Chuanbin Liu

PERSONAL STATEMENT

My research interests span Medical Image Analysis, Fine-grained Image Analysis and Weakly-supervised Learning. The noteworthy research project of mine is applying Deep Learning into Pediatric Orthopaedics. I am skilled at python and matlab coding, and experienced of Linux server management. I am an enthusiastic and progressive man, and a reliable team leader.

CONTACT INFORMATION

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EDUCATION

09/2015-Present **Doctor of Information and Communication Engineering**
University of Science and Technology of China (USTC)

09/2011-06/2015 **Bachelor of Applied Physics**
University of Science and Technology of China (USTC)

RESEARCH EXPERIENCES

09/2018-Present *Deep Learning for Fine-grained Image Analysis*

Independent Completor

- Propose a novel bidirectional attention-recognition model to actualize a bidirectional reinforcement of **attention** and **recognition** learning for **weakly-supervised** Fine-grained Object Classification.

  *One Journal paper submitted to **IEEE TMM**.*

  *One patent accepted by **CNIPA**.*

05/2018-Present *Deep Learning for Diagnosing Developmental Dysplasia of the Hip*

Project Leader

- To resolve the temporal diversity and pathological deformity challenge in X-ray based diagnosis of DDH, convert the detection of a landmark to the **detection/segmentation** of the landmark's local neighborhood patch. **Spatial attention** and **Adversarial learning** are also employed to deal with the false positive detection.

  *One conference paper accepted by **MICCAI 2019**.*

  *One patent accepted by **CNIPA**.*

  *Research in use by **Anhui Provincial Children's Hospital**.*

09/2017-Present *Deep Learning for Pediatric Bone Age Assessment*

Independent Completor

- Propose a novel **weakly-supervised learning** approach for Bone Age Assessment, which can discover and extract the discriminative bone parts **without human prior**. **State-of-art** performance has been achieved, and the proposed method exhibits **interpretability**, **consistency** and **inspiration** with human prior knowledge.

  *One conference paper accepted by **MICCAI 2019**.*

  *One patent accepted by **CNIPA**.*

*Research in use by **Anhui Provincial Children's Hospital**.*

09/2015-09/2017 ***Multimedia Network Design based on Game Theory***

Project Participant

- Consider the network applications as **game players** driven by their best self-interest. A novel Media-attribute Switching is proposed with the idea of **Mechanism Design**. It can provide incentives for applications to label their media-attributes honestly, thus to protect the multimedia network with order and efficiency. **Scalable Video Coding** and **MobilityFirst** Network are also involved in this research.

  *One conference paper submitted to **MMM2020**.*

07/2013-09/2014 ***Equipment Development for Particle Detection***

Independent Completor

- Design a **front-head software** for detecting magnetic flux of **nuclear fusion**.

  *Equipment in use by **Southwestern Institute of Physics**.*
- Design an **analog circuit preamplifier** for detecting neutron flux of **nuclear fission**.

  *Equipment in use by **Shanghai Institute of Applied Physics**.*

VOLUNTEER & ASSISTANT EXPERIENCES

09/2014-07/2017 ***Teaching Assistant of Design Innovation***

- Teaching Assistant in **USTC Design Innovation Course** as well as **Stanford University Global Alliance for Redesign**. Master the skill of **project management**, **team collaboration** and **leadership**.

09/2012-01/2015 ***Volunteer Assistant of Psychotherapists***

- Assist the psychotherapist to **help the student with psychological problem**. Master the skill of **listening**, **observing** and **psychological counseling**.

PUBLICATIONS

- **Chuanbin Liu**, Hongtao Xie, et al. Extract Bone Parts without Human Prior: End-to-end Convolutional Neural Network for Pediatric Bone Age Assessment. MICCAI 2019
- **Chuanbin Liu**, Hongtao Xie, et al. Misshapen Pelvis Landmark Detection by Spatial Local Correlation Mining for Diagnosing Developmental Dysplasia of the Hip. MICCAI 2019
- Fanchao Lin, **Chuanbin Liu**, et al. Semantic-embedding and Shape-aware U-net for Ultrasound Eyeball Segmentation. ICME 2019.
- Zhihua Shang, **Chuanbin Liu**, et al. Potential of Attention Mechanism for Classification of Optical Coherence Tomography Images. VCIP 2019.
- **Chuanbin Liu**, Hongtao Xie, et al. Bidirectional Attention-Recognition Model for Fine-grained Object Classification. IEEE Transactions on Multimedia. (under review)
- **Chuanbin Liu**, Hongtao Xie, et al. Law is Order: Protecting Multimedia Network Transmission by Game Theory and Mechanism Design. MMM 2020. (under review)

HONORS & AWARDS

07/2017 CVPR 2019 Contest on Mitosis Detection in Phase Contrast Microscopy Image Sequences (3rd)

09/2016 Excellent Teaching Assistant Award

03/2014 China Undergraduate Physics Tournament Award (Grade 2)

12/2013 Chung-Yao Chao Talent Students Scholarship