

# PENG-HUNG (CHARLES) TSAI

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## EDUCATION

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### Ph.D. in Computer and Information Sciences

Expected May 2024

University of Arkansas at Little Rock

Dissertation: *Modeling Advancement in Spacefaring through Deep Learning*

Advised by: Dr. Daniel Berleant

GPA: 4.0 / 4.0

### M.S. in Information Science

Dec. 2020

University of Arkansas at Little Rock

Thesis: *Applying Web Technologies for Data Mining of Models of Advancement Over Time in Space Exploration Technology*

GPA: 4.0 / 4.0

### M.S. in Economics and Finance

Aug. 2007

Southern Illinois University, Edwardsville

Project paper: *Measuring the Impact of U.S. Monetary Policy on the Taiwan Equity Index Using Multivariate GARCH Models*

GPA: 3.67 / 4.00

### M.B.A.

Dec. 2005

University of Arkansas at Little Rock

GPA: 3.9 / 4.0

### B.E. in Civil Engineering

Jun. 1996

Tamkang University, New Taipei City, Taiwan

## TEACHING EXPERIENCE

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### College Level

#### Co-Instructor

Spring 2024

University of Arkansas at Little Rock

- IFSC 7310 Information Systems Analysis (Graduate)
  - Teach sessions focused on applying system analysis and design techniques.
  - Instruct on the fundamentals of HTML, JavaScript, and PHP for developing Web-based information systems.

#### Teaching Assistant

2019-Present

University of Arkansas at Little Rock

- IFSC 2200 Ethics in the Profession (Undergraduate) Fall 2019-Fall 2020, Fall 2021-Spring 2024
  - Grade students' responses to various assignments, including short essay questions, lecture inquiries, student-selected ethical case questions, and case studies addressing ethical issues.
- IFSC 3360 System Analysis and Design (Undergraduate) Fall 2023
  - Taught a session on the review of PHP syntax and concepts.
  - Graded students' homework submissions and offered constructive feedback to assist students in understanding the material better.
- IFSC 7310 Information Systems Analysis (Graduate) Spring 2023
  - Evaluated code submissions, and graded assignments and problem sets, ensuring adherence to systems analysis concepts and methodologies.

- IFSC 3300 Web Client Applications (Undergraduate) Fall 2019, 2020, 2021, 2022
  - Reviewed code submissions and addressed individual concerns on assignments and programming concepts.

**Graduate Workshop on Scientific Teaching**

Summer 2022

University of Arkansas at Little Rock

- Received training in evidence-based teaching practices for active and inclusive learning to promote engaging, student-centered learning environments.

**K-12****Home Tutor**

1996

- Helped a 9<sup>th</sup>-grade student improve his understanding of key concepts in algebra, geometry, and statistics. Received positive feedback from the parents for the progress their child made.

**7<sup>th</sup>-grade Math Tutor**

1994

Hanyin Tutoring Center, Taipei, Taiwan

- Provided two hours of math tutoring daily on the foundation of algebra for both walk-in and pre-scheduled students.

**RESEARCH EXPERIENCE**

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**Doctoral Researcher**

2021-Present

Department of Information Science, University of Arkansas at Little Rock

- Conduct data compilation and analysis and develop machine learning algorithms to project the future course of spacecraft technology.
- Performed a systematic review of the technology forecasting literature focusing on the application of quantitative trend extrapolation techniques.

**Research Assistant**

2021

Department of Computer Science, University of Arkansas at Little Rock

- Investigated computer vision and image classification algorithms for X-ray testing, resulting in a research report along with the Python code for implementation.

**Research Assistant**

2006-2007

Department of Economics and Finance, Southern Illinois University, Edwardsville

- Gathered and consolidated economic and financial data from diverse sources to facilitate in-depth analysis and model development, leading to a published research paper.

**JOURNAL AND CONFERENCE PUBLICATIONS**

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**Tsai, P. -H.**, Berleant, D., Segall, R. S., Aboudja, H., Batthula, V. J. R., Duggirala, S., and Howell, M. (2023). Quantitative Technology Forecasting: A Review of Trend Extrapolation Methods. *International Journal of Innovation and Technology Management*, 20(4), Article 2330002.

Duggirala, S., Aboudja, H., Batthula, V. J. R., Howell, M., Segall, R. S., **Tsai, P. -H.**, and Berleant, D. (2023). Women in Space: From Historical Trend to Future Forecasts. *Proceedings of the Oklahoma Academy of Science*, 102:124-131.

