Hamsamalini K R

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WORK EXPERIENCE

2015 – 2016	**Technical Support Engineer**
	Hewlett Packard Ltd, Bangalore (India)

- *Customer based technical assistance*
- *Service for clients in Australian and New Zealand regions*

EDUCATION AND TRAINING

2011 – 2015	**B.E (Electronics and communication engineering)**
	Peoples School of Education, Karnataka (India)

Electronic devices and circuits, Engineering and applied mathematics, Probability and random process, Digital image processing, Signals and system, Control systems, Digital Signal Processing, Communication networks, Embedded systems

Bachelor Thesis: *Biometric Data Acquisition System*

- *Design of pertinent biometric palm data acquisition system*
- *Extraction of data from 2d images generated from commercial web camera*
- *Implemented using image processing and Computer vision algorithms*
- *Client-based biometric data storage application development*
- *Raspberry-pi, C++, OpenCV*

2016 – 2021	**M.Sc (Embedded Systems)**
	Technische Universität Chemnitz, Chemnitz (Germany)

Computer vision, Image processing and pattern recognition, Digital systems, Software platform for embedded systems, Hardware/Software co-design, Smart sensor systems, Automotive Sensor Systems, Design of software for embedded systems using Embedded C and ADA, Real time systems, Television and video signal processing, Numerical simulation with MATLAB

Research Project*: Horse Heart-Rate Detection Using Video*

- *Non-intrusive heart rate estimation of horse from a video source*
- *Image processing using Blind Source Separation Technique (BSS)*
- *Skin coefficient establishment and noise processing of signal*
- *Independent Component Analysis (ICA) and Principal component analysis (PCA) for dimensionality reduction of the acquired signal*
- *MATLAB, Image processing toolbox*

Master thesis: *Analytical and Deep Learning Based Grasping for Anthropomorphic Robotic Hands*

- *Design and development of a novel robust robotic grasping model using deep learning with analytical supervision and evaluation in simulation*
- *Mathematical modelling of analytical planner to automate the data generation process*
- *Robotic hand grasp configuration estimation using Inverse Kinematics modelling*
- *Analysis of object pose and shape with respect to the coordinate frame to*

approximate feasible grasp contact points of unknown 3D objects
- *Quality score allotment for the generated dataset to mark the robustness and to validate the outputs*
- *Deep Neural Network Regressor to train on analytically generated dataset and to predict high dimensional hand grasp configuration*
- *Python, Spyder IDE, Klampt Simulator, Allegro hand, URDF, ROB*

ACADEMIC PROJECTS

Eye state classification using deep learning *Convolutional neural network-based classifier for eye state classification as opened or closed eye. Binary classification. Python, OpenCV*

Pedestrian detection using Bayes classifier *Gray pixel values and HOG feature descriptor are used for the classification of the image with / without pedestrians using machine learning. Weka tools, Visual Studio, OpenCV*

High precision measurement of capacitance *Implementation and simulation of an interface for capacitor to eliminate Stray capacitance. LTspice, MATLAB*

Range of estimation of a hybrid vehicle *Modeling of the Battery of the hybrid bike to estimate the range of an ebike by simulating the vehicle as a heterogeneous system. Efficiency of the battery, Power required in real time scenarios (up-hill, down-hill, brake, driver mass was considered). MATLAB/ Simulink*

Robotic arm control *Implementation of controller of robotic arm to analyze and to understand the motor movements. VHDL, Nexys3*

Digital stop watch *Implementation of stop watch using state machines and seven segment decoder. VHDL*

LANGUAGE AND TECHNICAL SKILLS

Language	*German (A2), English (Proficient), Kannada (Native), Hindi, Telugu, Tamil*
Programming skills	*Python, MATLAB, C++, VHDL*
Tools	*Anaconda, MATLAB/ Simulink, Visual Studio, LTspice*
Communication protocol	*CAN, Flex ray, I2C, UART*
Operating System	*Windows, Linux*
Familiar Platforms and Frameworks	*TensorFlow, PyTorch, Keras, AWS*

EXTRA ACTIVITIES

- *Organized events as IEEE student member in PESCE, Karnataka, India*

- *Secured certificate from 'Udemy' for course on 'Machine learning A-Z, hands on Python'*

- *Completed course on 'Data Analytics on Amazon Web Services' and acquired certificate*

- *Represented the college throwball team as a captain at inter-state tournament, India*

- *Exhibited paintings at art exhibition conducted at TU Chemnitz, Germany*

Chemnitz,
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