

# Ryan T. Gordon, Ph.D.

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Software Engineering Portfolio Website Link: <https://ryan-gordon-314159.github.io/>

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Versatile software engineer with nearly 9 years of experience building innovative solutions for the Artificial Intelligence and Quantum Computing Programs at IBM Research

## Work Experience

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***Software Engineer (Research Staff Member), IBM Artificial Intelligence Program,  
T. J. Watson Research Center, Yorktown Heights, NY (September 2023-March 2025)***

- **Made Pipelines on Distributed Cluster for AI Model Training** - Created, used, and maintained Python data processing pipelines for preparing data to train AI models; performing tokenization, depuplication, hate-abuse-profanity removal. Critical for making IBM's Granite 3.0 and Bamba
- **Constructed Super-Pipelines** - Constructed super-pipelines for stitching together multiple stages of data processing, adding verification pipeline checkpoints after each stage to check that all data has been correctly processed
- **Built Generative AI SDK** - Made Python SDK to interact with IBM's internal retrieval augmented generation (RAG) system for doing multiple iterations of fine-tuning of LLMs utilizing user-supplied data.
- **Evaluated Tokenizers** - Tested multiple tokenizers available on Hugging Face to compare corresponding model performance using ablation experiments
- **Contributed to building IBM Product for AI Model Data Preparation** - Direct product development experience writing and testing code for data-prep-kit (<https://github.com/data-prep-kit>), a toolkit for AI researchers working to prepare data for LLMs

***Software Engineer/Physicist (Research Staff Member), IBM Quantum Computing Program,  
TJ Watson Research Center, Yorktown Heights, NY (August 2016-September 2023)***

- **Project Manager: Studying Two-Qubit Gate Fidelity vs Repetition Rate in Multi-Qubit Processors** - Wrote Python software for running quantum circuits, collecting two-qubit fidelity data, and analyzing it to produce clear figures explaining these results
- **Project Manager: Environmental Impact on Qubit Coherence** - Carefully study looking at how environmental factors can influence qubit performance. Learning from this project produced a qubit packaging where the highest  $T_1$  time ever measured was recorded for a transmon qubit. See: <https://x.com/jaygambetta/status/1395347923123245056>
- **Developing Python Automation for Single Qubit Calibration and Characterization** - Software developer/test physicist as part of a cross-functional team to improve qubit coherence. Created software for automating qubit characterization and calibration

## Skills

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Languages:	Python, Java, C++, SQL, HTML
Machine Learning:	NLPs, LLMs, Model Training, Fine Tuning, Generative AI, PyTorch, HuggingFace
Experience:	Distributed Computing, Data Processing Pipelines, Data Engineering, Ray, Spark, Lakehouse, Cloud Computing (AWS, IBM), Data Analysis, Visualization Tools, Automation, Debugging, Software Test Engineering, Kubernetes, Docker, Git, GitHub, CI/CD, Data Structures, Algorithms, Linting, and many more

## Education

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- **Ph.D., Physics, Iowa State University** (May 2011)
- **B.S., Double Major in Physics and Mathematics, Western Illinois University** (May 2005)