

# Xiongming Dai

Ph.D. Candidate

Division of Computer Science and Engineering

Louisiana State University

Baton Rouge, LA

Email: [xdai2@lsu.edu](mailto:xdai2@lsu.edu), [daixiongming@gmail.com](mailto:daixiongming@gmail.com)

Personal Website: <https://daixiongming.github.io/>

Cell : (225)-228-5162

## Experience

---

- |   |  |                     |
|---|--|---------------------|
| Graduate Research & Teaching Assistant  | Louisiana State University                     | May 2018 - Present  |
| <ul style="list-style-type: none"><li>Responsible for theoretical research of resampling for sequential Monte Carlo, and have proposed a repetitive ergodicity in deterministic domain with median, it is faster than the state of the art, which is verified by theoretical deduction and experiments of a hidden Markov model in both the linear and non-linear cases.</li><li>Responsible for theoretical research of optimal camera configuration for large-scale motion capture systems, a NP hard problem, and have developed a 3D simulation framework, further introduce Riesz potentials to discretize rectifiable submanifolds of the maximum overlapping coverage, it proves that the proposal grows at most logarithmically, under mild assumptions.</li><li>Responsible for theoretical research of Monte Carlo Sampling, and have proposed a weighted Riesz potentials interaction, where only few samplers required to achieve high performance for hidden Markov model.</li></ul> |  |                     |
| Director  | Shenzhen Realis Multimedia Technology Co.,Ltd. | Jul 2016 - Aug 2017 |
| <ul style="list-style-type: none"><li>Responsible for the location and tracking of infrared reflective markers corresponding to rigid bodies to realize multiplayer motion capture.</li><li>Responsible for the optimization of optimal camera configuration solutions.</li><li>Responsible for the optimization of the inverse kinematics and the integration of the system.</li></ul>   |  |                     |
| Project Leader  | Shenzhen Realis Multimedia Technology Co.,Ltd. | Feb 2016 - Jun 2016 |
| <ul style="list-style-type: none"><li>Served as a leader for developing inverse kinematics software from scratch.</li><li>Responsible for the configuration and optimization of the infrared reflective markers solution so that the corresponding rigid body is most easily captured by the camera system.</li><li>Responsible for the interactive communication mechanism between cameras to ensure minimum latency of the camera system.</li></ul>   |  |                     |
| Senior Software Development Engineer  | Hunan VisualTouring Technology Co.,Ltd.        | Jun 2015 - Jan 2016 |
| <ul style="list-style-type: none"><li>Responsible for service robot multitasking development based on robotic systems ROS.</li><li>Responsible for theoretical research of Visual SLAM and related software development.</li></ul>  |  |                     |

- Responsible for 3D reconstruction of interior scenes.
- Responsible for 3D face recognition based on 3-dimensional projection volume invariance feature.

Graduate Research Assistant     Huazhong University of Science & Technology     Aug 2012 - May 2015

Software Development Engineer     Huazhong Numerical Control Co.,Ltd.     Aug 2012 - May 2015

- Responsible for calibration research and software development of industrial robot systems.
- Responsible for the algorithm research and software development of CNC toolpaths in order to obtain smooth machining results.

## Education

---

Louisiana State University	Computer Science	Ph.D., (Nov, 2022 (Expected))
Louisiana State University	Computer Science	M.Sc., 2022
Huazhong University of Science & Technology	Mechatronics Engineering	M.Sc., 2015
Changsha University of Science & Technology	Mechanical Engineering	M.Sc., 2012

## Publications

- 
- **Xiongming Dai**, Gerald Baumgartner. **Weighted Riesz Particles**. Neural Information Processing Systems(NeurIPS), 2022 submitted
  - **Xiongming Dai**, Gerald Baumgartner. **Optimal Camera Configuration for Large-Scale Motion Capture Systems**. Neural Information Processing Systems(NeurIPS), 2022 submitted
  - **Xiongming Dai**, Gerald Baumgartner, **Variance Reduction of Resampling for Sequential Monte Carlo**. Association for the Advancement of Artificial Intelligence(AAAI), 2022 submitted

## Awards

- 
- Three software copyright
  - Two inventive patents
  - 2nd place in the 3rd Changsha University of Technology Cooking Competition
  - 2009-2010 School of Mechanical Engineering at Changsha University of Sci&Tech 1 on 1 Basketball competition champion, called "The King of 1 on 1".
  - The team got the 3rd place in the 15th HUST Graduate Cup Soccer League, Forward

- The team got the 2nd place in the 25th HUST Graduate Cup Basketball League, Small Forward

## Technical Strengths

---

- **Languages Proficient:** Python, R, Matlab, C/C++, Shell.
- **Robotic System:** ROS operating system
- **GPU Programming:** NVIDIA CUDA
- **Computer Vision/Graphics:** OpenGL, OpenCV.
- **SDLC/Documentation:** LaTeX, Overleaf
- **Platforms/ Frameworks:** Windows, UNIX/Linux •
- **Others:** Git
- **The Most Important:** non-stopable and perseverance in learning

## Research and Hobbies

---

- My research interest includes Bayesian Learning, Monte Carlo Sampling, Tracking, Simultaneous Localization and Mapping (SLAM), Robotics, Anomaly Detection (Deep One-Class Learning), Evolutionary Algorithm, Graph Theory and Riesz Potentials.
- I am also interested in corresponding applications in social informatics, healthcare analytics, security, and wireless communications. I am crazy about Mathematics, Cooking, Drawing and Playing Basketball & Badminton. I am a person, who is always unstoppable and persevering in learning.