

# JUAN ANTONIO ROBLEDO LARA

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## Education

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### Georgia Institute of Technology

*M.S. in Computer Science (Specialization in Machine Learning)*

Aug 2022 – May 2024

Atlanta, GA

### Tecnologico de Monterrey

*B.S. in Mechatronics Engineering*

Aug 2016 – Jun 2021

San Luis Potosi, Mexico

## Relevant Coursework

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- Machine Learning (CS 7641)
- Deep Learning (CS 7643)
- Computer Vision (CS 6476)
- Artificial Intelligence (CS 6601)
- Data Analytics (CSE 6242)
- Algorithms (CSE 6140)

## Experience

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### IPICyT

*Research Engineer*

Aug 2021 – Jul 2022

San Luis Potosi, Mexico

- Developed an ETL pipeline in Python to collect, process, and store air quality data from sensors in a database.
- Implemented data preprocessing techniques using Pandas to clean and transform raw sensor data for analysis.
- Visualized time series data using Matplotlib to analyze trends in CO2 levels, enhancing data-driven decision-making.
- Performed regression analysis to calibrate sensors and validate the accuracy of measurements against commercial air quality monitors, achieving a correlation coefficient ( $R^2$ ) above 0.9.
- Automated data acquisition to reduce manual effort, significantly accelerating the analysis workflow.

### Brigham and Women's Hospital

*Research Trainee under Prof. Yu Shrike Zhang*

Jun 2019 – Jan 2020

Boston, MA

- Developed a 3D printer capable of printing small constructs made of biomaterials for tissue engineering applications.
- Created paper-based devices for in vitro tissue modeling, utilizing extrusion-based hydrogel bioprinting techniques.
- Conducted original research that led to publications in renowned academic journals.

### BMW Group / PEM Motion

*Logistics Trainee - Floor Walker Program*

Jan 2019 – Jun 2019

San Luis Potosi, Mexico

- Monitored stuck material orders using SAP to ensure timely delivery of car parts to the assembly line.
- Analyzed historical material delivery data with SAP and Excel to identify part numbers prone to delays and underlying process issues causing order disruptions.

## Technical Skills

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**Programming Languages:** Python (Advanced), SQL (Intermediate), JavaScript (Basic)

**Frameworks & Tools:** Pandas, Scikit-Learn, PyTorch, NumPy, SciPy, Matplotlib, Seaborn, Git, Linux.

## Projects

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### Songs Mood Prediction

*Georgia Institute of Technology - Data Analytics (CSE 6242)*

- Developed a machine learning pipeline to predict the mood of a song based on its audio features.
- Trained a Random Forest model, achieving an accuracy and F1 score of 0.964.
- **Technical Skills:** Python, Scikit-Learn, Pandas, NumPy, Matplotlib, Seaborn.

### Simulated Annealing Algorithm to Solve the Knapsack Problem

*Georgia Institute of Technology - Algorithms (CSE 6140)*

- Developed a custom simulated annealing algorithm to efficiently solve the 0/1 knapsack problem.
- Achieved a relative error below 4% for both small and large instances, with an average runtime of 7 seconds.
- **Technical Skills:** Python, Pandas, NumPy, Matplotlib, Algorithm Design.

### Diabetes Prediction

*Georgia Institute of Technology - Machine Learning (CS 7641)*

- Developed a machine learning pipeline to predict if a woman has diabetes based on medical data.
- Trained a Random Forest model, achieving an accuracy of 0.8 and an F1 score of 0.71.
- **Technical Skills:** Python, Scikit-Learn, Pandas, NumPy, Matplotlib, Seaborn.

### Robot Assistant to Find Misplaced Objects

*Georgia Institute of Technology - Robotic Caregivers (BMED 8813)*

- Developed software for a robot assistant to localize misplaced objects in homes using ROS and Python.
- Integrated navigation, manipulation, speech recognition, and perception capabilities into a mobile manipulator robot.
- **Technical Skills:** Software Development, Python, ROS, Linux.