Landon Holcomb

(512) 653-5482 | landonholcomb@gmail.com | landonholcomb.com
linkedin.com/in/landonholcomb | github.com/LandonHolcomb | Clemson, SC, USA

Research Focus

Ph.D. student in Computer Science with an M.S. in Physics, focused on quantum computing and advancing **quantum machine learning (QML)** and **quantum natural language processing (QNLP)**. My work explores quantum kernel methods, variational models, and hybrid quantum–classical learning frameworks. Beyond questions of performance or scalability, I am particularly interested in what QML can reveal about the nature of learning and representation itself, how quantum structure may expose patterns or principles that are hidden to classical models.

Education

- **Clemson University** — *2025 – Present*
  Ph.D., Computer Science (in progress) — Clemson, SC
- **Clemson University** — *May 2025*
  M.S., Physics — Clemson, SC
- **Texas A&M University** — *Dec 2022*
  B.S., Physics — College Station, TX

Research & Work Experience

- **Graduate Research Assistant — Computer Science Department** — *2025 – Present*
  Quantum Machine Learning & Natural Language Processing — Clemson University
  - Developing quantum-inspired methods for text representation and classification.
  - Investigating quantum feature maps and kernel-based frameworks for structured data.
  - Exploring simulation and benchmarking approaches to evaluate hybrid learning models.
  - Focused on reproducibility, interpretability, and comparative hybrid–classical performance.
- **Competitive Projects — Quantum Hackathons** — *2024 – 2025*
  Hybrid Algorithms & Applications — Various
  - **Tornado Intensity Prediction:** Built hybrid pipelines comparing classical models with quantum feature maps; quantum kernels improved class separability on meteorological data.
  - **Spectral-Gap Estimation:** Implemented a hybrid workflow in PennyLane; validated on molecular instances for spectral gap estimation over multiple bond lengths.
- **Graduate Research Assistant — Single Molecule Biophysics Lab** — *2024 – 2025*
  Computational Biophysics — Clemson University
  - Developed Python tools for single-molecule fluorescence analysis; integrated simulations with experiments for FRET-based measurements.
- **Research Assistant — Astrophysics** — *2021 – 2022*
  Stellar Dynamics & Instrumentation — Texas A&M University
  - Supported design, construction, and observational deployment of an astronomical spectrograph at McDonald Observatory.
  - Assisted in data acquisition and calibration for stellar dynamics studies, exploring dark matter in globular clusters.

Teaching

- **Graduate Teaching Assistant — Physics/Astronomy Labs** — *2024 – 2025*
  Undergraduate Instruction — Clemson University
  - Lead lab sessions and supported students in experimental setup, analysis, and reporting.

Publications & Contributions

While at Texas A&M University, contributed to multiple astrophysical instrumentation efforts resulting in peer-reviewed publications. Contributions included the **mechanical design, integration, and field deployment** of spectrographic instruments used for stellar spectroscopy at McDonald Observatory. These projects fostered experience in collaborative, data-intensive experimental research.

Skills

- **Quantum & ML:** QML, QNLP, quantum kernels/feature maps, variational circuits, benchmarking & methodology
- **Frameworks:** PennyLane, Qiskit
- **Programming:** Python, CUDA, Git, Jupyter, LaTeX
- **Data/Methods:** Statistical modeling, experiment design, reproducibility, visualization