Li Chenglin, Ph.D.

ERB 113, The Chinese University of Hong Kong,
Shatin, N.T., Hong Kong SAR

(852) 6483 1068
chenglinli@cuhk.edu.hk

Research Interests

Precision Engineering, Compliant Mechanism, Design Methodology, Micro and Nano-Manufacturing, Metrology

Teaching Interests

Mechanical Design, Precision Machine Design, Micro-Electro-Mechanical Systems (MEMS), Mechanics of Materials, Micro and Nano-Fabrication, Precision Metrology

Education

The Chinese University of Hong Kong — Hong Kong SAR, China

Ph.D., Mechanical Engineering (GPA 3.8/4.0) — Aug. 2013 – Oct. 2018

Thesis: "Precision Design and Control of a Flexure-based Multi-layer Roll-to-roll Printing System"
Supervisor: Prof. Chen Shih-Chi

Tsinghua University — Beijing, China

B.E., Mechanical Engineering (GPA 89/100) — Aug. 2009 – July 2013

Research Experience

CUHK Multiscale Precision Instrumentation Laboratory, Advisor: Prof. Chen Shih-Chi

A New Compliant Mechanism Design Methodology Based on Stiffness Matrices (Major Participant)
April 2018 – Present

Deep Learning for Next-generation Precision Machine Tools and Manufacturing (Participant)
Nov. 2017 – Oct. 2019

Precision Design and Control of a Flexure-based Multi-layer Roll-to-roll Printing System (Ph.D. Thesis Research)
Mar. 2016 – Oct. 2018

Theoretical Modeling and Development of a Microtome Optimized for Soft Tissue Cutting and 3-D Microscopic Imaging (Participant) Jan. 2015 – Dec. 2017

Design and Control of Flexure-based Multi-axis Nanopositioners for Ultra Precision Applications (Major Participant) Aug. 2013 – April 2016

Tsinghua University, Advisor: Prof. Zhang Wei

Software System Development for Calculating Dynamic Bearing Load in Hydroelectric Generating Set (B.E. Thesis Research) Nov. 2012 – June 2013

Tsinghua University, Advisor: Prof. Zhao Mingguo

Bionic Monocular Vision System (Student Research Training) Sept. 2012 – April 2013

Tsinghua University, Advisor: Prof. Li Yipeng

Design and Realization of Visual Navigation System for Quadrotor Unmanned Aerial Vehicle (Student Research Training) Sept. 2011 – Aug. 2012

Work Experience

The Chinese University of Hong Kong Hong Kong SAR, China

Research Associate (with Prof. Chen Shih-Chi) Sept. 2020 – Present

Research Assistant (with Prof. Chen Shih-Chi) Jan. 2019 – Sept. 2020

Teaching Assistant Aug. 2013 – May 2016

Advising and Teaching Experience

Undergraduate Mentor of:

Ho Meng-Xi (Intern) Mar. 2021 – Present

Fong Kai Yiu, "Design of a 2-D Nano-Positioner" (Final Year Project) Oct. 2019 – Mar. 2020

Cheung Ho Tin, "Design of a 3-Axis Nano-Positioner" (Final Year Project) Oct. 2015 – Mar. 2016

Chan Hoi Kan and Cheung Michelle, "Design of a 2-D Compliant Stage with Vibration Suppression" (Final Year Project) Oct. 2014 – April 2015

Teaching Assistant:

ENGG 1310, Engineering Physics: Electromagnetics, Optics, and Modern Physics, Instructor: Dr. Li Yiyang Spring 2016

MAEG 4040, Mechatronic Systems, Instructor: Prof. Guo Ping Fall 2015

MAEG 1010, Introduction to Robot Design, Instructor: Prof. Qian Huihuan Spring 2015

ENGG 1100, Introduction to Engineering Design, Instructor: Prof. Liu Yun Hui Fall 2014

MAEG 3040, Mechanical Design, Instructor: Prof. Michael Y. Wang Spring 2014

MAEG 3050, Introduction to Control Systems, Instructor: Prof. Yam Yeung Fall 2013

