

# Devi Prasad Tripathy

San Jose, CA (open to relocation)

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**Career Objective:** To collaborate with passionate and hard working people to build smart products and provide valuable insights from incoming data streams utilizing cutting-edge Machine Learning techniques

## Industry Experience

### Senior Platform Engineer, Machine Learning

*Alectio*

BACKEND, INFRASTRUCTURE, DEVOPS, ML OPS, SOFTWARE ENGINEERING

*July. 2020 - Present*

- Built Alectio's infrastructure on **Kubernetes** with **OpenShift, Kops, Terraform, Nginx-Ingress, Kubeflow, AWS Cloudfront, AWS VPC, Cloud Trail, and Airflow**.
- Re-designed and implemented Alectio's backend in **Golang** and migrated **Dynamodb** database to **Cassandra**. Created Dev environment setup using VSCode Dev container, used goSwagger to manage and automate lots of code management.
- Redesigned Alectio's Client python SDK to work with **GraphQL** and use **GRPC** for an end to end communication with Alectio's server
- Build hosted Auto Active learning stack with ephemeral compute instances using **Kubernetes**. Handled provisioning, deletion, data retrieval, deployment monitoring for the training instance by writing **infrastructure as code** backend to interact with various infrastructure resources
- Built Auto labeling stack and deployed using **KubeFlow (Tensorflow extended)**
- Built the ETL stack for run analysis on high volume streaming data using **Spark and Hadoop**
- Built stack for internal instrumentation using **Grafana, Python Flask, and Postgres SQL**
- Built CI/CD pipeline using **Jenkins** and Gitlab to automate testing of APIs, log changes to Confluence and Receive errors messages

**Main Tech Stack:** Python, Python-Flask, Golang, Golang-Echo, Redis, Cassandra, DynamoDB, Spark, Hadoop, Swagger, Kubernetes, Openshift, Kops, Terraform, Kubeflow, Airflow, GRPC, OAuth, GraphQL, AWS Cloudfront, AWS VPC

### Software Engineer, Machine Learning

*Third Insight Inc.*

PROBABILISTIC GRAPH GUIDED ARTIFICIAL REASONING SYSTEM

*Aug. 2019 - Feb 2020*

- Developed a **full-stack system** for **360 degree scene understanding**. Implemented real-time multi **fisheye camera stitching** using **CUDA and C++**, established a **deep learning pipeline** to process the video using **Python (Pytorch, TVM, Scikit learn, scipy, numpy, matplotlib, pandas)** and **C++**
- Build simulation using ROS and Gazebo with Reinforcement learning agent for path planning and obstacle avoidance, used **Reinforcement learning (Open AI gym, python)**, Meta learning using graph based hierarchical models
- Build Virtual Reality simulation in **Unity** of real time 360 video used SLAM to superimpose Computer vision artifacts on the 360 video.
- Implemented **C++ RedisGraph** client to perform **real-time in-memory** graph query. This was used with **GCN for advance visual reasoning**. Explored reasoning potential in knowledge based systems to develop next generation of algorithms for visual scene understanding using the best of deep learning and expert systems. Developed several components of **deep learning pipeline** involved in **automating aircraft inspection**
- Developed novel modularized "build system" using **behavior tree** in **C++** to allow **on-demand module builds** and attaching to the parent, thereby allowing **better memory management and resource allocation**

### AI Specialist intern

*Thermo Fisher Scientific*

DEEP LEARNING ON QPCR AND PCR TASKS

*May 2019 - Aug. 2019*

- Developed **next-generation QPCR and PCR analysis software** by utilizing capabilities of **Deep Learning**. **Improved** existing system **accuracy from 78% to 98%**. Solved multi dye cross-talk problems
- Implemented and trained **CNN** models using **Python (using Tensorflow, Scikit learn, scipy, numpy, matplotlib, pandas)** and **Tensorflow**. Developed various methodologies to **evaluate the performance** of the model **according to the domain**. Built **front-end** system to use the **Genotyper**
- Explored various Machine learning models (PCA, SVM) as baseline approach for fast modeling and testing of current data set variation.
- Developed **front end** using **Java** to **consume deep learning models** for easy interaction with the rest of the software stack
- Created internal tools in **Java** to provide valuable insight into what parameters were considered during prediction

