SHAONA CHENG

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EDUCATION

Shanghai Jiao Tong University (SJTU) **Shanghai, China**

Master of Engineering in Mechanical Engineering Sept. 2015-Mar. 2018

- Average Score: 87/100

Yanshan University (YSU) **Qinhuangdao, China**

Bachelor of Engineering in Mechanical Design, Manufacturing and Automation Sept. 2010-Jul. 2014

- Average Score: 85.11/100

Major Courses: Intelligent Control Technology, Numerical Analysis, Matrix Theory, Linear Algebra, Digital Signal Processing, Theoretical Mechanics, Electronics, Frontier of Biomechatronics, Machine design, Microcomputer Theory and Application

PUBLICATIONS

Shaona Cheng, Andong Yi, U-Xuan Tan, Dingguo Zhang (2018). Closed-Loop System for Myoelectric Hand Control Based on Electrotactile Stimulation. 2018 3rd International Conference on Advanced Robotics and Mechatronics (ICARM). IEEE. pp. 486-490

Shaona Cheng, Dingguo Zhang (2017). A Wearable Armband "iFeel" for Electrotactile Stimulation. 2017 10th International Conference on Human System Interactions (HSI). IEEE. pp. 120-124

RESEARCH EXPERIENCES

***Independent Researcher*, System Development for Closed-loop Control of Prosthetic Hand, Robotics Institute of Shanghai Jiao Tong University**

Advisor: Prof. Dingguo Zhang & Prof. Honghai Liu Jul. 2017-Mar. 2018

- Designed circuit modules to achieve electromyography (EMG) signals' process with pattern recognition algorithm as well as myoelectric prosthetic hand's control via motors
- Designed a fingertip-wearable sensor that could sense force and transmit data from the prosthetic hand to amputee's wearable stimulator via Bluetooth
- Introduced tactile feedback to achieve closed-loop control of the prosthetic hand on amputees, and leveraged the modular design concept to achieve human-machine interface
- Removed artifacts of electrical stimulation from contaminated EMG signals by using a bandpass filter and a cascade notch filter
- Conducted experiments on amputees to evaluate the contribution of electro-tactile stimulation feedback to grasping performance of prosthetic hand
- Published a paper on 2018 3rd International Conference on Advanced Robotics and Mechatronics (ICARM)

***Independent Researcher*, Design of a Wearable Armband based on Electro-tactile Stimulation, Robotics Institute of Shanghai Jiao Tong University**

Advisor: Prof. Dingguo Zhang Jun. 2016-Mar. 2017

- Accomplished a custom-designed electro-tactile stimulator in highly-integrated circuit modules with the feature of being wearable and portable
- Achieved multiplexing function in the stimulator based on ARM Cortex-M microcontroller to generate tactile stimulation in single channel independently or in multiple channels simultaneously
- Designed five-pairs electrodes in a flexible printed circuit board (PCB) which could be attached to arm skin via an armband
- Validated tactile stimulation's performance through waveform measurement and people's perceptive evaluation
- Addressed challenges in the control of embedded systems, enhanced my capability in programming as well as

circuit design

- Published a paper on 2017 10th International Conference on Human System Interactions (HSI)

***Group Leader*, Design of an Intelligent Dining Table Robot, Robotics Institute of Shanghai Jiao Tong University**

Advisor: Prof. Honghai Liu Mar. 2016-Jun. 2016

- Led a team to design an intelligent robot that could grasp plates automatically for dining table
- Devised the electrical control system for mechanical arms
- Successfully completed the design and gained A+ in the project of Design and Practice of Mechanical and Electrical Systems
- Greatly improved my cooperation skill, problem-solving skill and hands-on ability

***Group Leader*, System Development for Hand Rehabilitation, Robotics Institute of Shanghai Jiao Tong University**

Advisor: Prof. Dingguo Zhang Nov. 2015-Apr. 2016

- Successfully developed a platform to achieve passive movement of slave hand fingers following active motions from master hand fingers
- Designed a glove-like sensor to capture movement from master finger
- Designed a stimulator based on functional electrical stimulation (FES), manufactured a skin-attachable flexible PCB with high-density electrodes to achieve slave finger's movement by FES

***Independent Researcher*, Innovative Structural Design of High-efficiency Garbage Truck based on Multi-body Dynamic Simulation, Yanshan University**

Advisor: Prof. Wenguang Jiang Dec. 2013-Jun. 2014

- Designed the structure of a garbage truck with a detachable container by SolidWorks
- Created a hook arm in sliding type to stabilize the movement and save the working space
- Conducted stress analysis on the hook arm and optimized mechanical structures

PATENT

Dingguo Zhang, **Shaona Cheng**, Kai Gui. Insole Device for Producing Sole Pressure Sensing by Utilizing Electrical Stimulation and Application Method. CN106307803A. 2016-08-17

WORK EXPERIENCE

***Test R&D Engineer*, Intel Asia-Pacific Research & Development Ltd., Shanghai** Apr. 2018-Apr. 2020

- Developed programs for validation of flash memory circuits
- Optimized testing algorithms for components' yield improvement to maximize the profit
- Cooperated with global teams to improve productivity during high-volume manufacturing process

EXTRACURRICULAR ACTIVITIES

Volunteer, The 16th Awarding Program for Future Scientists, Shanghai Jiao Tong University Oct. 2016

Volunteer, The 120th Anniversary of SJTU, Shanghai Apr. 2016

HONORS & AWARDS

1st Prize Scholarship awarded by Yanshan University Fall 2010

2nd Prize Scholarship awarded by Yanshan University Spring 2011 & Fall 2011

3rd Prize Scholarship awarded by Yanshan University Spring 2012 & Spring 2013

SKILLS & INTERESTS

Mechatronics: AutoCAD, SolidWorks, Altium Designer, STM32 microcontroller, Arduino, Bluetooth

Programming: C, C++, C#, Matlab, Python

Language: Chinese (native), English (fluent)