Publications

Journal Publications

1. C. Li, H. Xu, and S. Chen*, "Design of a Precision Multi-layer Roll-to-roll Printing System", *Precision Engineering*, Vol. 66, pp. 564-76, 2020.
2. C. Li, J. Wang, and S. Chen*, "Flexure-based Dynamic-tunable Five-axis Nanopositioner for Parallel Nanomanufacturing", *Precision Engineering*, Vol. 45, pp. 423-34, 2016.
3. J. Wang, C. Li, and S. Chen*, "Sectioning Soft Materials with an Oscillating Blade", *Precision Engineering*, Vol. 56, pp. 96-100, 2019.
4. X. Fan, Y. Huang, X. Ding, N. Luo, C. Li, N. Zhao*, and S. Chen*, "Alignment-free Liquid Capsule Pressure Sensor for Cardiovascular Monitoring", *Advanced Functional Materials*, pp. 1805045, 2018.
5. Y. Meng, W. Lin, C. Li, and S. Chen*, "Fast Two-snapshot Structured Illumination for Temporal Focusing Microscopy with Enhanced Axial Resolution", *Optics Express*, Vol. 25, No.19, pp. 23109-21, 2017.
6. N. Luo, W. Dai, C. Li, Z. Zhou, L. Lu, C.C.Y. Poon, S. Chen, Y. Zhang, and N. Zhao*, "Flexible Piezoresistive Sensor Patch Enabling Ultralow Power Cuffless Blood Pressure Measurement", *Advanced Functional Materials*, Vol. 26, No. 8, pp. 1178-87, 2016.

Manuscripts in Preparation or Submitted

1. C. Li and S. Chen*, "Compliant Mechanism Design Based on Compliant Element-Leg-Stage (CELLS). Part I: Principles", (in preparation, to be submitted to *Precision Engineering*).
2. C. Li and S. Chen*, "Compliant Mechanism Design Based on Compliant Element-Leg-Stage (CELLS). Part II: Practice", (in preparation, to be submitted to *Precision Engineering*).

Conference Publications

1. C. Li, X. Liu, and S. Chen*, "Design of a Six-axis Parallel Nanopositioner Using Decoupled Flexural Legs", *Proceedings of the Annual Meeting of the ASPE*, Pittsburg, PA, USA, Oct. 2019, pp. 422-6.
2. X. Liu, C. Li, H. Li, X. Wang, and S. Chen*, "Deep Learning-based Precision Control for Six-axis Compliant Nanopositioner", *Proceedings of the Annual Meeting of the ASPE*, Pittsburg, PA, USA, Oct. 2019, pp. 139-44.
3. Y. Meng, W. Lin, J. Chen, C. Li, S. Chen*, "Fast Two-snapshot Structured Illumination for Wide-field Two-photon Microscopy with Enhanced Axial Resolution and Signal-to-noise Ratio", *CLEO: Applications and Technology*, Optical Society of America, May 2019, pp. AM3I-6.
4. C. Li and S. Chen*, "A Flexure-based Multi-layer Roll-to-roll Printing System", *Proceedings of the Annual Meeting of the ASPE*, Charlotte, NC, USA, Oct. 2017, pp. 393-7.
5. J. Wang, C. Li, and S. Chen*, "Design of a High-speed Oscillating Blade Microtome", *Proceedings of the Annual Meeting of the ASPE*, Charlotte, NC, USA, Oct. 2017, pp. 412-6.
6. C. Li, J. Wang, and S. Chen*, "Design of a Flexure-based Dynamic-tunable Five-axis Nanopositioner", *Proceedings of the Annual Meeting of the ASPE*, Boston, MA, USA, Nov. 2014, pp. 153-7.

Patents

1. S. Chen, J. Wang, and C. Li, "Microtome", *U.S. Patent*, No. 10,603,688, Mar 31st, 2020.
2. S. Chen, X. Liu, C. Li, X. Wang, and H. Li, "Control System, Control Method and Computer Storage Medium", *U.S. Patent Application*, No. 16/419,955, May 22nd, 2019.
3. S. Chen, C. Li, and J. Wang, "Method and Apparatus for Dynamic Tuning", *U.S. Patent*, No. 9,527,733, Dec 27th, 2016.

Honors and Awards

Second Place (CUHK team) of the 4th Student Challenge in the 32nd Annual Meeting of the American Society for Precision Engineering (ASPE 2017) Nov. 2017

Second Prize of Life Sciences Group in the 2nd Hong Kong University Student Innovation and Entrepreneurship Competition June 2016

Merit Award of Mechanics & Control Systems Group in the 1st Hong Kong University Student Innovation and Entrepreneurship Competition June 2015

Postgraduate Individual Merit of Professor Charles K. Kao Student Creativity Awards April 2015

Best System Control Award and Excellent Team Culture Award (THU team) in International Aerial Robotic Competition (IARC 2012) Aug. 2012

Journals Refereed

Precision Engineering, Journal of Micro and Nano-Manufacturing, HKIE Transactions