Batthula, V. J. R., Segall, R. S., Berleant, D., Aboudja, H., and **Tsai, P. -H.** (2022). Future Satellite Lifetime Prediction from the Historical Trend in Satellite Half-Lives. *Journal of Systemics, Cybernetics and Informatics*, 20, 3:40-45.

**Tsai, P. -H.**, Berleant, D., Segall, R. S., Aboudja, H., Batthula, V. J. R., and Howell, M. (2022). Spacecraft for Deep Space Exploration: Combining Time and Budget to Model the Trend in Lifespan. In: Arai, K. (eds) Proceedings of the Future Technologies Conference (FTC) 2021, Volume 3. FTC 2021. *Lecture Notes in Networks and Systems*, Vol. 360. Springer, Cham. (Presented Oct. 2021)

Howell, M., Berleant, D., Aboudja, H., Segall, R. S., and **Tsai, P. -H.** (2021). Is Technological Progress a Random Walk? Examining Data from Space Travel. *Journal of the Arkansas Academy of Science*, 75:67-73.

Batthula, V. J. R., Segall, R. S., Howell, M., Aboudja, H., Berleant, D., and **Tsai, P. -H.** (2021). Forecasting of a Technology Using Quantitative Satellite Lifetime Data. *Journal of Systemics, Cybernetics and Informatics*, 19, 5:78-83.

Kutan, A. M. and **Tsai, P. -H.** (2007). China's Exchange Rate Policy and Overseas Investment in the United States: Past, Present, and Future Recommendation. *Journal of Business Administration*, 72:1-16.

## AWARDS AND HONORS

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Graduate Assistantship	2019-Present
Department of Information Science, University of Arkansas at Little Rock	
Graduate Student Travel Award	2021
Donaghey College of STEM, University of Arkansas at Little Rock	
Outstanding Graduate Student Award	2021
Department of Information Science, University of Arkansas at Little Rock	
Julie V. Bova Endowed Scholarship	2005
College of Business, University of Arkansas at Little Rock	

## SERVICE

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<b>Grader, Central Arkansas Chapter Competition of MATHCOUNTS</b>	2023
University of Arkansas at Little Rock	
<ul style="list-style-type: none"> <li>Helped grade math tests for the regional MATHCOUNTS competition.</li> </ul>	
<b>Judge, Little Rock BEST Robotics competition</b>	2021
University of Arkansas at Little Rock	
<ul style="list-style-type: none"> <li>Participated as a judge in appraising the student teams' engineering notebooks.</li> </ul>	
<b>Student Representative</b>	1996
Department of Civil Engineering, Tamkang University	
<ul style="list-style-type: none"> <li>Elected to serve the interests of first-year civil engineering students.</li> </ul>	

## INDUSTRIAL EXPERIENCE

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<b>Product Manager, Product Quality and Delivery</b>	2014-2018
EiKO Global (Asia), New Taipei City, Taiwan	
<ul style="list-style-type: none"> <li>Led the optimization of the supply chain for the LED lighting product line, focusing on ensuring product quality and on-time delivery.</li> </ul>	
<b>Account Project Manager</b>	2011-2013
CTi Wire & Cable, New Taipei City, Taiwan	
<ul style="list-style-type: none"> <li>Managed sales accounts and supervised the execution of product development projects for major original equipment manufacturers (OEMs) and retail customers to drive sales growth.</li> </ul>	
<b>Buyer/Planner</b>	2008-2011
Meritek Electronics Corporation, Baldwin Park, California	
<ul style="list-style-type: none"> <li>Forecasted product demand and used the forecasts to develop and implement product stocking and replenishment strategies.</li> </ul>	
<b>Process Engineer</b>	2007-2008
Prime Wheel Corporation, Gardena, California	
<ul style="list-style-type: none"> <li>Employed lean management tools to improve the wheel painting line's processes and trained operators on process changes to increase productivity and improve the quality of output.</li> </ul>	

### **Quality Engineer**

1999-2002

Unitech Printed Circuit Board Corporation, New Taipei City, Taiwan

- Led a team of nine quality control (QC) inspectors and utilized statistical process control (SPC) and other QC techniques to assess and ensure process capability and product quality.
- Achieved the Certified Quality Technician (CQT) certification.

### **SKILLS**

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**Computer:** Python, R, SQL, JavaScript, PHP, HTML, Java

**Languages:** Mandarin (native), English (proficient)