Manas Mehta

mmehta@wpi.edu
+1 (774) 243-4851

Link to my Personal Website

Local Address
79 West Street
Apartment 2E
Worcester, MA 01609

LOOKING FOR PHD OPPORTUNITIES IN COMPUTER VISION & MACHINE LEARNING

EDUCATION

M.S. IN COMPUTER SCIENCE
Department of Computer Science, Worcester Polytechnic Institute (WPI), MA, USA - 2020 - Present

- 4.0 GPA
- **Thesis:** ViSoR (Visual SLAM on a Robot) | **Advisor:** Michael A. Gennert

B.S. IN COMPUTER SCIENCE
Department of Computer Science, Worcester Polytechnic Institute (WPI), MA, USA - 2016 - 2020

- Minor in Mechanical Engineering
- Graduated with Distinction
- 3.97 GPA

WORK EXPERIENCE

GRADUATE RESEARCH ASSISTANT
Whitehill Lab, WPI - June '21 - Current

Advised by: Jacob R. Whitehill (WPI)

- Multiple Object Tracking (MOT) module that effectively tracks multiple students and teachers in a K-12 classroom throughout a video
- Detection and tracking complexities in the form of frequent subject exit and re-entry, erratic trajectories, and occlusions
- Multiple Object Tracking and Segmentation (MOTS) Track-RCNN model, designed as an extension of detectron2's Mask-RCNN model + attention-based MOT systems utilizing transformers
- Learning embeddings of image patches extracted from a frame to generate novel full-body re-identification models
- Using Python, OpenCV, PyTorch, TensorFlow
- Link to Github - code for techniques researched

GRADUATE RESEARCH ASSISTANT
COILS, VIEW (Visualization, Information, and Exploration at WPI) Lab, WPI - June '20 - Current

Advised by: Lane T. Harrison (WPI)

- Design and develop an interface to visualize and interpret data from K-12 classroom interactions (Gaze and Emotions) and their effects detected using Deep Learning visual face analysis
- Conduct iterative user studies and K-12 teacher interviews to test the efficacy of the interface & enhance it
- Collect and analyze quantitative and qualitative user experience data using HCI strategies like qualitative coding
- **Develop Data Vis & HCI research - paper for submission is in progress to IEEE VIS or ACM SIGCHI**
- Using JavaScript, React, D3, HTML, CSS, Firebase
- Link to Demo Interface (for testing purposes - no user data collected)

DEVOPS/QA INTERN
LiveData Utilities, Cambridge, MA - May '19 - Aug '19

Advised by: Neil Letendre (LiveData Utilities)

- Set up CI test builds on GoCD, TeamCity, & Jenkins with window batch scripts and Git integration
- Develop VCS migration automation scripts in Python for migrating SVN Repo to Git (BitBucket)
- Set up Azure Test and CI VMs
- Set up OAuth Security for TeamCity, BitBucket & Azure

PEER LEARNING ASSISTANT (PLA)
Department of Mathematical Sciences, WPI - Aug '17 - Mar '18

- PLA for Ordinary Differential Equations, Matrices & Linear Algebra, Discrete Mathematics

- Mentored around 20 students every term
- Help with Homework, Labwork, Exam Prep, & Core Concepts

SUMMER INTERN

Design Innovation Center, University of Delhi - May '17 - Jun '17

Advised by: Abhijeet Parmar (DIC)

- Engineer a Preliminary Code for Image Processing
- Study CAM Processes and design a G-code interpreter

PROJECTS

VISUAL SLAM ON A ROBOT (VISOR)

MS Thesis, WPI Humanoid Robotics Lab (WHRL), WPI - Jan'21 - Current

Advised by: Michael A. Gennert (WPI)

- Implement a SLAM system from scratch on the humanoid Atlas robot
- Extended Kalman Filter (EKF) Visual SLAM in a 3D indoor static structured environment
- Stereo Vision 3D landmarks & FAST + BRIEF descriptors
- Visual-Inertial Odometry priors-based velocity motion model (6DOF pose estimation)
- Using C++, ROS, CMake, OpenCV, Eigen
- Link to Github

DEVELOPING INCIDENTUI - A RIDE COMFORT AND DISENGAGEMENT EVALUATION APPLICATION FOR AUTONOMOUS VEHICLES

Major Qualifying Project (MQP) - Nvidia, Santa Clara, CA - Jan'20 - Mar'20

Advised by: Mark L. Claypool (WPI), Raymond Poudrier (Nvidia)

