

# Anthony Marinov

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## EXPERIENCE

### MiTek | R&D Engineer Intern

June 2024 - Sept 2024

- Developed an new AI generative design program using Python, XGBoost, and Tensorflow along with a cost and time estimation tool in Excel for optimized lateral system design in wood light-frame construction
- Led the R&D team in the creation of a new design philosophy for MiTek's lateral solutions, validated through testing in the new program, capable of decreasing construction time by up to 20% with negligible cost increase
- Assembled a file package with detailed documentation for internal company distribution and hosted a tutorial presentation outlining the details, usage, and further development possibilities for the program and Excel tool

### Alpha MM Inc. | Software Engineer

June 2023 - Sept 2023

- Created a machine learning pricing and expense model using Tensorflow in Python for more efficient client quoting and accurate project expense estimates, increasing project margins by 7% on average
- Developed a Python program to handle project scheduling, match sub-contractors to projects, and generate client invoices and necessary project agreement documents

## EDUCATION

**BS, Structural Engineering** | University of California, San Diego | **GPA: 3.857 / 4.000**

June 2025

**MS, Structural Engineering/Computer Science** | University of California, San Diego | **GPA: In Progress**

June 2026

## SKILLS

### Computer Science

**Languages:** Java, Python, C, SQL, MATLAB, HTML/CSS, VBA

**Tech:** Machine Learning/AI, Data Structures, Object Oriented Programming, Git

**Libraries:** Keras/Tensorflow, XGBoost, PyTorch, Sklearn, Pandas, Matplotlib, Seaborn, Xlwings, SMOTEENN

### Engineering

**Programs:** Solidworks, LabVIEW, SAP 2000, RISA, Abaqus, AutoCAD, Revit, MS Office

**Tech:** Sensors, Data Acquisition, Signal Processing, Spectral Analysis, Structural Health Monitoring

**Design/Analysis:** Finite Element Analysis, Product Design, Composites, Steel, Reinforced Concrete, Timber

## PROJECTS

### Generative Pretrained Transformer (GPT) | (Python, PyTorch)

[github-link](#)

- Developed a custom implementation of the Transformer architecture, drawing on the GPT-2 framework and the "Attention is All You Need" paper, to create a text generation model that emulates Shakespeare
- Constructed the model from scratch using PyTorch, manually implementing multi-head self-attention, positional encoding, and layer normalization to support long-range context, as well as residual connections and dropout to improve model training and reduce overfitting

### Soil-Water Retention ML Model | (Python, Keras/Tensorflow, Sklearn, Matplotlib)

[class project, can't share](#)

- Created a non-isothermal soil-water retention model in a geotechnical engineering context using multiple machine learning approaches (ridge regression, KNN, RNN w/ custom loss functions)
- Optimized the models using cross validation to predict soil saturation given matric suction under any user specified temperature, unlike traditional isothermal models

### Design-Build Competition | (Solidworks, AutoCAD)

[github-link](#)

- Designed and built an extending arm mechanism that delivers a ball to suspended scoring platforms, utilizing 3D printing, laser cutting, 3D CAD design, AutoCAD, and servomotors
- Placed 1<sup>st</sup> out of 46 teams: only team to use a unique mechanism type, surpassing 2<sup>nd</sup> place by 73%