Project Introduction

Zimou Gao

Leader of EV Charging Robot Team
Program Manager of Florabot
Research Assistant of Field Robotics Lab
Product Manager of TP-LINK
Consultant of MiracleTech
Graduate Student of Robotics in NEU

6 Years Working Experience in Engineering R&D and Program Management

2018 - Present

- Created a robot system for Robotic EV charging **(Leader)**
- Developed robotics for floral industry **(Program Manager)**
- Infrared Image SLAM & Drone Application **(Research Assistant)**
- Wearable Device for Parkinson Patients **(Developer)**
- Expanded US market for MiracleTech Co. **(Consultant)**

2015 - 2018

- Built & characterized Security Monitoring product, the pioneering work for TP-LINK Smart Home System to scale from 1 - N **(Product Manager)**
- Teaching-by-Hand Spaying Robot **(Developer)**

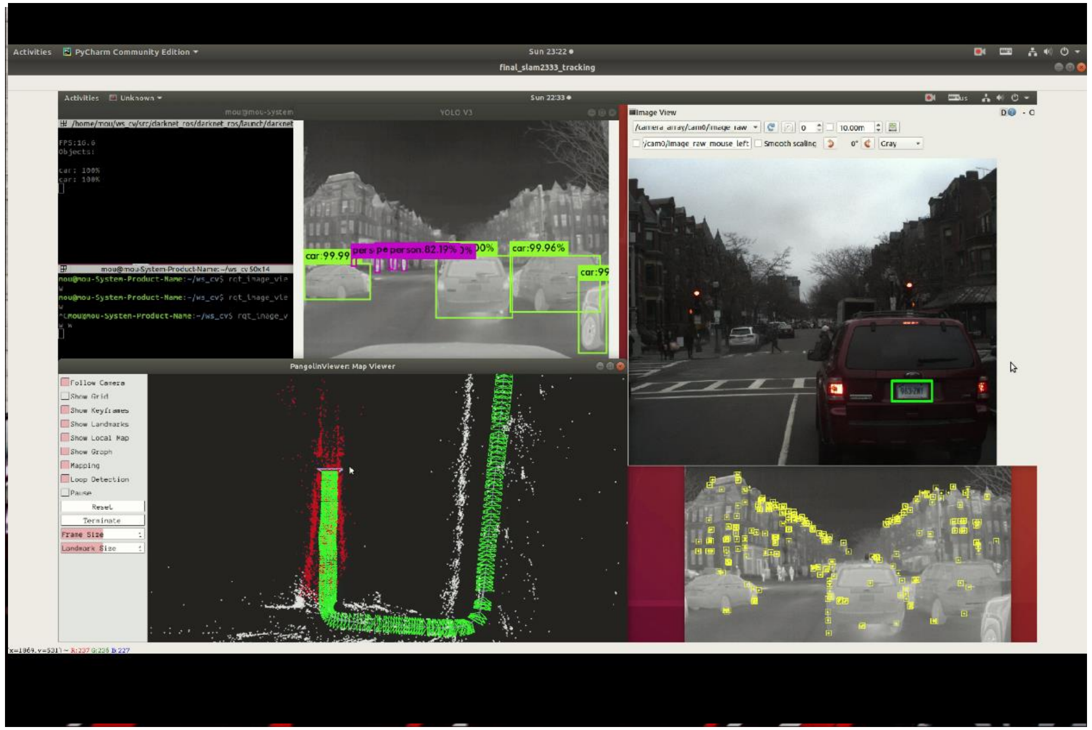
TP-LINK Product Line Development (Product Manager)

Product	Member	Design	HW	SW	Test	Manufacturing	Marketing
Monitor & Network Device	**Cross-functional Teams**	√	√	√	√	√	√
Product Website Link	• SW/HW • Designer • Buyer • Factory • Distributor	• Structure design • Product design	• PCB • Battery • Chip, etc.	• APP • UI • Monitoring system	• Safety certification • CCC/CE/ROHS/EMC • Structure test • Reliability test • SW & HW test • Materials test	• Plastics/sheet metal/labeling/electromechanical manufacturing • First Batch • Injection molding • Welding • Packaging	• Website design • Customer service • Sales forecast

- Created Security Monitor Product Line
- Launched 20+ new products into market, **achieved $1M monthly sales growth**
- Managed 50+ products, serving millions of consumers
- Optimized product design and productive processes, **lowering 15 % costs & ramping up 300% production in 1 month**

