Karthik Pansetty

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Education

- **Indian Institute of Technology Gandhinagar (IITGN)** — Gandhinagar, India
  Bachelor of Technology in Electrical Engineering — *July 2015 - May 2019*
  with minor in Computer Science and Engineering; (GPA: 8.35/10)

Skills

- **Programming Languages:** Python, JAVA, MATLAB, C, Verilog and Assembly Level Language.
- **Frameworks:** TensorFlow, Keras, PyTorch, Pandas, NumPy, SciPy, Matplotlib, NLTK, OpenCV, Scikit-learn, Networkx, Google Cloud Platform.

Professional Experience

- **HealthCloudAI** — Bangalore, India
  Machine Learning Engineer — *July 2019 - April 2020*
  - Developed a Dynamic Graph Convolutional Neural Network (DGCNN) model to predict clinical diagnosis from unstructured clinical text using Tensorflow to improve the quality and effectiveness of patient care.
  - Also developed a model to generate personalized questions and associated symptoms/risk factors based on the demographics and the medical history of patients.
  - Designed and implemented a pipeline consisting of acquiring the medical data, cleaning the data, training models, validating them and deploying them on the Google Cloud Platform.

Research Experience

- **GIcST: A Natural Language Framework to Identify Themes Differentiating Cohort Subgroups** (*Supervisor: Prof. Nitesh Chawla, Mentor: Dr. Keith Feldman*) — Notre Dame, IN
  Research Experience for Undergraduates (REU), University of Notre Dame — *May 2018 - July 2019*
  - Developed Generalized Identitification of Cohort Specific Themes (GIcST) framework to systematically extract themes differentiating texts of two generalized population sub-groups while accounting for overall population-level experiences.
  - This framework automates the process of discovery of psychological themes with respect to outcomes from unstructured psychological intervention texts paving the pathway for personalizing interventions and to gain insights into the practices surrounding patient conditions and outcomes, aimed to ultimately better inform the quality and effectiveness of care.
  - Under review at the *ACM Transactions on Computing for Healthcare* journal.
- **Graph Based Image Segmentation** (*Guide: Prof. Shanmuganathan Raman*) — Gandhinagar, India
  Summer Research Internship Program, IIT Gandhinagar — *May 2017 - July 2017*
  - Implemented Binary Image Segmentation in MATLAB by using the graph representation of Simple Linear Iterative Clustering (SLIC) superpixels of an image.
  - Analyzed different methods of Spectral Clustering and understood the graph representation of an image.

Projects

- **Geometric Deep Learning** (*Guide: Prof. Shanmuganathan Raman*) — *August 2017 - December 2017*
  - Explored the deep learning methods in the non-Euclidean structured data such as graphs and manifolds.
  - Analyzed the advantages of using different Geometric deep learning methods over classical deep learning methods.
  - Implemented Graph coarsening and pooling in Python which are used in Geometric Deep Learning methods.

Course Projects

- **EmoContext SemEval-2019** (*Guide: Prof. Mayank Singh*) *Sep 2018 - Nov 2018*
  - Implemented an LSTM model to classify the emotions of a user based on the context of the texual dialogue between two users for the SemEval-2019 Challenge.
- **Neural Machine Translation** (*Guide: Prof. Dinesh Garg*) *May 2018 - July 2018*
  - Implemented Neural Machine Translation using an LSTM model with Bahdanau attention in Python using Tensorflow to translate German to English utilizing the Europarl Parallel corpus.
- **Optical Flow** (*Guide: Prof. Shanmuganathan Raman*) *November 2017*
  - Implemented Horn Shunck and Lucas Kanade methods of determining the optical flow between two images of the same scene at different intervals of time in Python.
- **Iterative Closest Point (ICP)** (*Guide: Prof. Shanmuganathan Raman*) *October 2017*
  - Implemented Iterative Closest Point (ICP) Algorithm in Python to estimate the point correspondences as well as global rotation matrix and translation vector between two 3D point clouds (RGB-D).
- **Face Recognition System** (*Guide: Prof. Shanmuganathan Raman*) *September 2017*
  - Designed a Face Recognition System based on the Eigenfaces method using AT&T Database of faces in Python.
  - Implemented Principal Component Analysis (PCA) Algorithm for dimensionality reduction in Python.
- **DES and RSA Encryption** (*Guide: Prof. Souradyuti Paul*) *March 2017*
  - Implemented DES and RSA Encryption in Python to encrypt text and image as a course project for Introduction to Applied Cryptography.
- **Morse Code Detector in FPGA** (*Guide: Prof. Joycee Meekie*) *March 2017*
  - Implemented a Morse Code detector in FPGA by using a combination of two Moore Finite State Machines and programming it in Verilog.

Academic Achievements

- **Deans list awardee** for outstanding academic performance, for 4 out of the 8 semesters while at IIT Gandhinagar.
- Qualified in the National Talent Search Exam (NTSE) which is one of the **prestigious exams** conducted by the Government of India in 2013.

Relevant Courses

- **Graduate Level:** Pattern Recognition and Machine Learning, Natural Language Processing, Mathematical Foundations for Computer Vision and Graphics.
- **Undergraduate Level:** Probability and Random Processes, Ordinary Differential Equations, Introduction to Computational Complexity Theory, Algorithm Analysis and Design, Data Structures, Introduction to Applied Cryptography, Digital Signal Procesing, Signals and Systems, Number Theory.
- **Deep Learning Specialization** by deeplearning.ai (Coursera) : Neural Networks and Deep Learning, Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization, Structuring Machine Learning Projects, Convolutional Neural Networks, Sequence Models.

Positions of Responsibility

- **Mentor** in the Peer-Mentoring Initiative for the course Data Structures and Algorithms.
- **Project Mentor** in the Coding Club of IIT Gandhinagar.
- **Core Team Member** of Blithchron'17, Cultural Fest of IIT Gandhinagar.
- **Co-Founder** of Torque, the Technical Magazine of IIT Gandhinagar.
- **Design Head** of Bytes, Campus Magazine of IIT Gandhinagar.