

Tushar Chugh

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EDUCATION

CARNEGIE MELLON UNIVERSITY M.S. IN ROBOTIC SYSTEMS

DEVELOPMENT

Aug'15 - Dec'16 | Pittsburgh GPA: 3.75

YOUNG INDIA FELLOWSHIP (WITH UNIVERSITY OF PENNSYLVANIA)

MASTER'S PROGRAM IN LIBERAL ARTS

Jun'11-May'12 | New Delhi, India

Selected in top 57 across India

Developed a **haptic belt** device for visually impaired to help navigate by providing haptic feedback for avoiding obstacles. (won awards)

MAHARSHI DAYANAND UNIVERSITY

B.TECH IN ELECTRONICS AND COMMUNICATION ENGINEERING

Jul'07 - May'11 | Faridabad MARKS:71/100

Awarded chairman scholarship at MRCE

LINKS

Github:// [tusharchugh](#)

LinkedIn:// [tusharchugh](#)

COURSEWORK

Machine Learning

Computer Vision

Robot Autonomy

Embedded Real Time Systems (Linux Kernel)

Software - Object, Design and Concurrency

Linear Algebra

Systems Engineering

PROJECTS

Vehicle detection using HOG and SVM

Behavioral cloning with deep learning

Lane detection and estimation of curvature

SmartCap for visually impaired

SKILLS

PROGRAMMING

C++ • Java • MATLAB • Python

PLATFORM | FRAMEWORK | IDE

Linux • ROS • OpenCV • TensorFlow

Android Dev • Visual Studio (WPF, WCF)

Git • CI(Travis, Jenkins)

HARDWARE

Raspberry Pi • Arduino(also mbed, ATMEGA and PIC) • PCB Designing (Basics)

EXPERIENCE AND PROJECTS

GENERAL MOTORS | AUTONOMOUS PERCEPTION SOFTWARE

Feb'17 - Present | Warren, MI

- Developed ROS based drivers (including viz plug-ins) for short range radars
- Created classifier for automatic camera lens cleaning system verification
- Led sensor calibration and data collection process for data annotation
- Benchmarking DNN's like R-CNN, SSD, YOLO, FCN, ENET on our dataset
- Mentoring and guiding the new hires in the team

QUALCOMM RESEARCH CENTER | SOFTWARE INTERN

May'16 - Aug'16 | San Diego, CA

- Worked on software development of **Neural Processing Engine (NPE)**
- Contributed in bringing up the new ASIC emulator platform, coded AlexNet conv layers in Assembly and created programmers guide for developers
- Designed a cap for the blind to narrate the scene using NPE and Alexa

MICROSOFT INDIA (R&D) | SOFTWARE DEVELOPMENT ENGINEER 2

May'12 - Jul'15 | Hyderabad, India

- Envisioned, created and **released** to public **Kinect Ripple** - a dual projection infotainment platform built in C# with javascript based API's
- Conceptualized **Orientron** - Echo spot like device with e-paper display
- Co-founded Makerzby for Internet of Things(IoT) related development

MICROSOFT RESEARCH, CAMBRIDGE | SENSORS AND DEVICES

Aug'13 - Jan'14 | Cambridge, UK

- Researched on a novel way for quick & low cost printing of electronic circuits using an inkjet printer with silver nanoparticles.
- Developed firmware for windows phone based gaming peripherals

NATIONAL ROBOTICS ENGINEERING CENTER | CAPSTONE CMU

Aug'15 - May'16 | Pittsburgh, PA

- **Autonomous Water Taxi** : Implemented path-planning stack using SBPL and ROS. Created Occupancy Grid Map (OGM) using OpenStreet maps, designed framework to add and inflate obstacle data to OGM, used ARA* algorithm as global planner and tuned motion primitives
- **Andy - Instructing robot arms via speech commands** Enabled Andy to understand speech commands for performing table-top manipulation tasks. Used HSV as color space, HOG features and SVM for detecting shapes and Amazon Alexa for speech. NLP and path planner were provided by NREC

PUBLICATIONS

Circuit Stickers : ACM CHI, 2014 Canada, Steve Hodge, Et Al.

Vector2703 : Autonomous Ground Vehicle, IEEE Explore Japan, T. Chugh, Et Al.

AWARDS

2016 3rd

2016 1st

2013 Editor's choice

2013 Top 12 Asia

2013 2nd/10 countries

2012 1st(India)

2010 1st(India)

Amazon Alexa

Qualcomm

Maker Faire, NYC

Wall Street Journal

Health 2.0, SF

Accenture and Yahoo

Microsoft

Internet of Voice Challenge Hackmobile

Microsoft Research demo

Best Asian Innovations

Developer World Cup for Health

Innovation Jockeys

Imagine Cup, Poland