Monitor Camera

Monitor Recorder



Infrared Image SLAM Demo

TIME News of our Lab's research in Antarctic

Research Assistant in Field Robotics Lab

- **IR Application:** Developed IR SLAM System with Object Detection & Tracking for self-driving car at night
- **Drone Application:** Our Lab went to the Antarctic to count the number of Penguin with drones

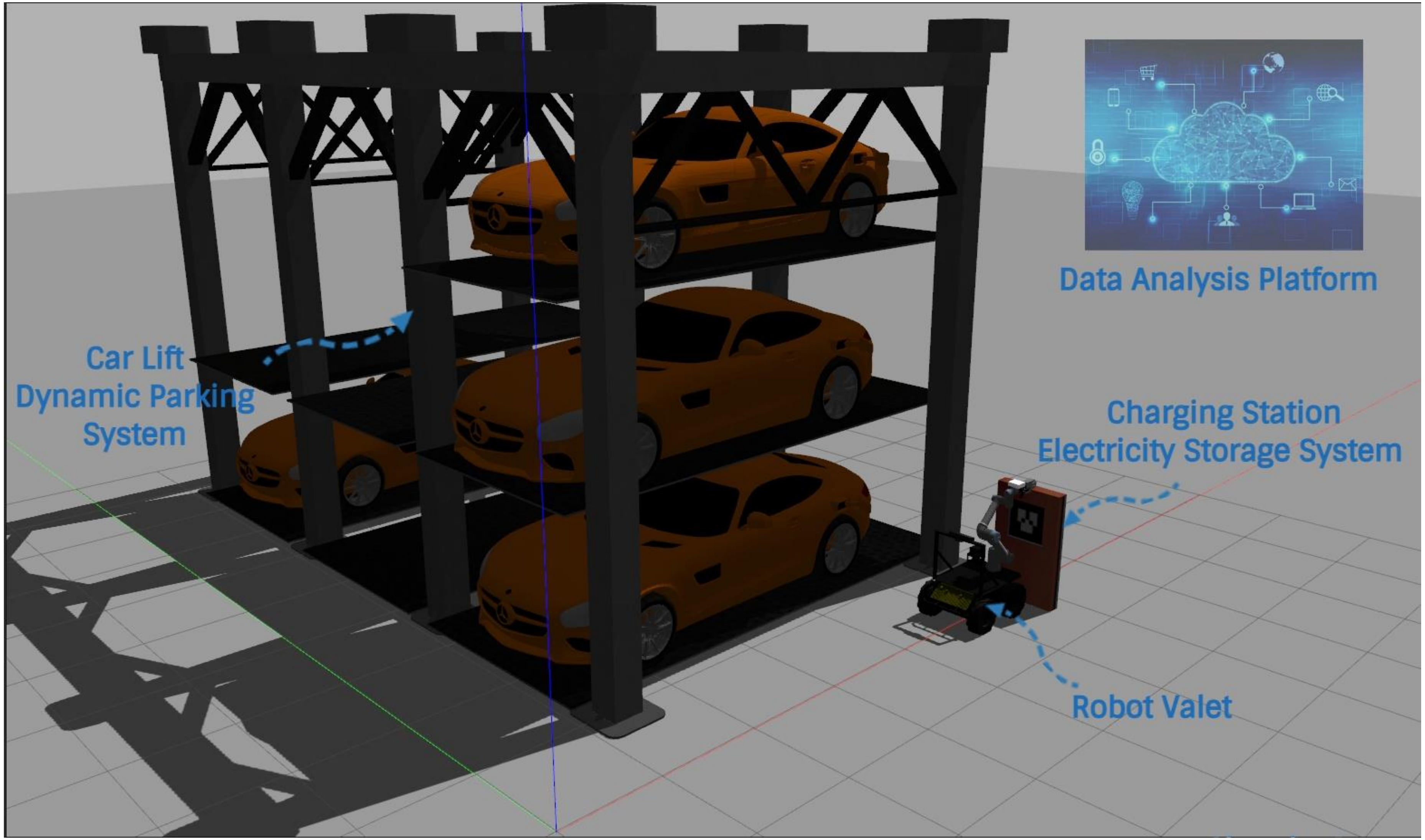
Charging Robot Program (Leader)

Product	Member	Design	HW	SW	Test	Manufacturing	Marketing
Robot	**10 people**	√	√	√	√		√
Website	• Engineers • MBA	• Mechanical structure	• Sensors • Batteries • Communication	• Simulation • Navigation • Manipulation	• Identify bugs • POC	• Prototyping	• Partnership with BP • Business pitch

