

CURRICULUM VITAE

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Citation Statistics: [Google Scholar](#)

1 Research Interests

Image processing, machine learning, and computer vision with application to medical imaging.

2 Education

M.S.E.	2020 – Present	Biomedical Engineering	Johns Hopkins University Thesis Advisor: Jerry L. Prince
B.E.	2016 – 2020	Biomedical Engineering	Sun Yat-sen University GPA: 3.7 / 4.0

3 Research

Aug 2021 – Present	Graduate Research Assistant (full-time) Image Analysis and Communication Lab Johns Hopkins University Advisor: Prof. Jerry L. Prince
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Recent advances in magnetic resonance scanner quality and the rapidly improving nature of facial recognition software have necessitated the introduction of MR defacing algorithms to protect patient privacy. The influence of these defacing algorithms, particularly on the post processing of MR images such as registration, segmentation, synthesis, and so on, is within the scope of my current research.

Aug 2017 – Jun 2020	Undergraduate Research Assistant (part-time) Sensor Technology and Biomedical Instruments Lab Sun Yat-sen University Advisor: Prof. Jun Wu
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- i) Design and synthesize bioactive materials for bone tissue engineering.
- ii) Support team as the in-vivo technical specialist. Perform craniotomy on more than 50 SD rats with a survival rate above 92 percent.

4 Projects

May 2021 Shiny APP for Bird Recognition Using Convolutional Neural Networks

Advisor: Prof. Brian S. Caffo

Build a website for bird image classification from scratch in 8 days independently. The website (https://m250.shinyapps.io/bird_recognition/) is based on a residual convolutional neural network that was pretrained on ImageNet dataset and transferred onto Caltech-UCSD Birds dataset.

Apr 2021 Multimodal Brain Tumor Segmentation and Survival Prediction

Advisor: Prof. Jerry L. Prince

Implement a 3D U-net and a cascaded anisotropic convolutional neural network for brain tumor segmentation. Based on the segmentation result, we extract radiomic features to train a regression tree ensemble model for survival prediction. Our presentation was the 1st place winner in the final competition.

Apr 2021 Neural Decoding for Patients with Upper Limb Paralysis

Advisor: Prof. Gene Y. Fridman

Inspired by the experiment of Elon Musk's Neuralink, in which the monkey could play video games with its brain, we implement two algorithms, Kalman Filter and Long Short-Term Memory Networks, for decoding 164-channel neural signals from a monkey controlling a cursor.

Aug 2020 – May 2021 Progressive Learning: A Potential Algorithm for Lifelong Learning Machine

Advisor: Prof. Joshua T. Vogelstein

Prog-Learn is a lifelong learning approach that utilizes representation ensemble to achieve omnidirectional knowledge transfer in multitask learning with only quasilinear space and time complexity. My contribution was to demonstrate the omnidirectional transfer in a real data scenario on auditory dataset.

Aug 2020 – Dec 2020 Course Projects of Introduction to Computational Medicine:
i) Imaging, and ii) Physiome

Advisor: Prof. Michael I. Miller, Prof. Tilak Ratnanather,
Prof. Raimond L. Winslow, and Dr. Joseph L. Greenstein

- i) Perform statistical analysis to demonstrate the association between Alzheimer's disease and frontal lobe volumes, which are quantified from T1-weighted MRI scans with multi-atlas segmentation method.
- ii) Implement classical models to estimate cardiac output from arterial blood pressure using ICU physiologic data.

5 Publications

- [1] Linghao Jin, **Chenyu Gao**, Jerry L. Prince, Aaron Carass, “Effects of defacing whole head MRI on neuroanalysis”, SPIE Medical Imaging (Poster Presentation), San Diego, California, United States, 21 February 2022
- [2] Jayanta Dey, Joshua Vogelstein, Hayden Helm, Will Levine, Ronak Mehta, Ali Geisa, Gido van de Ven, Emily Chang, **Chenyu Gao**, Weiwei Yang, Bryan Tower, Jonathan Larson, Christopher White, Carey Priebe, “Omnidirectional Transfer for Quasilinear Lifelong Learning”, <https://doi.org/10.21203/rs.3.rs-831408/v1>
- [3] Lili Wang, Long Chen, Jiping Wang, Liying Wang, **Chenyu Gao**, Bo Li, Yuanzheng Wang, Jun Wu, Changyun Quan, “Bioactive gelatin cryogels with BMP-2 biomimetic peptide and VEGF: a potential scaffold for synergistically induced osteogenesis”, Chinese Chemical Letters, <https://doi.org/10.1016/j.cclet.2021.10.070>

6 Awards and Honors

Sept 2019	Scholarship of Sun Yat-sen University for Outstanding Students
Jan 2019	Scholarship of Sun Yat-sen University for Academic Progress
Aug 2018	2 nd Prize: Guangdong Undergraduate BME Innovation Design Competition