- Lead Researcher / Lead Writer
- Research & Develop a Java Android App that measures 2-axis comfort for disengagements and events during autonomous car tests
- Integrate with Autonomous Car Simulator using a Java redesign of the communications protocol and protobufs
- Networking & Data Transfer on Android Tablet (OTG-Ethernet)
- Using Java, AndroidStudio, Protobufs
- Link to MQP Page - Report is not accessible since it is embargoed by Nvidia

EXPERIENCING KYOTO: EVALUATING AUGMENTED REALITY AUDIO GUIDES

Interactive Qualifying Project (IQP) - Kyoto, Japan - Oct '18 - Dec '18

Advised by: Jennifer deWinter (WPI), Atticus Sims (KyotoVR)

- Co-Lead Researcher
- Determine the Efficacy of Kyoto VR's GPS based AR Audio Guide Application and Identify the Target Market
- Design and Conduct User experience (UX) Testing and Surveys
- Analyze Data Trends and Create User Profiles
- App UI Design and Future Implementation Suggestions
- Link to IQP Page - report and other resources

PATHFINDER APPLICATION

WPI & Brigham and Women's Hospital - Mar'19 - May'19

- Assistant Lead Software Engineer - Lead Feature teams and manage the GitHub codebase
- Pathfinder kiosk application using Java and JavaFX to help hospital employees go from one location to another using A*
- Create a GUI based Map editor that lets the employees add or remove nodes and connect them
- Create an embedded Database using Apache Derby
- Create an interface to request services like room booking, janitorial services, transport, food, etc.
- User profiles and abstracted features for visitors, employees, and administrators
- Accompanying Android phone app for pathfinding
- Second best application and best feature awards

IN-CLASS AND PERSONAL PROJECTS

WPI - Aug'16 - Present

- Image Processing & Regression using a CNN

- Coupon Finder Mobile Android Application (Project Lead)
- Enhance Topic Labelling using Link Grammar and Word Embedding with NLP
- Develop JS Web App with Firebase, Passport, D3, Node

EXTRACURRICULAR

ENACTUSWPI
Writing Director and Competition Manager - Aug'17 - Dec'19
- Social Entrepreneurship Organization
- Collaborate with Project Teams on Writing Related Tasks
- Manage the Competition Team
  - Evaluate Efficacy of Projects
  - Oversee Script-Writing and Presentation Preparation

STUDENTS PREVENTING ASSAULT & RAPE IN OUR COMMUNITY (SPARC)
Member & Interim Secretary - Aug'17 - Mar'18
- Workshops and Information Sessions on Sexual Assault on college campuses
- Teaching about consent and Title IX

WPI GERMAN STUDENT EXCHANGE PROGRAM
HTWG, Konstanz, Germany - Mar'18 - Jul'18
- Language and Cultural Immersion

ACCOMPLISHMENTS

GRE GENERAL TEST SCORES
ETS - Aug'21
- Verbal (**165** / 170), Quantitative (**166** / 170), Writing (**5.0** / 6.0)

MEMBER OF UPSILON PI EPSILON (UPE) - MASSACHUSETTS ALPHA CHAPTER
WPI - Jan'20 - Present
- International Honor Society for the Computing and Information Disciplines
- Distinguished performance in the major of Computer Science

DEAN'S LIST
WPI - Aug'16 - Dec'19
- Distinguished undergraduate academic performance in a term

CHARLES O. THOMPSON SCHOLAR
WPI - Aug'16 - May'17
- Distinguished academic performance in the freshman year

WPI PRESIDENTIAL SCHOLARSHIP
WPI - Aug'16 - May'20
- $20,000 per annum Merit scholarship

SKILLS

LANGUAGES
- Python
- C++
- Java
- JavaScript
- HTML5
- CSS
- Git

SOFTWARE/LIBRARIES
- VSCode
- ROS
- CMake
- Jupyter Notebook
- OpenCV
- PyTorch
- Keras
- Sklearn
- Protobufs
- React
- Firebase
- Android Studio
- Heroku
- AWS/Azure

OPERATING SYSTEMS
- Linux
- macOS
- Windows
- Android