

# Pingjun Chen

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## EDUCATION & TRAINING

- 10/2020-Present      Postdoctoral Fellow, Department of Imaging Physics, The University of Texas MD Anderson Cancer Center, USA  
Topic: Computational Modeling of Digital Pathology  
Mentors: Jia Wu, Joseph D. Khoury, and Jianjun Zhang
- 01/2016-08/2020      Ph.D. in Biomedical Engineering, University of Florida, USA  
Advisors: Paul D. Gader and Christine E. Schmidt  
Dissertation: Thyroid Nodule Frozen Section Whole Slide Image Diagnosis with Deep Representation. Available from: <http://ufdc.ufl.edu/UFE0056627>.
- 09/2012-07/2015      M.S. in Medical Image Analysis, Dalian University of Technology, China
- 09/2008-07/2012      B.S. in Software Engineering, Dalian University of Technology, China

## RESEARCH STATEMENT

Dr. Chen concentrates on developing cutting-edge computational techniques to improve cancer care. Three pillars of his research are: (1) computer-aided pathology image analysis; (2) identification of novel pathomic signatures to capture tumor heterogeneity; and (3) intelligent multimodal integration to facilitate precision oncology. Dr. Chen aims to develop more robust, interpretable, accessible, and equitable oncology solutions for making cancer history.

## HONORS & AWARDS

1. 2022, Silver Distinguished Reviewer, IEEE Transactions on Medical Imaging

## PATENTS

4. Jia Wu, Joseph D. Khoury, **Pingjun Chen** & Siba El Hussein (2022), Methods and Systems for Determining Leukemia or Lymphoma Levels using Unsupervised Clustering and Lymphoid Images. Filed.
3. Joseph D. Khoury, Jia Wu, Siba El Hussein & **Pingjun Chen** (2022), Methods and Systems for Determining Leukemia or Lymphoma Levels using Lymphoid Images. Filed.
2. Shanhui Sun, **Pingjun Chen**, Xiao Chen, Zhang Chen & Terrence Chen (2021), Systems and Methods for Image Segmentation. Available from: [US20210397966A1](https://patents.google.com/patent/US20210397966A1).

1. Xiao Chen, **Pingjun Chen**, Zhang Chen, Terrence Chen & Shanhui Sun (2021), Anatomy-Aware Motion Estimation. Available from: [US20210397886A1](#).

## INVITED PRESENTATIONS

2. 09/18/2022, **Is More Always Better? Effects of Patch Sampling in Distinguishing Chronic Lymphocytic Leukemia from Transformation to Diffuse Large B-Cell Lymphoma**, The 1th Workshop on Computational Mathematics Modeling in Cancer Analysis, MICCAI 2022, Resort World Convention Centre, Singapore. **Virtual**.
1. 06/16/2022, **Artificial Intelligence Strategy in Digital Pathology for Chronic Lymphocytic Leukemia Recognition**, 2022 T32 Virtual Symposium, The University of Texas MD Anderson Cancer Center, Houston, TX, USA. **Virtual**.

## OPEN SOURCE DATASETS

1. **Pingjun Chen** (2018), Knee Osteoarthritis Severity Grading Dataset. Available from: <https://data.mendeley.com/datasets/56rmx5bjcr/1>. DOI: <https://doi.org/10.17632/56rmx5bjcr.1>

## PUBLICATIONS

\*Equal Contribution  Corresponding Authorship

### JOURNAL ARTICLES

15. Lingzhi Hong, Whitney E Lewis, Monique Nilsson, Sonia Patel, Susan Varghese, Melvin J Rivera, Robyn R Du, & **Pingjun Chen**, *et al.* (2022), Limited Benefit from the Addition of Immunotherapy to Chemotherapy in TKI-Refractory EGFR-mutant Lung Adenocarcinoma, *Cancers*. DOI: <https://doi.org/10.3390/cancers14143473>.
14. **Pingjun Chen\***, Siba El Hussein\*, Fuyong Xing, Muhammad Aminu, Aparajith Kannapiran, John D. Hazle, L. Jeffrey Medeiros, Ignacio I. Wistuba, David Jaffray, Joseph D. Khoury & Jia Wu (2022), Chronic Lymphocytic Leukemia Progression Diagnosis with Intrinsic Cellular Patterns via Unsupervised Clustering, *Cancers*. DOI: <https://doi.org/10.3390/cancers14102398>.
13. Siba El Hussein\*, **Pingjun Chen\***, L. Jeffrey Medeiros, John D. Hazle, Jia Wu & Joseph D. Khoury (2022), Artificial Intelligence-Assisted Mapping of Proliferation Centers Allows the Distinction of Accelerated Phase from Large Cell Transformation in Chronic Lymphocytic Leukemia, *Modern Pathology*. **Monthly Readers' Choice - March 2022**. DOI: <https://doi.org/10.1038/s41379-022-01015-9>.
12. **Pingjun Chen\***, Muhammad Aminu\*, Siba El Hussein\*, Joseph D. Khoury & Jia Wu (2021), CellSpatialGraph: Integrate Hierarchical Phenotyping and Graph Modeling to Characterize Spatial Architecture in Tumor Microenvironment on Digital Pathology, *Software Impacts*. DOI: <https://doi.org/10.1016/j.simpa.2021.100156>.
11. Siba El Hussein\*, **Pingjun Chen\***, L. Jeffrey Medeiros, Ignacio I. Wistuba, David Jaffray, Jia Wu & Joseph D. Khoury (2021), Artificial Intelligence Strategy Integrating Morphologic and Architectural Biomarkers Provides Robust Diagnostic Accuracy for Disease Progression in Chronic

