Hang Yin

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Research Interests

Soft Robotics, Biomimetic Robotics, Multiscale 3D Printing, Microfabrication

Education

University of Colorado Boulder | Boulder, CO — Sep 2014 - Aug 2017
Master of Science in Mechanical Engineering — GPA: 3.66
Advisor: Prof. Xiaobo Yin & Prof. Wei Tan

Beihang University | Beijing, China — Sep 2010 - Jun 2014
Bachelor of Science in Astronautical Engineering
Advisor: Prof. Dajun Xu

Politecnico di Milano | Milan, Italy — Sep 2012 - Feb 2013
Exchange program in Aerospace Engineering
Advisor: Prof. Franco Bernelli-Zazzera

Work Experiences

Tamaki Control | Denver, CO & Twin Falls, ID — Aug 2017 - Present
Automation Engineer

- Programmed PLC code for dairy production and equipment cleaning using Rslogix
- Designed control strategy and HMI to optimize the operation and control for automation process

Research Experiences

xbLab, University of Colorado Boulder | Boulder, CO — Aug 2015 - Jul 2017
Research Assistant

- Developed a bottom-up projection stereolithography system with micron-scale resolution
- Programmed software control with LabVIEW and MATLAB for electro-mechanical system and dynamic mask processing
- Designed optics, motion system and other hardware assembly for the printing device
- Planned and conducted experiments characterizing materials and optimized parameters for fabrication
- Invented a printing method to quantitatively control stiffness for 3D printed hydrogel structure from ~2 kPa to ~15 kPa with limited influences on topography and feature size

Aerospace Laboratory, Politecnico di Milan | Milan, Italy — Nov 2012 - Feb 2013
Lab Assistant

- Designed the drilling and sample extraction process for the equipment used on Rosetta satellite
- Tested the required torque level for drilling foam glass with various compressive strength
- Optimized the translation speed and force needed for the drilling and sample extraction

Project Experiences

Radicool — Jan 2016 - May 2016

- A hybrid glass microsphere-plastic metamaterial film that is fully transparent to the solar spectrum while having an infrared emissivity greater than 0.93 across the atmospheric window has been developed by the team
- I programmed the PID Labview code to control the temperature of thermal couple through automatically adjusting voltage for cooling power measurement
- Measured the thickness of silver coating using AFM

Mechatronics and robotics Jan 2015 - May 2015

- Designed a self-driving, target-sensing and accurate projectile-launching robot as a team of 4 people
- Programmed controls for motion, sensing and launching systems with Arduino and mbed k64f using C++
- Designed the body structure and launching system with SolidWorks
- Designed circuits for motors, signal sensors, and power system and tested their functions

PillOne Dispenser Jan 2015 - May 2015

- Designed a pill dispenser for people with motor skill inconvenience
- Brain stormed for potential mechanisms and finished more than 10 prototypes
- Performed user test for the 3D printed final product to 30 people

Simulink Modeling for Spacecraft Dynamics and Control | Individual project Oct 2012 - Feb 2013

- Modeled the attitude of the spacecraft with assigned Euler angle and kinematics of the satellite
- Simulated the control system based on PID control and designed actuators to adjust spacecraft attitude

Publications

1. Hang Yin, Yonghui Ding, Yao Zhai, Wei Tan and Xiaobo Yin, Orthogonal programming of heterogeneous micro-mechano-environments and geometries in three-dimensional bio-stereolithography, Nature Communications 9, 4096 (2018).

2. Hang Yin, Fabrication of Tissue-Mimetic Environment Using Projection Stereolithography, MS Thesis (2017).

Teaching Experiences

Teaching Assistant | Thermodynamics, University of Colorado Boulder Spring 2016
Teaching Assistant | Finite Element Analysis, University of Colorado Boulder Fall 2015
Teaching Assistant | Nanomaterial, University of Colorado Boulder Fall 2015
Teaching Assistant | Statistics, University of Colorado Boulder Spring 2015

Skills

Engineering Expert: AFM, SEM, Machine shop skills, 3D printing
3D modeling software: SolidWorks, ABAQUS, CATIA, AutoCAD
Programming and Automation: LabVIEW, MATLAB, C++, Mathematica, Python, PLC Programming
Language: English (Excellent), Chinese (Native)