensure training stability over long runs

Anime Recommendation System   **Hackathon 2022 - 2nd place**
PyTorch, Pandas, NumPy

- Designed and implemented a personalized recommendation system in **under 24 hours** using an RNN model
- Preprocessed over **11 GB** of raw data using Pandas
- Achieved **over 70%** next-watch prediction accuracy on a held-out validation split

Fractal Simulator   **Solo Research Project**

- **Solo** project developed with python completed under a **5 month** time constraint with no supervision or direction
- Implementation of a simple, user friendly GUI through tkinter with no prior experience

EXPERIENCE

UTRGV
Teaching Assistant   *Jan 2022 - Dec 2023*

- Proficiently analyzed and debugged **1500+ files** across **15 weeks** to catch and correct syntactical errors
- Learned React and Express in **under 2 weeks** to administer guidance for **50+** students

Algorithmic Self-Assembly Research Group
Research Assistant   *May 2022 - Dec 2025*

- Directed weekly seminars for **30+** students across **5+** fields of study
- Organized annual Hackathons including set-up, posing problems, and participation

SKILLS

Programming Languages: Python, C++, HTML/CSS, JavaScript, TypeScript, Java, Ruby, Rust, SQL
Frameworks: PyTorch, TensorFlow, Scikit-learn, Keras, Pandas, NextJS, React, Express, Tailwind CSS, Bootstrap, Ruby on Rails
Software: Anaconda, Jupyter Notebook, Google Colab, Jira, Miro, Microsoft Word, Excel, PowerPoint, Overleaf
Languages: English: fluent, Spanish: conversational

RELEVANT COURSES

Reinforced Learning	Deep Learning	Mathematical Statistics	Technical Communications
Advanced Data Structures and Algorithms	Advanced Operating Systems	Web Development	Data Mining

AWARDS

Presidents List (2020-2023): Maintain a GPA of 4.0 or higher while being enrolled in at least 12 credit hours
Best Graduate Poster Award (2023, 2024): Awarded to the best poster showcasing innovative and creative thinking. Recipients participated in a 1 hour poster presentation showcasing the research to a vast audience with different ages and fields of study
Hackathon 2023 (5th out of 70 students): Located 2 identical motifs in time series data with over 1 billion data points.
Hackathon 2024 (3rd out of 100 students): Solved a theoretical problem related to an extension of Chemical Reaction Networks.