Lymphocytic Leukemia, *The Journal of Pathology*. **Invited Commentary**.

DOI: <https://doi.org/10.1002/path.5795>.

10. Xiaoshuang Shi, Fuyong Xing, Kaidi Xu, **Pingjun Chen**, Yun Liang, Zhiyong Lu & Zhenhua Guo (2021), Loss-based Attention for Interpreting Image-level Prediction of Convolutional Neural Networks, *IEEE Transactions on Image Processing*. DOI: <https://doi.org/10.1109/TIP.2020.3046875>.
9. **Pingjun Chen\***(✉), Yun Liang\*, Xiaoshuang Shi, Lin Yang & Paul Gader (2020), Automatic Whole Slide Pathology Image Diagnosis Framework via Unit Stochastic Selection and Attention Fusion, *Neurocomputing*. DOI: <https://doi.org/10.1016/j.neucom.2020.04.153>.
8. Yuan Li\*, **Pingjun Chen\***, Zhiyuan Li, Hai Su, Lin Yang & Dingrong Zhong (2020), Rule-Based Automatic Diagnosis of Thyroid Nodules from Intraoperative Frozen Sections using Deep Learning, *Artificial Intelligence in Medicine*. DOI: <https://doi.org/10.1016/j.artmed.2020.101918>.
7. **Pingjun Chen**(✉), Xiaoshuang Shi, Yun Liang, Yuan Li, Lin Yang & Paul Gader (2020), Interactive Thyroid Whole Slide Image Diagnostic System using Deep Representation, *Computer Methods and Programs in Biomedicine*. DOI: <https://doi.org/10.1016/j.cmpb.2020.105630>.
6. Zizhao Zhang, **Pingjun Chen**, Xiaoshuang Shi & Lin Yang (2019), Text-Guided Neural Network Training for Image Recognition in Natural Scenes and Medicine, *IEEE Transactions on Pattern Analysis and Machine Intelligence*. DOI: <https://doi.org/10.1109/TPAMI.2019.2955476>.
5. Fuyong Xing, Yuanpu Xie, Xiaoshuang Shi, **Pingjun Chen**, Zizhao Zhang & Lin Yang (2019), Towards Pixel-to-Pixel Deep Nucleus Detection in Microscopy Images, *BMC Bioinformatics*. DOI: <https://doi.org/10.1186/s12859-019-3037-5>.
4. **Pingjun Chen**, Linlin Gao, Xiaoshuang Shi, Kyle Allen & Lin Yang (2019), Fully Automatic Knee Osteoarthritis Severity Grading using Deep Neural Networks with A Novel Ordinal Loss, *Computerized Medical Imaging and Graphics*. DOI: <https://doi.org/10.1016/j.compmedimag.2019.06.002>.
3. Zizhao Zhang, **Pingjun Chen**, Mason McGough, Fuyong Xing, Chunbao Wang, Marilyn Bui, Yuanpu Xie, Manish Sapkota, *et al.* (2019), Pathologist-Level Interpretable Whole-Slide Cancer Diagnosis with Deep Learning, *Nature Machine Intelligence*. DOI: <https://doi.org/10.1038/s42256-019-0052-1>.
2. **Pingjun Chen** & Lin Yang (2019), tissueloc: Whole Slide Digital Pathology Image Tissue Localization, *Journal of Open Source Software*. DOI: <https://doi.org/10.21105/joss.01148>.
1. Xin Fan, **Pingjun Chen**, Hua Cheng & Ruiyang Liu (2016), A Reproducible Comparative Study on Registration Packages for Toddler MRI Images, *Journal of Medical Imaging and Health Informatics*. DOI: <https://doi.org/10.1166/jmhi.2016.1820>.

