Juan D. Pinto

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Experience

Google.org + AI Institutes Virtual Organization — Remote
[Upcoming] Google.org AI4Ed Research Fellow — *[Upcoming] May 2025 – Aug 2025*
- Will engage in collaborative projects across NSF AI in Education Institutes

NSF AI Institute for Inclusive Intelligent Technologies for Education (INVITE) — Urbana, IL
Learner Modeling Graduate Research Assistant — *Aug 2023 – Present*
- Developed predictive models of student skills and behaviors for real-time adaptive learning
- Led data cleaning and analysis on datasets with tens- to hundreds-of-thousands of student actions

Human-Centered Educational Data Science Lab (HEDS) — Urbana, IL
Graduate Research Assistant — *Sept 2020 – Present*
- Developed predictive and inferential models of student behaviors, emphasizing explainable AI
- Investigated CS students' coding patterns using epistemic network analysis, LLMs, and various ML approaches
- Contributed to 13 peer-reviewed publications (6 as lead author) in venues related to *educational data mining*

ETS Research Institute — Princeton, NJ
Ida Lawrence Research Intern — *June 2024 – July 2024*
- Developed small heuristic classification models (for ensembling) that detect student reading disengagement
- Validated models indirectly (unlabeled data) using response accuracy, on-task behavior, and book preferences

Projects

Interpretable Neural Network for Learner Behavior Detection | *Python, PyTorch*
- Developed a convolutional neural network for detecting rare gaming-the-system behavior among learners
- Emphasized interpretable-by-design approach via custom loss function and novel thresholding mechanism
- Demonstrated that the model provides fully faithful explanations utilizing 100% of its inference-time parameters
- Achieved 90% explanation intelligibility among human users

Evaluating LLMs for Debugging Strategy Classification | *Python, Scikit-learn*
- Developed pipeline for systematic LLM prompting across different dimensions, such as *chain-of-thought*, *zero-* vs. *few-shot*, *single-* vs. *multi-label*, *reasoning*, and *fine-tuned*
- Trained+tuned various ML models to compare against LLM results for classifying students' debugging strategies
- Improved annotation efficiency and minority class detection in student code

Weight-Based Modeling for Student Performance Prediction | *Python, Scikit-learn, PyTorch, TensorFlow*
- Engineered complex weighted features to predict student performance on future coding problems
- Showed that *source code* and *struggling pattern* similarity, along with *problem order*, improved prediction accuracy
- Demonstrated that logistic regression with weighting schemes matched SOTA model performance
- Won 2nd place in the 2022 Educational Data Mining in CS Data Challenge

Modeling Student Performance Using Measures of Persistence | *Python, Scikit-learn*
- Tested multiple linear, tree-based, and ensemble models to predict student quiz performance using homework data
- Conducted careful feature engineering based on previously studied elements of student persistence
- Analyzed the role of features and their interactions in-depth using SHAP values from random forest model

Education

University of Illinois Urbana-Champaign — Urbana, IL
Ph.D. in Educational Data Science — *Aug 2025*

University of Michigan — Ann Arbor, MI
M.A. in Design and Technologies for Learning — *July 2020*

Brigham Young University — Provo, UT
B.A. in Ancient Near Eastern Studies — *May 2016*

Skills

Data Analysis & Visualization: Python (NumPy, Pandas, Matplotlib, Seaborn), R, SQL
Machine Learning & AI: Scikit-learn, PyTorch, Tensorflow, Keras