

Debasmita Ghose

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in debasmita-ghose-59859763/ • 📄 DebasmitaGhose

Education

- **Yale University** **CGPA:**
2019–
Doctor of Philosophy - Computer Science
Relevant Courses: Intelligent Robotics, Building Interactive Machines, Database Systems
- **University of Massachusetts, Amherst** **CGPA: 3.86/4.0**
2017–2019
Master of Science - Computer Science
Relevant Courses: Robotics, Computer Vision, Machine Learning, Mobile and Ubiquitous Computing, Advanced Algorithms
- **Manipal Institute of Technology, Manipal, India** **CGPA: 9.07/10.0**
2013–2017
Bachelor of Technology - Electronics and Communication Engineering
Relevant Courses: Advanced Embedded Systems Design, Control Systems, Building Automation Systems

Experience

- **Yale University** **New Haven, CT**
September 2019 - Present
Graduate Research Assistant
Yale Social Robotics Lab (Advisor: Brian Scassellati)
Exploring division of labor between human and robots in the context of recycling sorting industry.
- **College of Computer and Information Sciences, UMass Amherst** **Amherst, MA**
September 2018 - August 2019
Research Assistant
Laboratory of Perceptual Robotics (Advisor: Rod Grupen)
 - Using Bi-Directional LSTM to compensate for the effect of gravity, inertia and drift on a tactile sensor.
 - Working on the development of a new humanoid robot platform - uBot7**Information Fusion Lab** (Advisors: Madalina Fiterau, Tauhidur Rahman)
 - Performed **object detection**, on thermal image datasets to detect people in the scene using Faster R-CNN.
 - Integrated saliency detection with pedestrian detection to improve the performance of object detection networks on thermal images captured during the day.
 - Created the first of its kind multimodal salient pedestrian dataset from the KAIST Multimodal Pedestrian Dataset.**MOSAIC Lab** (Advisor: Tauhidur Rahman)
 - Building a model to extract breathing rate and heart rate from multiple ultra-wide band radars, placed around a person sleeping in different postures
- **Siemens Corporate Technology** **Munich, Germany**
June 2018 - August 2018
Robotics Research Intern
Used **Robot Operating System (ROS)** on the Siemens humanoid to implement :
 - **Follow Me** - Used a trained leg detector and a laser scanner to detect the nearest pair of legs, and follow them
 - **Pick and Place** - Worked on implementing a grasp planner based bi-manual pick and place task .
- **Nanyang Technological University** **Singapore**
January 2017 - June 2017
Research Assistant (Advisor: Thambipillai Srikanthan)
Implemented **machine learning** techniques for developing a system that can detect the mode of transportation used by a person using time sequenced location data retrieved from his cellphone with an accuracy of about 90%
- **Technical University of Dresden** **Dresden, Germany**
May 2016 - August 2016
Undergraduate Summer Research Intern
Built an **octo-copter** which was capable of stable flying and taking off and landing autonomously.

Publications

Peer Reviewed Conferences

- Dr. Mohan Kumar J, Rishabh Mahajan, Deeksha Prabhu, **Debasmita Ghose** (2016), Cost Effective Road Accident Prevention System, In *Proceedings of the IEEE International Conference for Contemporary Computing and Informatics (IC3I)*, Noida, India.

Peer Reviewed Workshops

- **Debasmita Ghose***, Shasvat M. Desai*, Sneha Bhattacharya*, Deep Chakraborty*, Madalina Fiterau, Tauhidur Rahman (2019), Pedestrian Detection in Thermal Images using Saliency Maps, In *Proceedings of the IEEE Workshop on Perception Beyond the Visible Spectrum, Computer Vision and Pattern Recognition (CVPR)*, Long Beach, California.

*Authors Contributed Equally

Skills

- **Languages:** Python, C, C++, MATLAB, C#, VHDL
- **Frameworks:** ROS, Keras, TensorFlow, PyTorch, Git, OpenCV
- **Tools:** Moveit!, Gazebo, Eagle, ORCAD, PSpice, Simulink, Xilinx

Achievements

- **DAAD RISE Professional Scholarship:** Received the RISE Professional Scholarship 2018 from the German Academic Exchange Service for a research internship with Siemens AG, Munich, Germany
- **Best Outgoing Student:** Conferred with the Best Outgoing Student of the 2013-2017 batch of 240 students, by the Department of Electronics and Communication Engineering, Manipal Institute of Technology, Manipal
- **Winner:** INK Makers – Make-a-Thon, 2016 an innovation challenge conducted by INK Talks for building a Braille Reader among 20 teams
- **Best Research Poster – Technical** at Indo German Convention of Lindau Alumni, Kasturba Medical College, Manipal among 40 teams
- **Theme Winner:** Internet of Things and Intelligent Systems at Intel India Embedded Challenge – 2014 for building Amphibious Rescue and Surveillance Robot – a Modern Hovercraft among 2000 teams

Projects

Graduate (Deep Learning).....

- **Telekinesis: Multi-User Multi-Class Classification of EEG Data**
 - Classifying EEG signals from different brains, to predict the task the subject is thinking about performing, using **Autoencoders** and **Convolutional Neural Networks**
 - Using existing datasets to train the models and testing on data collected using the Emotiv EPOC+ headset on subjects and achieved an initial accuracy of about 75%
- **A Comparative Study of Architectures for 2D Image Segmentation**
 - Implemented Deep Learning models- **FCN, U-Net, Dilated Convolutions, Dense Nets** by modifying them for Image Segmentation in Keras Framework on PASCAL VOC dataset
 - Used transfer learning techniques to achieve an improvement in the performance of U-Net
- **Automatic Sports Video Highlight Generation**
 - Implemented a **3D Convolutional Neural Network** using the Keras/TensorFlow framework to analyze the excitement levels of audience watching a game to classify parts of the video into “Highlight” and “Standard Gameplay” with an accuracy of about 70%

Under-Graduate (Embedded System Design).....

- **Road Accident Prevention System**
 - Designed a system to detect driver drowsiness, check if the driver is under the influence of alcohol, if he has fastened the seat belt and if he is tailgating someone or being tailgated by someone.
 - Developed a system to alert the driver by means of an audio stimulus, if found to violate traffic rules and if needed, send the details of the car to the nearest police station for further action.
 - Our team of 3 was selected among the top 10 teams of Atmel Embedded Design Challenge 2016 for this project.
- **Amphibious Rescue and Surveillance Hovercraft**
 - Designed and built a vehicle capable of traversing autonomously to inaccessible locations and perform live environmental monitoring.
 - Developed a system to transmit real time video feed from this vehicle to a ground station to assist the rescue teams
 - This project was awarded as the best project at the Intel India Embedded Challenge, 2014 in the category Internet of Things and Intelligent Systems.
- **Cargo Aligning Robot (using Firebird V Robotics Research Platform)**
 - Programmed the FireBird V Research Platform to act as a cargo aligning robot, which could traverse a grid of points in a path autonomously avoiding obstacles.
 - Designed and built a robotic arm to pick up, turn and drop cargo blocks.
 - This project was a part of the e-Yantra National Robotics Competition conducted by Indian Institute of Technology, Bombay.