## REVIEW ARTICLES

1. **Pingjun Chen**, Jianjun Zhang & Jia Wu (2022), Artificial Intelligence in Digital Pathology to Advance Cancer Immunotherapy, *21st Century Pathology*. Available from: <https://21stcenturypathology.com/assets/data/articles/21CP-3-120/21CP-3-120.pdf>.

## CONFERENCE ARTICLES

5. **Pingjun Chen\***, Muhammad Aminu\*, Siba El Hussein\*, Joseph D. Khoury & Jia Wu (2021), Hierarchical Phenotyping and Graph Modeling of Spatial Architecture in Lymphoid Neoplasms, *The 24th International Conference on Medical Image Computing and Computer Assisted Interventions (MICCAI)*. DOI: [https://doi.org/10.1007/978-3-030-87237-3\\_16](https://doi.org/10.1007/978-3-030-87237-3_16).
4. **Pingjun Chen**, Jinzheng Cai & Lin Yang (2020), Chromosome Segmentation via Data Simulation and Shape Learning, *The 42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS) in conjunction with the 43rd Annual Conference of the Canadian Medical and Biological Engineering Society*. DOI: <https://doi.org/10.1109/EMBC44109.2020.9176020>.
3. Jinzheng Cai, Le Lu, Adam P Harrison, Xiaoshuang Shi, **Pingjun Chen** & Lin Yang (2018), Iterative Attention Mining for Weakly Supervised Thoracic Disease Pattern Localization in Chest X-Rays, *The 21st International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*. DOI: [https://doi.org/10.1007/978-3-030-00934-2\\_66](https://doi.org/10.1007/978-3-030-00934-2_66).
2. Zizhao Zhang, **Pingjun Chen**, Manish Sapkota & Lin Yang (2017), Tandemnet: Distilling Knowledge from Medical Images using Diagnostic Reports as Optional Semantic References, *The 20th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*. **Oral Presentation**. DOI: [https://doi.org/10.1007/978-3-319-66179-7\\_37](https://doi.org/10.1007/978-3-319-66179-7_37).
1. **Pingjun Chen**, Xin Fan, Ruiyang Liu, Xianxuan Tang & Hua Cheng (2015), Fiber Segmentation using A Density-peaks Clustering Algorithm, *IEEE 12th International Symposium on Biomedical Imaging (ISBI)*. DOI: <https://doi.org/10.1109/ISBI.2015.7163953>

## BOOK CHAPTERS

3. Rukhmini Bandyopadhyay, **Pingjun Chen\***, Siba El Hussein, Frank Rojas, Kingsley Ebare, Ignacio Wistuba, Luisa Solis Soto, L. Jeffrey Medeiros, *et al.* (2022), Is More Always Better? Effects of Patch Sampling in Distinguishing Chronic Lymphocytic Leukemia from Transformation to Diffuse Large B-cell Lymphoma, *The 1st Workshop on Computational Mathematics Modeling in Cancer Analysis (CMMCA)*. DOI: [https://doi.org/10.1007/978-3-031-17266-3\\_2](https://doi.org/10.1007/978-3-031-17266-3_2).
2. **Pingjun Chen\***, Maliazurina Saad\*, Frank Rojas\*, Morteza Salehjehromi, Muhammad Aminu, Rukhmini Bandyopadhyay, Lingzhi Hong, Kingsley Ebare, *et al.* (2022), Cellular Architecture on Whole Slide Images Allows the Prediction of Survival in Lung Adenocarcinoma, *The 1st Workshop on Computational Mathematics Modeling in Cancer Analysis (CMMCA)*. DOI: [https://doi.org/10.1007/978-3-031-17266-3\\_1](https://doi.org/10.1007/978-3-031-17266-3_1).
1. **Pingjun Chen**, Xiao Chen, Eric Chen, Hanchao Yu, Terrence Chen & Shanhui Sun (2020), Anatomy-Aware Cardiac Motion Estimation, *The 11th International Workshop on Machine Learning in Medical Imaging (MLMI)*. DOI: [https://doi.org/10.1007/978-3-030-59861-7\\_16](https://doi.org/10.1007/978-3-030-59861-7_16)

## CONFERENCE ABSTRACTS

6. Lingzhi Hong, Waree Rinsurongkawong, Maliazurina B Saad, **Pingjun Chen**, Muhammad Aminu, Amy R. Spelman, Marcelo Vailati Negrao, Tina Cascone, *et al.* (2022), Real-World Effectiveness of Immune Checkpoint Inhibitors Alone or in Combination with Chemotherapy in

Metastatic Non–Small Cell Lung Cancer, *2022 ASCO Annual Meeting*.

