

# Nikhil Karnwal

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## EDUCATION

**University of California San Diego**  
Masters, Machine Learning & Robotics

**California, USA**  
Sept, 2020 – Present

**Indian Institute of Information Technology**  
Bachelor of Technology with Hons., Information Technology (IT)  
GPA: 8.92/10

**Allahabad, India**  
July, 2010 - May, 2014

## AREA OF INTEREST

Machine Learning, Computer Vision, Deep Learning, Robotics, Distributed System, Design and Analysis of Algorithms, Data Structures.

## PROJECTS

### Implementation of paper - 'Show, Ask, Attend, and Answer'

Implemented paper – 'Show, Ask, Attend, and Answer: A Strong Baseline For Visual Question Answering' on VQA\_v2.0 data set and reproduced the results. This library can be installed and used as a baseline to generate any model on top of it.

[Source-Code](#)

### Perception: SLAM using Kalman Filter

Implemented SLAM using Kalman Filter for unicycle robot using SSD object detector for landmark detection and mapping.

### OneStage Visual Grounding on Talk2Car Dataset

Implemented OneStage learning based architecture for detecting an object in an image that is referred in the respective text command. It merges visual feature map from DarkNet and text embedding from BERT followed by stack of Visual Attention layers and YOLO layer for object detection.

### Semantic Segmentation on BSDS using UNet

Implemented UNet architecture on Berkeley Segmentation Dataset semantic segmentation. It is implemented in python using PyTorch Deep Learning framework on GPUs leveraging Kaggle compute machines.

[Source-Code](#)

### Transfer Learning using InceptionV3 network for Object Recognition

Developed a library to create object classifier using Transfer Learning paradigm through tensorflow. Currently, it is using InceptionV3 pre-trained deep learning model and generating feature vector that are being again passed to a Dense layer.

[Source-Code](#)

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## WORK EXPERIENCE

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### Uber R&D India

October,2018 – September,2020

#### Software Engineer 2

- Architected, Developed and Launched a backend of an Insights generation service which consisted of following components –
  - ETL pipeline on Hive to compute Statistical Features by churning trips level data for around 15 million users at an interval of 24hr.
  - Machine Learning model on Michelangelo, a distributed ML platform by Uber.
  - Elasticsearch for storing business metrics and insights.
  - Thrift based service implemented in Golang.
- Developed a service to *cluster customers using K-Means Clustering* model based on different business metrics and extract insights on real time data.
- Optimized memory consumption of a Golang services by 75% using *Streaming Paradigm to load and transform data replacing Bulk load and transform*.

### Microsoft R&D India

July,2014 – October,2018

#### Bing (Search Engine), Software Engineer 2

- Designed & Implemented library for answers generation and document summarization for **Question-&-Answering system** in Bing by leveraging Deep Semantic Similarity Model and Decision Tree machine learning algorithms.
- Designed & Implemented **web-ranking algorithms** for improving the relevance of search results in Bing for verticals like Shopping, Education, Application, Seasonal etc. by using Decision Tree and Deep Neural Network.
- Developed **query and document classifiers** for the classification of search queries by using SVM models and DNN models for a range of verticals.
- Developed a **RESTful service on azure using Azure Redis Cache database** for serving as backend for exam-result Answer in Bing using .Net.
- Developed **an android application for peer to peer data transfer** between two mobiles over the intranet.

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## BLOG & REPOSITORY

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Blog - [HomePage](#)

Machine Learning Repo – [GitHub-ML](#)

Algorithm & Data Structures Repo – [GitHub-Algorithm](#)

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## SKILLS

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**Languages:** C, C++, Java, C#, Python, Android, .Net, GoLang.

**Frameworks:** Tensorflow, PyTorch, Scikit-Learn, Keras

**Tools:** Azure technologies, Visual Studio, Netbeans, Matlab, Android Studio, Anaconda, Spyder, Kafka, Elasticsearch, Hive, MichelAngelo, PyML.