Dongdong Liu

https://sites.google.com/view/ddliu/

Interests

Robotics, Nonlinear Control

Education

Zhejiang University, Zhejiang, China — *Sept. 2013 – Jun. 2016*
Master Degree of Mechatronics Engineering — (GPA=3.50/4.0)

Yanshan University, Hebei, China — *Sept. 2009 – Jul. 2013*
Bachelor Degree of Mechanical Engineering — (GPA=3.85/4.0)

Research Experience

Programming Project:

Parallel Computation Programming of Smart Spare Part Inventory System — *Sept. 2016 – present*
Research Assistant, Nanyang Technological University(NTU),Singapore

- Programmed 30,000+ lines of codes with C# and tested the program on site.
- Programmed 20,000+ lines of codes with ASP.NET to complete GUI in Web.
- Led a team of three students in NTU to design, construct and modify the software.
- Proposed a divide-and-conquer strategy and reduced the complexity to $O(nlogn)$ from $O(n^2)$.
- Applied parallel computation to realize the strategy; the calculation time reduced from 8 hours to 40 minutes.
- Saved 15 senior engineers to maintain the system, increased the hit rate from 55% to 100% for the inventory system.

Control Projects:

Structural Design and Experiment with Fuzzy-PID Control for Rear Shaft Seal Test Platform — *Nov. 2014 – Nov. 2015*
Research Intern, Zhejiang University(ZJU), China

- Designed and assembled the pressure controlling machine and its electric schematic.
- Programmed 30,000+ lines of codes with C# and built a communication system between GUI and Real-time xPC target in Matlab .
- Performed pressure controlling simulation with MATLAB in both static and dynamic state; compared traditional PID and PID-Fuzzy strategies in two conditions; Established PID-Fuzzy as the control strategy, which has better dynamic control quality and can reduce the overshoot.
- Verified the control strategy on the prototype, maximum error is limited to 2.5%FS in the dynamic condition, 0.4bar in the stable condition.

Development of pressure container modeling for the Nonlinear Control System — *Mar. 2016 – Jun. 2016*
Research Intern, Zhejiang University(ZJU), China

- Established relationship between pressure and liquid elastic modulus based on experiments.
- Established the accurate pressure container model by reverse engineering to verify results.

- Verified the simulation by experiments with the same strategy in stable state and dynamic state, the maximum error of the simulation with the proposed model is less than 2%.

Robotics Projects:

Design and Development of Automatically Reconfigurable Parallel Walking Robot with Manipulators *Dec. 2012 – Aug. 2013*
Final Year Project(FYP), Yanshan University, China

- Designed a model of a 6 degree-of-freedom parallel robot with manipulators.
- Performed strength check with ANSYS and simulated velocity analysis with ADAMS.
- Won the highest score 95/100 among 155 students in the undergraduate thesis evaluation.

Hard Ware Development and Programming of Smart Fruit Picking Robot Car *Sept. 2012 – Dec. 2012*
Undergraduate Integrated Project, Yanshan University, China

- Managed a team of four students to write programs for a model car which could follow traces drawn on the floor, dodge barriers, control robot arms to pick fruits.
- Drew the circuit and PCB for the chip microcomputer MCS-51.
- Designed and manufactured the robot arms for Fruit Picking System.
- Wrote programs on both microcomputer and PC to establish USB connection.
- Entered the annnual Smart-Car Contest and won 3rd prize(4/25).

Honors and Awards

National Scholarship, Ministry of Education of P. R. China(MOE of China), 2011
Awarded to the student who has the highest GPA in the School of Mechanical Engineering
University Principal Level Scholarship (Thrice), 2010, 2011, 2012
Awarded to one of four students who have highest overall performance in the School of Mechanical Engineering
Hebei Province First prize of Mechanical Design Contest, 2012
Awarded to one of five students who have excellent skills of Three Dimensional Design of Mechanical Product among 144 competitors in Hebei Province
University First Excellent Scholarship, 2012
Tianjin BDI Cooperation Scholarship, 2012
University Second Excellent Scholarship, 2009
1st prize of Mechanical Design Contest in School of Mechanical Engineering, 2012
3rd prize of Mechanical Innovation in School of Mechanical Engineering (Robot Contest), 2012

Language Proficiency

Fluent in **English** and Native in **Chinese**

- New GRE: Verbal(155/170), Quantitative (170/170), Writing (4.0)
- IBT TOEFL: 102(Reading: 30, Listening: 25, Writing: 23, Speaking: 24)

Technical Skills & Others

Advanced: C++, C#, Visual Basic, SQL, ASP.NET
Moderate: Python, Assembly Language(X86-64), HTML, CSS, JavaScript
Software: Matlab, ROS, Linux(Ubuntu), Git, Labview, ANSYS, Pro/E, SolidWorks, AMESim
Hobbies: Swimming(member of Zhejiang University Swimming Team), Basketball