## Skills

<b>Software Development Tools</b>	<b>C++, Python, Java, GO</b> Rust, Swift, Software design patterns, Data structure and Algorithms, RestAPI, GRPC, Flask, OpenCV, CUDA, HTML, CSS, JS, <b>AWS, GCP, Kubernetes, Istio</b> , Xcode, Android Studio, Gradle, Git, Bash, Gtkmm, pkg-congify, autoconf, gmake, GCC, CMake, Apache Ant, <b>Scikit-Learn, Tensorflow, Pytorch, FastAI</b>
<b>Database</b>	<b>NoSql</b> (Redis, RedisGraph, MongoDB, DynamoDB, Firebase), SQL (MySQL)
<b>Deep Learning</b>	<b>CNN</b> (DenseNet, ResNet, Inception), FCN, <b>RNN</b> (GRU, LSTM, bi-LSTM, stacked-LSTM, <b>VAEs, Object Detection, Transformers</b> , Transfer Learning, customizing, debugging and tuning <b>Neural Networks</b>
<b>Machine Learning</b>	Linear Regression, logistic Regression, KNN, Naive Bayes, SVM, RL, Bagging & Boosting (ensemble), PCA, SVD, regularization, accuracy measures, statistical analysis and modeling, and <b>knowledge of end-to-end machine learning pipeline</b> (feature engineering, data cleaning, data visualization, model deployment and serving)

# Education

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## The University of Texas at Arlington

Aug. 2016 - Exp. Jul. 2020

**B.S. IN COMPUTER SCIENCE WITH MATH MINOR, GPA = 3.7**

- **Notable Coursework:** Data Structures & Algorithms, **Software Engineering**, OS, **Computer Vision**, **Machine Learning**, **AI**, **Human Computer Interaction**, **Statistics**, Computer Networks, Design Patterns
- Received **75% scholarship** of the **entire duration of Bachelors**

# Undergraduate Research

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## Scene Description Generation

University of Texas at Arlington

**VISUAL ATTENTION USING TRANSFORMERS**

Jan. 2019 - Jan 2020

- Innovated visual attention mechanism at visual-feature encoder level. Implemented transformer model to encode and decode image features and generate sentences describing the image
- Research was implemented using **Python(Pytorch, scikit-learn, scipy, matplotlib, numpy, pandas)**

## Visual Question Answering

University of Texas at Arlington

**PROBABILISTIC HEURISTIC GUIDED DEEP LEARNING**

Jan. 2019 - Aug 2019

- Implemented situation-aware Visual Question Answering system using Deep Learning powered by Dempster Shafer theory and outperformed current state-of-the-art model MCB-Att. Improved joint-Loss significantly on Wu-Palmer similarity

# Latest Projects

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## RedisGraph C++ Client (Open Source Contribution)

Jan. 2020

WRITTEN IN C++

- Developed C++ client for RedisGraph database that enables caching and advanced graph algorithms like RRT, DStar, Prim, Dijkstra, K-hop to be directly used on the in-memory RedisGraph

## Image Transformation Library (Computer Vision)

Jan. 2020

WRITTEN IN CUDA AND C++

- Developed CUDA based library to perform various lens distortion corrections

## Preoperative MRI segmentation using UNet (Computer Vision)

Jan. 2019

WRITTEN IN PYTHON, KERAS, TENSORFLOW

- Developed a Deep Learning based image segmentation model (UNET) to detect Glioma. Achieved the dice score of 0.91 by incorporating Squeeze and Excitation architecture used in UNETS

## MHealth (Deep Learning)

Winner at UTA Data Hack

WRITTEN IN PYTHON, PYTORCH, REACTJS

Oct. 2018

- Built an cross platform app for Malaria and eye disease detection using RestNet CNN architecture

## Digital Well Being (Deep Learning)

Winner at HACKTX UTA

WRITTEN IN PYTHON, PYTORCH, TENSORFLOW; DEVELOPED FOR IOS USERS AND ANDROID USERS

Oct. 2018

- Implemented a CNN and a bi-Directional LSTM based system to detect fake news by analyzing vast amounts of news articles and Fake images

## Ezera (NLP and Information retrieval)

Top 7 in MLH Southwest regional

WRITTEN USING PYTHON, JS, HTML AND HOSTED IN AWS

Oct. 2016

- A smart-app prototype, created to assist people especially visually challenged community. It can act as a one stop querying station that detects the identity of a person (face detection), the type of object in front (object detection) and describes all inferences orally in English language

# Honors and Certifications

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2020	<b>Google Foobar Challenge Level 5/5</b> , Secret challenge by Google Inc. Completed in April 2020	Programming
2018	<b>AWS Certified Developer - Associate</b> , by Amazon Web Services	AWS
2018	<b>Deep Learning 5 course Specialization on Coursera (Certified)</b> , 5 courses specialization by Andrew Ng	Coursera
2018	<b>Fast AI</b> , Deep Learning for coders by Jeremy Howard	fast.ai
2018	<b>HTML, CSS and JavaScript Coursera (Certified)</b> , by Duke University on Coursera	Coursera