Michael Menezes

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Education

- **Rice University** — Houston, TX
  Dual Degree; GPA: 3.90 — *Aug 2022 – May 2026*
  Bachelor of Science in Computer Science
  Bachelor of Arts in Mathematics
- **Course Work**
  (Fall 2024) Concurrent Program Design, Probabilistic Algorithms and Data Structures, Integration Theory
  (Completed) Machine Learning on Graphs, Computer Systems, Real Analysis, Reasoning about Algorithms, Introduction to Program Design, Probability and Statistics, Abstract Algebra, Algorithmic Thinking, Fundamentals of Computer Engineering, Honors Calculus III/IV, Honors Linear Algebra

Experience

- **OptimaLab** — Houston, TX
  Undergraduate Researcher — *Jan 2023 - Present*
  - **Transformer Independent Subnetwork Training**: Applied IST techniques to efficiently train transformer architectures in a distributed scenario. Used PyTorch with NCCL to implement the systems-level communication scheme to transmit the subnetworks.
  - **Machine Unlearning**: Competed in the NeurIPS 2023 Machine Unlearning Challenge co-hosted by Google. Surveyed and implemented cutting-edge techniques such as SCRUB (a distillation-based unlearning technique) and metrics like MIA accuracy. Incorporated noise injection to accelerate fine-tuning and improve generalization. Pandas, Plotly, and Scipy employed in data analysis.
- **Texas Torque Robotics** — The Woodlands, TX
  Student Engineer — *Aug 2018 - Aug 2022*
  - **Programmer**: Implemented PID controllers and model-based control systems to integrate sensors like IMUs, cameras, and encoders with manipulators like pneumatics and motors to form drivetrains, elevators, and arms using OpenCV in Python and WPILib in Java.
  - **CAD Lead**: Created custom optimizers combining Java, Excel, and VBA to design robotic subsystems in Solidworks for informed decisions and reduced prototyping costs.

Projects

- **Oil Production Prediction**: Project for Rice Datathon 2024; won 1st overall. Performed feature engineering and data wrangling to transform oil production data into a more informative format. Trained and tuned deep neural networks, gradient-boosted trees, and random forests. Created user-friendly graphics for easy interpretation of results.
- **Promoting Breast Cancer Equity Across States**: Project for Rice Datathon 2023; won best visualization prize. Utilized Pandas and NumPy to clean data, compute summary statistics, and find the expected annual number of women that would develop breast cancer in each state. Determined which states most needed more mammography facilities with linear regression, and visualized findings in choropleth heat maps using Matplotlib and Folium.
- **Intubation Chamber**: Patent pending; using SolidWorks, designed medical device that acts as a mechanical barrier while also creating a negative pressure zone around intubated patient. The polycarbonate chamber was manufactured for and used at the Conroe Regional Medical Center to protect healthcare workers during the COVID-19 pandemic.

Programming Skills

- **Languages**: Python, Java, C, R, Latex
- **Developer Tools**: Git, Liveshare, Eclipse, VSCode, IntelliJ
- **Libraries**: PyTorch, NumPy, Matplotlib, Pandas, OpenCV, Java Standard Library

Additional Information

- **Awards**: Louis J. Walsh Merit Scholarship in Engineering (AY 24-25), Dean's List (FA 22, SP 23)
- **Activities**: International Collegiate Programming Contest, Rock Climbing, Calisthenics
- **Patent Pending**: Intubation Chamber Application Number: 16/859,343