# Armin Foroughi

arforoug@ucsd.edu | (818)620-9895 | LinkedIn: linkedin.com/in/arminforoughi | Github: github.com/arminforoughi

## Education

**University of Virginia, charlottesville** — charlottesville, VA
*Masters of Data Science* — *September 2022 - June 2024*

**University of California, San Diego** — San Diego, CA
*Bachelors of Science in Biochemistry with specialization in Data Science* — *September 2018 - June 2021*

**Relevant Coursework**:
computational concepts (recursion, OOP), data structures (arrays, linked lists, stacks, queues, priority queues, heaps, binary trees, and hash tables), machine learning (Bayesian Decision Theory, SVMs, linear and Nonlinear Optimization, Deep Learning (CNNs, RNNs)), graph theory, probability, abstract data types, interfaces, algorithms and complexity, Spectrometry(NMR, IR, Mass Spec), Quantum Mechanics.

## Skills

- **Languages**: Python, Java, SQL, R, C++, Bash, Git, Octave
- **Cloud Computing**: AWS, SSH
- **Computational & Visualization Libraries**: Numpy, Pandas, Sklearn, TensorFlow, PyTorch, Scipy, Seaborn, OpenCV

## Work Experience

**University of California San Diego** — San Diego, CA
*Machine Learning Researcher* — *September 2021 - present*

- **Responsibilities**: Using TensorFlow Keras sequential modeling and imputing about half a billion data point in mini batches using gradient tape. Making lost figures to identify bias and variance. write regulators to prevent over fitting. Employ Sklearn grid search to find best parameters. Improved the binary accuracy from 75 to 90 percent. run my algorithm in the schools supercomputer through ssh cloud computing. I mainly work with .Star and .MRC format files developed from a Cryogenic electron microscopy.
- **Writing algorithm for MRC files**: MRCs are a grayscale picture representation of a single protein. I wrote an algorithm that reads the MRCs as a 2D array then it rotates and translates each MRC and uses in place comparison to another MRC to find its closest MRC match. This creates an ordered single line of all MRCs that will be used to construct a 3D model of the protein.
- **Writing algorithm for Star files**: Star files are data frames of particles and their features that go into each MRC. I'm working on an algorithm that uses a three layer neural network to identify the best particles that go in each MRC and the bad particles that should not be used. A good particle is when it stays with one MRC and a bad one alters between MRCs. The algorithm looks at each iteration that CryoEm runs to form an MRC, and uses sigmoid activation function for binary classification to Identify good versus bad particles.

**CoderSchool** — Pleasanton, CA
*Programing Coach* — *July 2021 – Present*

- **Responsibilities**: Teach Python to middle school and high school students. Mostly teach basic fundamentals of python, data structure, and open-cv. Part time online while I'm working in the laboratory in UCSD

**University of California San Diego School of Pharmacy** — San Diego, CA
*Student intern* — *January 2019 - January 2020*

- **Data analysis Internship**: To research unknown adverse of effects of drugs using the FAERS (FDA Adverse Event Reporting System) data base, and find any new and crucial side effects of drugs by writing filter functions on Linux to search for a unique scenario of drug usage. **Analysing MDMA related deaths**: There were nearly 50 deaths with MDMA usage, but after extensive research, we found out that less than 5 were directly related to MDMA.

**UCSF Urology** — San Francisco, CA
*Data Analysis Intern* — *July 2019 – September 2019*

- **Responsibilities**: Creating an Atlas of PSMA uptake for post -Proctectomy Patients. Contouring lesions or lymphadenitis in PET, MRI or CT scans by using MIM platform, to analyze the most common places lesions can develop after a post -Proctectomy surgery.

**Natera Inc** — San Carlos, CA
*Clinical Data Operator* — *July 2019 – September 2019*

- **Responsibilities**: Create new orders on Laboratory Inventory Management System and perform necessary checks to ensure proper accessioning. Accession samples with high accuracy and efficiency.

**UCSF bioengineering Department of Surgery** — San Francisco, CA
*Intern* — *July 2018 – September 2018*

- **Responsibilities**: Assist on building a surgical endoscopy with three degrees of freedom. Specified in improving lifting force and strength of materials. Designing knuckles with AutoCAD and 3D printing them.

## Data Science & Machine Learning Projects

- **Facial Recognition of over** 200 **Faces Using Deep CNN(Trained on GPU)**:
  - Designed and trained from scratch an 8 layer Deep CNN architecture in Tensorflow with top 5 classification accuracy average of 96.3%
  - Resolved class imbalance problem in the dataset by using Stratified K-fold and resampling of the training batches, and weighted loss
  - Implemented Adam Optimizer and Xavier Weight Initialization for faster convergence
  - Employed BatchNormalization and Pooling to speed up training
- **Titanic Survive vs prediction**:
  - Predicting the survival of titanic passengers from training data on Kaggle, using multiple features and engineering new features.
  - Using pipelines to standardize, categorize, and engineer new features from the names column.
  - create a neural network from scatch and a NN grid search function to find the best NN layers.
- **Correlation of Political Party on U.S. stock market**:
  - To determine if the political party of the United States president has any significant effect on the U.S. stock market
  - analyzed the data of three stock market indexes and their stock prices over the length of different presidential terms.
  - observed that during Democratic presidential terms, there is significantly more growth in stock prices than during Republican presidential terms. However, despite the analysis, I calculated a p-value of 0.0557 with a t-test and concluded that because I could not reject the null hypothesis, the political party of the U.S. president does not have a significant effect on U.S. stock market prices.
- **Online Shopping Store on JAVA** :
  - Build the backend of an online Shopping Store on JAVA
  - Use linked lists, stacks, and queues, to build shopping carts for costumers, keep track of goods in the store, and preform transactions
- **Trade Learning Algorithm** :
  - Write trading bots using the DCA Grid strategy, run on AWS. Write algorithms to calculate indicators such as MACD and RSI. Write an algorithm to develop an n-gram model of the stock market's percent change, then use a binary neural networks to predict ups and downs.

## Licenses and Certificates

- **Deep Learning Specialization**:
  Issuing Company : deeplearning.ai (4 Certificates)
  Neural Networks and Deep Learning
  Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization
  Structuring Machine Learning Projects
  Convolutional Neural Networks
- **Machine Learning**:
  Issuing Company : deeplearning.ai

## Volunteer and Community involvement

**Kaiser Permanente** San Francisco, CA
*over 150 volunteer hours* *July 2016 – September 2018*

- **Responsibilities**: Stock inventories in the emergency department, comforting patients and their families. Familiar with hospital equipment's. Helping patients at the front desk with directions and room numbers.

**DVC Persian Club** Pleasant Hill, CA
*Club President* *July 2017 – September 2018*

- **Responsibilities**: Leadership and organizing skills. Advertising and fund raising for events. Set up an event to celebrate Iranian new year, Nowruz, for 300 guests in fall 2017.

## Extracurricular activities and Hobbies

playing piano(mostly classical music), Painting and drawing portraits in realism and surrealism movements, sailing