KARTHIK KUMAR GUDIBOINA
M.Tech
Electrical Engineering Discipline
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Work Experience

● Currently working in the Tata Consultancy Services,India for the innovator profile as a Systems Engineer from 5 months. [2021 - Present]

Education

Degree	Institution	CPI/Percentage	Year
M.Tech (Electrical Engg)	IIT Gandhinagar,India	8.43/10	2019 - 2021
B.Tech (ECE)	JNTU,Hyderabad,India	9.2/10	2015-2019
Class XII	Sri Chaithanya Junior College,Hyderabad,India	96 %	2013-2015
Class X	Gurukul The School,Warangal,India	9.3 /10	2012 -2013

Projects

- **Emotion Recognition from Speech Signal [Aug 2021 – Oct 2021]**
  - The objective is to recognize the emotion from speech signal.
  - Through this work, I got an experience in dealing with time domain signal and non stationary signals.
  - I designed a neural network with a combination CNN layers and Bi-LSTM layer.
  - Experimented with many speech features such as FDLP-S, FDLP-PLP2,FDLP-M and MFCC.

- **Light field Synthesis from Single Image , Prof.Shanmuganathan Raman, IIT Gandhinagar. [June 2020 – April 2021]**
  - This work is a part of M. Tech thesis work.
  - The main objective of this project is, given an image of a scene from some views, the model should generate the new sub aperture views of 4D light field of the same scene.
  - This work incorporates disparity map reconstruction from a single image.
  - Worked with Convolutional neural networks, Generative Adversarial networks and many such deep learning techniques.

- **Brain Tumor classification from MRI images [Mar 2021 - May 2021]**
  - In this work,MRI images of patients are classified to the grade of the tumor.
  - Worked with an international PHD student specialized in the field of medical physicist.
  - Experience in working with the 3D data and 3d convolution networks.
  - Implemented many regularization techniques and data augmentations to avoid over fitting as the data is very less.

- **Polyp Segmentation with GANS,Prof.Shanmuganathan Raman, IIT Gandhinagar. [Dec 2021 – Mar 2021]**
  - In this work,segmented masks of polyp in endoscopic images are predicted.
  - Worked with different kinds of networks for better localization of abnormality in endoscopy images.
  - Used Conditional GANS with the patch discriminator which gave good localization and consistency in shape for the polyp segmentation.
  - This work submitted to MICCAI 2021 conference (waiting for reviews).

- **NLP Contribution Graph, Prof.Mayank Singh, IIT Gandhinagar. [Aug 2020 - Nov 2020]**
  - The main objective of this project is extracting the main contribution sentences of a research paper.
  - The contribution sentences extracted are further classified to 8 information units.
  - For a research paper a mini summary was created by displaying information as a contribution graph.
  - Worked with sequential models such as RNNs and LSTMs.

- **Classification of Endoscopic images, Prof.Himanshu Shekar, IIT Gandhinagar. [Aug 2020 – Nov 2020]**
  - Endoscopic images are classified by using deep learning techniques.
  - Detected Normality and abnormality in images. Accuracy achieved is 90%. Good precision and recall were achieved as well.
  - Residual Network architecture was used in this work.

- **Human Protein Classification ,Online Course Project. [May 2020–June 2020]**
  - This is a multi-label classification problem where Human protein cell images are classified.
  - Dataset used is from the Kaggle.
  - Transfer learning is implemented and different regularization techniques were explored.
  - The F-score achieved is 0.70753.

- **Defocus blur Estimation,Prof.Shanmuganathan Raman, IIT Gandhinagar . [Jan 2020–April 2020]**
  - Re-implemented the research paper from scratch.
  - Classical method to estimate defocus blur from the image by observing rank of the patches.

- **Forgery Detection in JPEG Image, Prof. Nitin Khanna, IIT Gandhinagar. [Oct 2019 – Nov 2019]**
  - Forgeries in a JPEG image were detected by Block Artifact Grid mismatch.
  - The approach is fully in spatial domain.
  - Research paper was implemented and the data of some small forgeries in image were created.
  - The problem was solved by finding the block artifacts pattern of the JPEG image.

- **Smart Door Lock System, Prof. Madhavi Kumari, JNTU Hyderabad. [Oct 2019 – Nov 2019]**
  - Smart Door Locking was designed which operates through a smart phone.
  - This was designed by using the NodeMcu Devkit Board(similar to arduino but has wifi module inbuilt).
  - Used infrared sensors for trespassing detection into the house through the door without unlocking.
  - Explored different ways of security unlocking such as random password generation,face and finger print scan,voice unlock,QR based unlocking.

Internships

- **Summer intern at International Institute of Information Technology(IIIT) Hyderabad. [May 2018-Jul 2018]**
  - Basic training in Speech recognition, machine learning concepts, and worked with Kaldi toolkit.
  - Attended Summer school at IIIT Hyderabad while undergoing internship.
  - Speech signal processing techniques were explored.
  - Contributed some part of my work in creating dataset for Telugu speech recognition system. Telugu speech data collected from Youtube was pre-processed and annotated.

Achievements

- Score of 611/1000 and got percentile of 98.2 in Graduate Aptitude Test in Engineering (GATE-Electrical),2019.
- Among top 10 members, who passed engineering from First class with Distinction from Electronics and Communications (ECE) department of Jawaharlal Nehru Technological University,Hyderabad .

Skill Summary

Programming Languages: Python, C-language, Core- Java(basic level).
Deep Learning Frameworks: PyTorch,Keras,Tensorflow
Simuation softwares: Matlab,Simulink,Mutisim.
Hardware experience: Arduino Programming,Raspberry Pi ,Sensor interfacing,worked with bluetooth, wifi module and many sensors.

Research Area Interests

- Generative Modelling with GANS, Computer Vision, Deep Learning, Reinforcement Learning, Machine Learning, Multi Modal Learning.

Course Certifications and Courses Relevant

Online Courses: Deep Learning Specialization(Coursera), Reinforcement Learning specialization in Coursera (Currently Learning), PyTorch Zero To GANs course, python,

Relevant Courses Done: Computer Vision, Image Processing, Machine Learning, Natural Language Processing, Computer Programming and Data structures, Digital Signal Processing, Communication systems ,Analog and Digital Electronics.

Significant Activities

- Teaching Assistant – Introduction to Computing course for first year B.Tech students [Nov 2020 – Jan 2021].
- Teaching Assistant – Analog and Digital Electronics for first year B.Tech students [Jan 2020 – Jun 2020].
- Teaching Assistant - Analog Electronics Laboratary. [Aug2019 – Nov 2019].
- Conducted a workshop on the topics of Arduino Programming,Matlab Programming, and Hardware interface with Matlab for Diploma students at a polytechnic college in Sangareddy,Hyderabad [Jun 2017].

References

- Dr. Shanmuganthan Raman, Associate Professor, Indian Institute Of Technology Gandhinagar, India.
  mail : shanmuga@iitgn.ac.in , phone: +91 7433009408
- Dr. Ravi Chaithanya Mysa, Senior AI Data Scientist, Vulcan-ai, Singapore.
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