DOI: [https://doi.org/10.1200/JCO.2022.40.16\\_suppl.9055](https://doi.org/10.1200/JCO.2022.40.16_suppl.9055).

5. Lingzhi Hong, Whitney E Lewis, Susan Varghese, Melvin Rivera, Robyn Du, **Pingjun Chen**, Haley Kemp, Waree Rinsurongkawong, *et al.* (2022), Limited Benefit from the Addition of Immunotherapy to Chemotherapy in TKI-Refractory EGFR-Mutant Lung Adenocarcinoma, *2022 ASCO Annual Meeting*. DOI: [https://doi.org/10.1200/JCO.2022.40.16\\_suppl.e21169](https://doi.org/10.1200/JCO.2022.40.16_suppl.e21169).
4. Maliazurina B Saad, Lingzhi Hong, Muhammad Aminu, Natalie I Vokes, **Pingjun Chen**, Carol C Wu, Waree Rinsurongkawong, Amy R. Spelman, *et al.* (2022), Deep Learning Signature from Chest CT and Association with Immunotherapy Outcomes in EGFR/ALK-Negative NSCLC, *2022 ASCO Annual Meeting*. DOI: [https://doi.org/10.1200/JCO.2022.40.16\\_suppl.9061](https://doi.org/10.1200/JCO.2022.40.16_suppl.9061).
3. Siba El Hussein\*, **Pingjun Chen\***, John D. Boom, Ignacio I Wistuba, L. Jeffrey Medeiros, Jia Wu & Joseph D. Khoury (2022), Proliferation Center-Focused Artificial Intelligence Algorithm Enhances Detection of Accelerated Phase Chronic Lymphocytic Leukemia, *111th USCAP Annual Meeting*. **Platform Presentation** DOI: <https://doi.org/10.1038/s41379-022-01041-7>.
2. Siba El Hussein\*, **Pingjun Chen\***, L. Jeffrey Medeiros, Jia Wu & Joseph D. Khoury (2021), Artificial Intelligence-Assisted Mapping of Proliferation Centers in Chronic Lymphocytic Leukemia/ Small Lymphocytic Lymphoma Identifies Patterns That Reliably Distinguish Accelerated Phase and Large Cell Transformation, *63rd ASH Annual Meeting and Exposition*. DOI: <https://doi.org/10.1182/blood-2021-146327>.
1. **Pingjun Chen\***, Siba El Hussein\*, L. Jeffrey Medeiros, Joseph D. Khoury & Jia Wu (2021), Machine Learning Pipeline with Feature Engineering Provides Robust Diagnostic Predictions in Chronic Lymphocytic Leukemia, Accelerated and Transformed Phases, *63rd ASH Annual Meeting and Exposition*. DOI: <https://doi.org/10.1182/blood-2021-149540>.

## MENTORING

### College Students

2. John D. Boom, Duke University, 06/2021-08/2021
1. Aparajith Kannapiran, The University of Texas at Austin, 06/2021-08/2021

## PROFESSIONAL MEMBERSHIPS

3. Member, IEEE Engineering in Medicine and Biology Society (EMBS), 2020 - Present
2. Member, Institute of Electrical and Electronics Engineers (IEEE), 2020 - Present
1. Member, The MICCAI Society, 2019 - Present

## PROFESSIONAL ACTIVITIES

### Journal Reviewer

18. Communications Medicine
17. Artificial Intelligence in Medicine

16. Journal of Oncology
15. Pattern Recognition
14. Cancers
13. Sensors
12. Diagnostics
11. BMC Cancer
10. Mathematical Biosciences and Engineering
9. Scientific Reports
8. Journal of Medical Imaging
7. IEEE Transactions on Cognitive and Developmental Systems
6. IEEE Transactions on Medical Imaging
5. IEEE Journal of Biomedical and Health Informatics
4. IEEE Transactions on Instrumentation and Measurement
3. Journal of Open Source Software
2. Complex & Intelligent Systems
1. PeerJ Computer Science

#### **Conference Reviewer**

2. IEEE International Conference on Image Processing (ICIP), 2021-Present
1. International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), 2019-Present

## **REFERENCES**

### **Jia Wu, PhD (Postdoc Mentor)**

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### **Jianjun Zhang, MD, PhD (Postdoc Mentor)**

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### **Joseph D. Khoury, MD (Postdoc Mentor)**

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**Paul D. Gader, PhD (PhD Advisor)**

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