JINBING YING

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SKILLS & TOOLS

- Tools: ROS, Android, .NET, Electron, Qt, MATLAB
- Programming: Java, C#, Python, C++, C
- Languages: English, Mandarin
- Design: SolidWorks, AutoCAD, NX, CATIA

WORK EXPERIENCE

TANVAS INC

Software Engineer | Chicago, IL | August 2018- Current

- Develop and design Android, Windows, and Web applications for TanvasTouch sensing technology.
- Develop custom infotainment system applications for automotive clients.
- Implement gesture interactions and adapt software applications for multiple display sizes.
- Debug hardware and write software for use in designing and testing haptics and maintain software builds.

Mechatronics Engineer | February 2017 – August 2018

- Experienced in control theory, PID tuning, digital filter, servo motion systems, piezo actuators as well as in Vibration, Accuracy, Error Mapping and Frequency/Time Domain Analysis in hardware development.
- Programed automated tests and data analysis in Python, modify firmware on PIC32 MCU using C/C++, create and conduct test procedures.
- Direct responsible person for developing 2D layouts, 3D models and assembly drawings using SolidWorks and AutoCAD for TanvasTouch sensor panels.

MICROSENSOR LABS LLC

Mechatronics Engineer | Chicago, IL | September 2016 - January 2017

- Collected soundtracks on a soap dispenser by sound sensors on an Arduino. Wrote a program to implement FFT analysis on the data and detect the activation of the hand hygiene monitoring process.
- Designed a digital wristband assembly in SolidWorks and made fast prototypes using 3D printing for use in medical personnel's hand hygiene monitoring.

CHUNGUO METAL FORMING AND MACHINING CO

CAD Design Engineer | Zhejiang, China | February 2015 - August 2015

- Modeled car components ranging from braking, steering and suspension systems in CATIA V5 according to clients' drafts and additional requirements.
- Created dies and CAM processes in NX.

RECENT PROJECTS

A* ALGORITHM VISUALIZATION AND COMPARISION WITH DIFFERENT HURISTIC FUNCTIONS

Built a Python package that implements A* search algorithm. Enabled users to define start/end point, hurdles interactively. Pygame package is used to visualize the searching process of A* search algorithm. Explored the performance when different heuristic functions are applied such as Euclidean and Manhattan distance.

AUTO SEARCH A TARGET IN UNKOWN SPACE AND SLAM WITH A CUSTOM ROBOT IN ROS

Created a simulated 2-wheel differential drive robot car. Defined inertia matrix, sensor attributes and TF relationships between each part using xacro. Imported the robot to an unknown environment built in Gazebo. The robot car autonomously explores the unknown space with AMCL and DWA navigation methods while

implementing SLAM in RVIZ at the same time. It searches an object using OpenCV pixel filtering and edge detection and then returns to start point once the target is found.

2D MAPPING WITH RPLIDAR AND HECTOR SLAM IN ROS

Built a wireless SLAM machine using a RPlidar, Raspberry Pi 4(RPI) and a power battery bank. Modified Hector slam navigation file to adapt to mapping with only RPlidar. A wireless server and client communication between RPI and workstation was established. ROS master running on RPI sends lidar scan data to workstation ROS client. The received data is interpreted and processed. 2D map data is then visualized in RVIZ on workstation.

REAL TIME FACE DETECTION AND RECOGNITION WITH OPENCV

In this project, a python library was created to implement face detection and recognition. User image data containing faces is collected by the web cam on a laptop. A python script with Haar Cascade classifier and image processing methods is utilized to detect faces and prepare cutout gray scale face image dataset. LBPH algorithm is then implemented to train the dataset and realize face recognition.

AUTO PATH DETECTION ROBOT CAR

Designed and fabricated an auto path detection robot car with mechanical shape and motor control PCB. Established communication between Android USB CDC and PIC32 using Java and C. An Android app is written to realize path detection with image pixel filtering method and send motor control data to PIC32.

EDUCATION

MS Mechanical Engineering specialized in Robotics, Northwestern University *Evanston, IL | December 2016*
BS Mechanical Engineering, Beijing Jiaotong University *Beijing, China, June 2014*
BS Mechanical Engineering, Oakland University *Rochester, MI | April 2014*