- **Founded a team of 9 engineers to develop EV Auto-Charging Robot System from sketching to PoC**
- Provide deep automation to drive down costs, increase quality, availability and consistency of EV charging

Charging Robot

ChargingBot System Components



Robot Valet

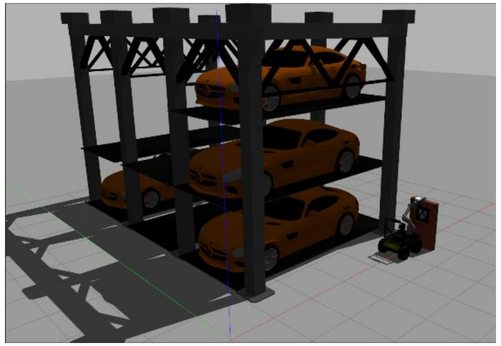
Dynamic Parking System

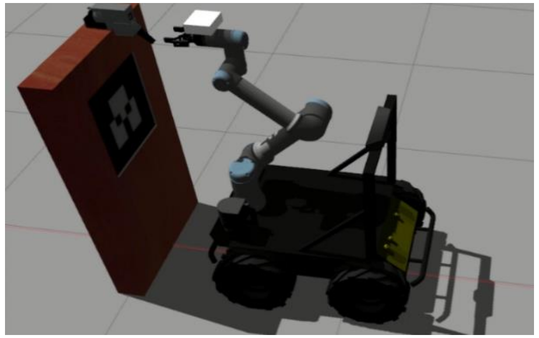
DC Fast Charging Station

PoC & Workflow in Simulation

- Developed robot Control System and Simulation Environment with ROS, SLAM and MoveIt
- Implement latest Reinforcement Learning and Computer Vision algorithms for agile manipulation

1





2

1. Car Lift

Car arrangement, identify charging type and flaps

2. Robot Valet

Navigate to charging station, pick up the connector

3. Robot Valet

Detect EV charging port and plug-in connector

4. Charging Station

Initiate and monitor charging process

5. Robot Valet

Retrieve connector from EV, close the flap

6. Analysis Platform

Inform EV owner and repeat these process

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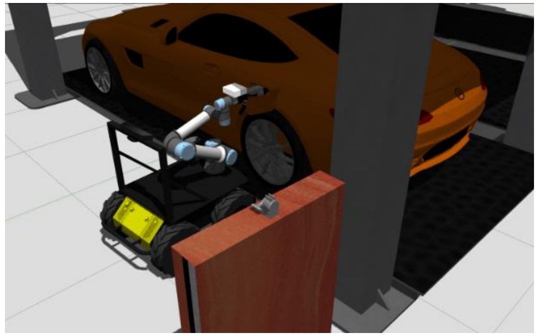


3

Developed robotics for floral industry (Program Manager)

Product	Member	Design	HW	SW	Test	Manufacturing	Marketing
Floral Assembly Line	**Cross-functional Teams**	√	√	√	√	√	√
Website link	• Engineers • Buyers • Vendors	• ID • Structure design	• Robots • Sensors • Cooler	• Computer Vision • Manipulation	• Reliability test • POC	• Sourcing components • Manufacture	• Global trade

Youtube Link: FloraBot Investor Presentation Day

- **Led development of robotic assembly line to automate flower arrangement, lowing 80% labor costs**
- Worked with CEO and executive team to prepare business pitch & POC demo for investors

Developed robotics for floral industry (Program Manager)

- Built the Flower Vendor Machine with flower friendly robotics to achieve floral sales automation
- Pioneered 1st China-US fresh flower boat shipping trials, lowing cost of roses by 15%

Outdoor Flower Vendor Machine with Robot Arm

Florabot Intern Spotlight Award

Expended US market for MiracleTech Co. (Consultant)

Product	Member	Design	HW	SW	Test	Manufacturing	Marketing
Healthcare/Lighting	**10 people**	**√**	**√**	**√**	**√**	**√**	**√**
Product Link Covid Support Link	• Factory • Designer • Seller	• Product design • Brand registration	• Battery		• CE/Rohs/MSDS • EPA, etc. • Safety & Hygiene certification	• Injection molding • Label printing	• Amazon • Google SEO • Social Medium • KOL collaboration

