GURSIMAR SINGH

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SUMMARY

I consider myself as a motivated engineer and a full-time learner. I am seeking full-time work opportunities in an organization to apply and enhance my technical skills. I have prior experience of working in the domain of Computer Vision and Robotics

EDUCATION

PDPM Indian Institute of Information Technology, Design and Manufacturing, Jabalpur
B.Tech in Electronics and Communication Engineering, 2015-Present **CPI: 7.8/10**

P.K.R Jain Sr. Sec. Public School, Ambala, Haryana
Class 12th, CBSE Board, 2014-2015 **93.4 %**
Class 10th, CBSE Board, 2012-2013 **CGPA 10/10**

EXPERIENCE

Computer Vision Intern, Canon Research and Development Center, Bangalore *May 2018 – Present*

- Implementing a deep learning network in TensorFlow for segmenting humans in complex poses from complex backgrounds
- Worked on conventional as well as deep learning based optical flow algorithms for tracking essential joints of human body in video sequences
- Developed algorithm for unsupervised pixel-level segmentation of humans or objects in relatively simpler backgrounds using an ensemble of image segmentation methods like Superpixel Clustering, Region growing, Gaussian mixture color modelling and energy minimization-based graph cut algorithms
- Developed semi-automated keypoint annotation tool in python to reduce manual work and save annotation time

Computer Vision Intern, IIT – Bombay *May 2017 – July 2017*

- Worked as an intern at IIT Bombay for FOSSEE (Free and Open Source Software for Education)
- Developed Image Processing and Computer Vision Toolbox for Scilab (An open source software like MATLAB) in C++.
- Implemented machine learning, object detection, face recognition and camera calibration modules in Scilab using OpenCV, C++ and Scilab API
- Developed basic functions of 3D reconstruction for Scilab using point cloud library

PUBLICATION

- AGARWAL, Harsh; SINGH, Gursimar; SIDDIQUI, Arshad Mohammed. **CLASSIFICATION OF ABANDONED & UNATTENDED OBJECTS, IDENTIFICATION OF THEIR OWNER WITH THREAT ASSESSMENT FOR VISUAL SURVEILLANCE.** *Accepted at International Conference on Computer Vision & Image Processing 2018*

TECHNICAL SKILLS

Languages: Python, C, Java
Libraries/Frameworks: Tensorflow, keras, OpenCV, Numpy, pandas, scikit-learn
Software: MATLAB, Scilab, Proteus, PSpice, Atmel Studio, CV-AVR, LabView

PROJECTS

A.I.R.I.S (Artificially Intelligent Responsive Ingenious Spectacles) *August 2017 - March 2018*

- Aimed at creating a product that would enable visually impaired people to better perceive their surroundings
- Used Face Recognition and Object Detection models to detect known faces and everyday objects
- Stereoscopic Vision algorithm to perceive real world location of objects and warn in case of obstacles
- Other features include sending SOS message (a personalized message with live camera capture), get current news and information regarding date and time among many others
- The spectacles are operated completely using voice commands

E-Yantra *October 2016 - March 2017*

- E-Yantra is an annual robotics competition hosted by IIT Bombay and sponsored by MHRD, Govt. of India
- The task was to cross a given arena by processing and interpreting the live feed obtained from overhead camera and then communicating the directions to the robot via zig-bee
- Implemented Probabilistic Road Mapping algorithm for path planning while avoiding obstacles

Robocon India 2017 *November 2016 - March 2017*

Designed a robot that can land Frisbees at predefined positions

- Responsible for designing power distribution system and motion control of the robot
- Used Multivariate Regression to predict the values of signal required for particular speed
- Conducted workshops at various schools on manual and autonomous robotics under Robocon IIITDMJ

Game Development on Embedded Platform

- Developed console for arcade games like snake, tetris, tennis etc. using 8x8 LED matrix and Atmega 8/16 microcontroller IC's
- CV-AVR was used for programming and proteus to design the circuit and simulate the program

MOOCS AND CERTIFICATIONS

1. **Robotics - University of Pennsylvania**
   - Aerial Robotics by Vijay Kumar
   - Computational Motion Planning by CJ Taylor
   - Perception by Kostas Daniilidis & Jianbo Shi
   - Estimation and Learning by Daniel Lee
2. **Python - Michigan University**
   - Getting started with Python by Charles Severance
   - Python Data Structures by Charles Severance
3. **Core Java from TCIL-IT (A govt. of India Enterprise)**

POSITIONS OF RESPONSIBILITY

- Teacher and Administrative member of Jagrati- A social initiative of IIITDMJ *August 2015 - Present*
- Coordinator of Electronics Club, IIITDM Jabalpur *July 2017 - July 2018*
- Assistant Coordinator of Counselling services, IIITDM Jabalpur *July 2017 - July 2018*

ACCOMPLISHMENTS

- Awarded Best Inter-Disciplinary Design Project for A.I.R.I.S at IIITDM Jabalpur *April 2018*
- Secured 4th rank out of 107 teams in IITB E-Yantra competition, sponsored by MHRD *March 2017*

PERSONAL DETAILS

- Date of Birth: 2nd June, 1997
- Language Proficiency: English, Hindi, Punjabi
- Personal Interests: Current affairs, Social work, Music