

Ming Chen

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EDUCATION

University of Cincinnati, Ph.D.

Aug. 2015 – Present

Computer Science and Engineering, (STEM)

Cincinnati, OH

- University Graduate Scholarship annually receiver
- **Selected Courses:** Machine Learning, Advance Algorithms, Computer Architecture, Cryptography

University of Dayton, B.S.

May 2012 – Dec. 2014

University of Dayton, (GPA:3.62/4.00)

Dayton, OH

- Annually International Scholarship Receiver
- **Selected Courses:** Data Structure, Programming I&II, Operating System, Database Management I&II

TECHNICAL SKILLS

Programming: Python, C/C++, Objective C, JAVA, C#, BASH, MATLAB, PHP, Node.JS

Frameworks: Tensorflow, Keras, Pytorch, Hadoop, Docker, Spark, Xcode, Android Studio

Developer Tools: Git, Docker, Google Cloud Platform, AWS, Visual Studio, PyCharm, IntelliJ, Eclipse

Languages: English, Chinese

EXPERIENCE

Artificial Intelligence Research Assistant

May 2016 – Present

Cincinnati Children's Hospital Medical Center

Cincinnati, OH

- Developed numerous machine learning and deep learning models using Python and TensorFlow
- Improved the quality of images by preprocessing MRI data using FSL, MATLAB, Bash scripts
- Established a track record of machine learning and deep learning for medical image analysis

Graduate Assistant & Web developer

Jan. 2017 – Dec. 2017

University of Cincinnati

Cincinnati, OH

- Developed number of graduate school web applications using ASP.NET, MVC, JavaScript, JQuery, CSS, and administered database using Microsoft SQL Server
- The developed web applications serve over 10000 students and faculties

Teaching Assistant

Aug. 2013 – Dec. 2014

University of Dayton

Dayton, OH

- Responsible for assisting the instructor with the grading of assignments, quizzes
- Engaged one-to-one with students with academic problems in both classroom and office hours

PROJECTS

Imaging reconstruction using generative adversarial network (GAN) | *Git, Python, Keras*

2020

- Implemented conditional GAN takes low resolution (blurry) image as input and generate high resolution image
- The model was evaluated by PSNR and SSIM
- Achieved an improved reconstruction performance of GAN by optimizing model loss function

Computer Aided Diagnosis using deep learning | *Python, C++, TensorFlow*

2020

- Developed a novel convolutional neural network to predict recovery outcome in patient with Intracerebral Hemorrhage (ICH) at 3 months using T2-weighted fluid-attenuated inversion recovery (FLAIR) imaging data [5]
- Developed a multi-task deep neural network to identified very preterm infants at high-risk for cognitive, language, and motor deficits at 2 years corrected age using resting state functional MRI data [2]
- Developed a multichannel deep neural network that combines MRI imaging data with clinical data detect attention deficit hyperactivity disorder (ADHD) in adolescents [4]
- Developed transfer learning enhanced deep neural network to predict cognitive score in very preterm infants with limited training datasets [1]

- Solving insufficient data problem using data augmentation techniques** | *Python, BASH* 2019
- Successful deep learning model requires large amount of training data while some datasets are limited and expensive to enrich
 - Achieved an improved machine learning performance by generating synthetic training data using SMOTE and ADASYN algorithms, [1], [2], [5]
- Implement 3D-Unet for brain tumor/DWMA detection and segmentation [3]** | *Python* 2019
- The 3D-Unet was implemented based on CNN and residual block
 - The model achieved a dice score of 0.95 compared with human manually segmented label
- Design and implement preprocessing pipeline for MRI data** | *C++, Python, Docker, BASH* 2018
- MRI data can be noising due to motion, eddy current, and magnetic induced distortion
 - The developed pipeline corrects all kinds of distortion and register subjects to standard templates
 - The pipeline automatically extracts and analyze probes tissue microstructure for medical research [1], [2], [5]
- Coding norm analysis using NLP** | *Java, C++, BASH* 2017
- Collaboration makes significant contribution for open source software development while standard coding norms are established and followed
 - Hundreds of social and coding norms are extracted and analysis by text mining using NLP methods
- Fast MRI imaging acquisition using compress sensing** | *C++, MATLAB* 2016
- MRI technique is useful but also suffered from slow image acquisition
 - A novel compressed sensing method is implemented using highly undersampled k-space data to reconstruct high resolution image
- Big data analysis using MapReduce,** | *Java, Hadoop* 2015
- Implemented MapReduce algorithm for statistic analysis on text data
 - The implementation significantly reduced processing runtime

REFERENCES

- [1] **Chen, M.**, Li, H., Wang, J., Yuan, W., Altaye, M., Parikh, N. A., & He, L. (2020). *Early Prediction of Cognitive Deficit in Very Preterm Infants Using Brain Structural Connectome With Transfer Learning Enhanced Deep Convolutional Neural Networks..* *Frontiers in Neuroscience*.
www.frontiersin.org/articles/10.3389/fnins.2020.00858/full
- [2] He L., Li H., Wang J, **Chen M.**, Gozdas, E., Dillman J.R., Parikh N.A., (2020). *A multi-task, multi-stage deep transfer learning model for early prediction of neurodevelopment in very preterm infants..* *Sci Rep* 10, 15072 (2020). PMID: PMC7492237 www.nature.com/articles/s41598-020-71914-x
- [3] Li H., Parikh N.A., Wang J., Merhar S., **Chen M.**, Parikh M., Holland S., He L., (2019). *Objective and automated detection of diffuse white matter abnormality in preterm infants using deep Convolutional neural networks..* *Frontiers in neuroscience*, 13, 610. www.frontiersin.org/articles/10.3389/fnins.2019.00610/full
- [4] **Chen, M.**, Li, H., Wang, J., Dillman, J. R., Parikh, N. A., & He, L.(2019). *A Multichannel Deep Neural Network Model Analyzing Multiscale Functional Brain Connectome Data for Attention Deficit Hyperactivity Disorder Detection..* *Radiology: Artificial Intelligence*, 2(1), e190012.
<https://pubs.rsna.org/doi/abs/10.1148/ryai.2019190012>
- [5] Li, H., Parikh, N.A., Wang, J., Merhar, S., **Chen, M.**, Parikh, M., ... & He, L. (2019). *Deep Learning Model to Predict Patient Outcome in ICH Using Fluid-Attenuated Inversion Recovery Imaging Data..* Paper presented at the Radiological Society of North America 2019 Scientific Assembly and Annual Meeting.
<http://archive.rsna.org/2019/19014469.html>

TEACHING COURSES

- EECE 1080C, Programming for ECE, University of Cincinnati** 2020, Spring
- MTH 149, Introductory Calculus II , University of Dayton** 2014, Spring/Fall