Yufang Yao

105 S Mathews Avenue, Urbana, IL, 61801 | 217-693-2865 | yufangy@illinois.edu | www.linkedin.com/in/yufang-yao

EDUCATION

University of Illinois at Urbana-Champaign

Ph.D. in Mechanical Engineering, GPA 3.93/4.0	05/2019 - Present
M.S. in Mechanical Engineering, GPA 3.91/4.0	01/2018 - 05/2019
Visiting Scholar in Mechanical Engineering	01/2017 - 12/2017

Zhejiang University

B.S. in Refrigeration and Cryogenic Engineering	08/2012 - 07/2016

- Major courses: Heat Transfer, Theory of Refrigeration and Cryogenics, Fluid mechanics
- GPA 3.94/4.0

PROFESSIONAL EXPERIENCE

Research Assistant working on **two-phase flow regime** and **two-phase distribution**   01/2017 - present

Air Conditioning and Refrigeration Center, University of Illinois, Urbana, IL

- Took charge of 2 industrial sponsored research projects, reporting monthly to 50+ engineers from 20+ companies in the automotive/refrigeration/home appliance industry.
- Designed experimental facility and test section with SOLIDWORKS and AutoCAD.
- Built a real AC system from scratch, including component selection, piping, sensor installation, electrical connection, control panel design, and system debugging.
- Designed a data acquisition system with LabVIEW to get temperature, pressure, mass flow rate, power and to achieve automation control.
- Conducted hands-on experiments, including thermal system operation, test matrix design, components control, and flow visualization with a high-speed camera.
- Analyzed the experimental data and processed the two-phase flow video with MATLAB, Origin, and Python.
- Proposed a 3D flow pattern map for developing two-phase flow for the first time in open literature

Independent study with a focus on a **He-4 Joule-Thomson cryocooler**   01/2016 - 12/2016

Institute of Refrigeration and Cryogenics, Zhejiang University, Hangzhou, China

- Designed a test section for compressor performance evaluation with SOLIDWORKS
- Simulated the compressor performance with MATLAB to predict the flow rate and efficiency at various conditions.
- Conducted hands-on experiments, including the operation of a precooled Joule-Thomson cryocooler working at 4K and system control.
- Analyzed the experimental data and understood the characteristic of Joule-Thomson cryocooler.

Engineering Internship, Scroll TEC Company, Hangzhou, China   12/2015 - 01/2016

- Tested and recorded the performance of the newly assembled compressors, including the power, flow rate, pressure, and noise.
- Documented detailed procedures of the compressor assembly process by communicating with the assemblers.
- Provided suggestions for improvement in compressor component design by summarizing the feedbacks from the assembly line to engineers.
- Reported the final intern presentation to the advisor and 10-people group.

05/2015 - 08/2015

Excellent Engineer Training Program, Zhejiang University, China

- Visited 10+ companies in the air conditioning and refrigeration field, including Johnson Control, Daikin, Danfoss, and learned various real applications of thermal systems.
- Communicated with professors and students from top universities in China and visited key labs to learn the operation of AC systems and innovative ideas for system optimization.
- Passed the final defense and got a certificate authorized by the Ministry of Education.

PUBLICATIONS

Journal Articles

- **Yao, Y.**, & Hrnjak, P. *"Visualization of refrigerant two-phase flow before and through distributor and evaluation of its performance"*, International Journal of Refrigeration, (2021). 125, 122-131.
- **Yao, Y.**, & Hrnjak, P. *"Developing adiabatic two-phase flow after a thermostatic expansion valve: flow development in an 8 mm tube"*, in preparation
- **Yao, Y.**, & Hrnjak, P. *"Developing adiabatic two-phase flow after a thermostatic expansion valve: the effect of tube diameter and oil"*, in preparation
- Liu, D., Gan, Z., de Waele, A. T. A. M., Tao, X., & **Yao, Y**. *"Temperature and mass-flow behavior of a He-4 Joule-Thomson cryocooler"*, International Journal of Heat and Mass Transfer, (2017). 109, 1094-1099.

Conference Proceedings

- **Yao, Y.**, Konepudi, R., & Hrnjak, P. *"Visualization of two-phase flow through distributors and effect on performance of evaporators"*, The 25th IIR International Congress of Refrigeration (2019). Paper 840.
- **Yao, Y.**, & Hrnjak, P. (2021). "*Effect of flow regime before distributor on two-phase flow distribution"*, In 18th International Refrigeration and Air Conditioning Conference, (2021). Paper 2463.
- **Yao, Y.**, & Hrnjak, P. (2021). *"Effect of orientation on performance of the refrigerant distributor"*, In 18th International Refrigeration and Air Conditioning Conference, (2021). Paper 2464.
- Shen, Y., Gan, Z., Liu, D., Chen, S., & **Yao, Y**. "*Characterization of a scroll-type compressor for driving JT cryocoolers working at liquid helium temperature*", In IOP Conference Series: Materials Science and Engineering (2019). Vol. 502, No. 1, p. 012056.
- Liu, D., Gan Z., Tao X., **Yao Y.**, & Pan W. *"Preliminary Experimental Study on a Precooled JT Cryocooler Working at 4 K Open Cycle"*, International Cryocooler Conference (2016). Cryocoolers 19, 377-383

SKILLS

- AutoCAD, SOLIDWORKS, ProE
- Simulation & Computation: MATLAB, EES, Abaqus, Fluent, Aspen HYSYS, ANSYS Icepak
- Program: Python, C Program language
- Other: Microsoft Office, Origin