Chuanzheng Li

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EDUCATION

University of Illinois at Urbana-Champaign, The U.S. Expected: May 2016
Degree: Master of Science in Mechanical Engineering GPA: 3.84/4.00

Zhejiang University, China Sep. 2010 – Jul. 2014
Degree: Bachelor of Science in Engineering GPA: 3.77/4.00
Major: Mechatronics

RESEARCH INTERESTS

- Control & Dynamics
- Robotics

ACADEMIC EXPERIENCE

Hardware Reconfiguration and Nonlinear Control of a 5-DOF Robot Arm Jan. 2015 – Present

- Utilized analytical and experimental efforts combined to reconfigure a used industrial robot arm, successfully restored its functionality
- Designed control boards for the robot arm, integrating features including high-current power circuits and digital control circuits for motors; communication modules for data acquisition in Simulink
- Experimented and compared PD & Feedforward method with feedback linearization for position control;
- Applied impedance control for intrinsically safe subject-robot interactions, which will be later applied to complex interaction-related situations such as inserting a peg into a hole and wiping glass

System ID and Control of a Two-Link Direct-Drive Underactuated Robot Aug. 2015 – Oct. 2015

- Accomplished system identification of the robot with least square fits to the energy equations of its linkages
- Designing controller to balance the linkages at their unstable equilibrium points, with system linearized at set points using LQR and pole-placement method

Design of a Wirelessly Controlled Robot Car with Real-Time Vision Feedback Sep. 2014 – Dec. 2014

- Developed control module for robot car in LabVIEW, including PID with anti-windup module for motor control, and shared variables for wireless communication between car and computer
- Applied sensor-based motor control and disturbance rejection for wall-following task
- Implemented object following feature with an onboard camera

Implementation of a Digital Controlled Balance System with Touchscreen Sep. 2014 – Nov. 2014

- Worked in group of four ME graduate students, developed a balancing system in which servos are controlled separately to rotate a touch-screen, holding a ball on a certain point of the screen
- Compared various filters on their ability to enhance system performance, then demonstrated in a class to arise blank students' interest

TEACHING EXPERIENCE

Teaching Assistant in Parker Motion and Control Instructional Lab, Department of Mechanical Engineering Aug. 2015 –

- Lead labs of entry-level robotics, topics including forward/inverse dynamics, simple controller design
- Assign and grade lab reports aiming at promoting students' understanding of Robotics and control theory
- Help holding a robot contest to test students' overall understanding of course materials, where pick and place challenges with trajectory planning and force control requirements are performed

Teaching Assistant in Advanced Circuit Design Lab, Department of Electrical Engineering Aug. 2015 –

- Advise over ten groups of undergraduates to choose project topics, help evaluate project feasibility, offer suggestions on addressing technical difficulty and finding resources
- Hold individual office hours upon request, help students resolve problems including embedded system program, PCB manufacture, and controller design
- Keep track of project progress, hold group meeting if needed for problem shooting and to boost productivity

Lab Assistant in Robotic Lab, Department of Electrical Engineering May. 2015 – Aug 2015

- Help maintain, design and assemble lab hardware
- Wrote lab manuals for system dynamics such as kinematic transformation, and control theory including PID control, feedforward control and impedance control

Teaching Assistant in Department of Mechanical Science and Engineering Jan. 2014 – Dec. 2014

- Course topic included Dynamics, Solid Mechanics
- Ranked as excellent teacher in all courses in surveys conducted by university
- Scheduled weekly discussion sessions to help ME students with course material
- Organized group meetings to assisted over 300 undergrads on homework problems
- Held weekly office hour offering academic advice on course related topics

RELATED COURSES (graduate level)

Control & Dynamics:	Industrial Control Systems; Control System Theory & Design; Advanced Flight Control; Introduction to Nonlinear Dynamics & Vibration;
Embedded System:	Data Structures; Signal Processing; Computer Control of Mechanical Systems; Mechatronics; Embedded DSP Laboratory;
Math:	Mathematical Methods I;

TECHNICAL SKILLS

Code Composer Studio	Matlab/Simulink	LabVIEW	Eagle CAD
Embedded C	Linux	Solidworks	AutoCAD
MS Office	LaTeX		