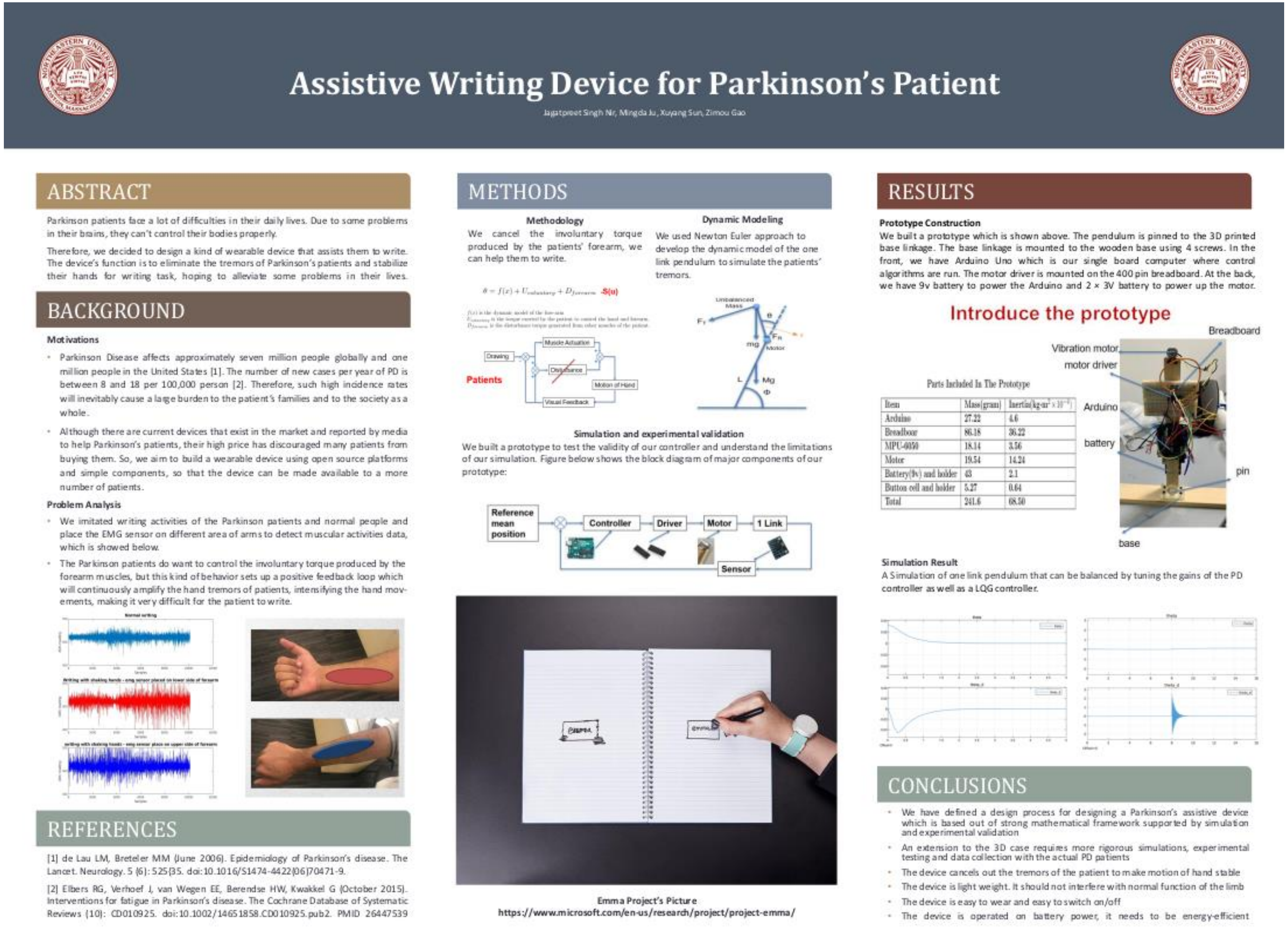
- Founded North American team & formulated strategies for international trade. Worked with vendors & distributors to expand global market, **grew it to $1M/year revenue and $300K/year profit in the US**
- Supported Medical Products Donation Against COVID-19 outbreak in **China(2020.2) & India(2021.4)**

Lighting Product

Medical Products Donation

Wearable Device for Parkinson Patients

Eliminate the tremors of Parkinson's patients and stabilize their hands for writing task



Poster

Teaching-by-Hand Spaying Robot (Developer)

Product	Member	Design	HW	SW	Test	Manufacturing	Marketing
Robot	**30+ people**		√	√	√		
Company Website Link	• Engineers • Factory		• Sensors • Communication	• Manipulation	• Safety certification • Reliability test • SW & HW test		

- Applied IMU calibration and compensation into Gesture Recognition device

Spraying Robot

Teaching-by-Hand

Thank you