Chicago, IL
(678)-956-4378
michaelq@uchicago.edu

Wanli Qian

Linkedin

Education & Technical Skills

B.S. in Computer Science, Georgia Institute of Technology, Major GPA: 4.00/4.00, Overall GPA: 3.76/4.00 **Aug 2018 — May 2022**
Predoctoral M.S. in Computer Science, (50% scholarship) University of Chicago **Sept 2022 — Now**

Course Work	Algorithms, Linear Algebra, Applied Combinatorics, Statistics, Information Theory, Automata and Complexity Theory Databases, Computer Systems&Networks, Cloud Computing, Unix Systems Statistical Machine Learning, Computer Vision, Robotics and Perception, Human-Robot Interaction UI/UX Design, Art and Technology
Programming/Scripting	Python, C++, C, C#, Java, SQL, Javascript, Matlab, UNIX shell scripting
OS and Tools	MacOS, Windows, Linux, ROS, Unity3D, Vue.js, Processing.js, P5.js, ReactNative, Spark, Hadoop, AWS, GCP, Google Firebase, Docker, Git

Publications

1. **Qian**, **W.**, Gao, C., Dong, H., Liu, R., Hanaocka, R. & Nakagaki, K. SHAPE-IT: Towards Multimodal Interaction with AI-Infused Shape-Changing UIs. *UIST(Pending review)* (2023).
2. **Qian**, **W.**, Yin, W., Zhu, Z. & Yan, Z. Weakly Supervised Part-based Method forComposite Object Detection in Remote Sensing Imagery. *IEEE JSTARS* (2022).
3. Chen, G., Baek, S., Florez, J., **Qian**, **W.**, Leigh, S.-w., Hutchinson, S. & Dellaert, F. GTGraffiti:Spray Painting Graffiti Art from Human Painting Motions with a Cable Driven Parallel Robot. *ICRA* (2022).
4. Zhu, Y., Ding, B., Li, C., **Qian**, **W.**, Li, F., Yao, Y., Gang, R., Zhang, C. & Cheng, J. LTNet: Light Transfer Network for Depth Guided Image Relighting. *CVPRW* (2021).
5. Wang, H., Li, H., **Qian**, **W.**, Diao, W., Zhang, L. Z. J. & Zhang, D. Dynamic Pseudo-Label Generation for Weakly Supervised Object Detection in Remote Sensing Images. *MDPI* (2021).

Research & Internship

Predoctoral Graduate Researcher, University of Chicago Actuated User Experience Lab(AxLab) **Sept 2022 — Now**

- Designed and implemented methods for shaping and manipulating geometric digital data via multi-modal input (voice, gesture, touch) with shape-changing user interface hardware.
- Developed fusion algorithm to integrate two modes of input (gesture [touch and non-contact], and speech) to generate and edit 3D mesh with diversified interaction.
- Developed innovative AI-assisted mesh manipulation algorithms, including Text-to-Mesh and Mesh-to-Mesh retrieval. Text-to-Mesh delivers top 'n' 3D mesh matches based on user text input, while Mesh-to-Mesh identifies semantically similar 3D meshes given a specific 3D mesh input. These cutting-edge algorithms enhance efficiency and accuracy in 3D mesh design and retrieval processes.

Software Engineer Intern, Kolmostar **May 2022 — September 2022**

- Engineered innovative solutions to augment the signal strength of microchips in urban areas, improving performance and reliability.
- Implemented simulations and leveraged 3D modeling techniques to recreate urban environments. Provided a platform for precise shadow calculations of buildings at various times of the day.
- Created a GUI Tool for easily visualize shadows for given area, as well as a pipeline for selecting and importing the desired areas.

Lab Assistant, Georgia Tech Borg Lab **May 2021 — May 2022**

- Built cable robot system which produces graffiti artwork, set up Motion Capture system to both capture real artist's graffiti trajectories which allows cable robot to replicate the captured trajectory and analyze cable robot trajectory.
- Implemented trajectory optimization on cable robot, solves infinite velocity, efficient area coverage, smoothing etc.
- Used Panda Robotic Arm(6 DOF), to produce Chinese calligraphy artwork, applied Chebyshev polynomial for stroke generation
- Implemented Trajectory optimization strategy on Calligraphy stroke generation by developing a dynamic Chebyshev polynomial order assignment algorithm.

Lab Assistant, Aerospace Information Research Institute **Aug 2021 — May 2022**

- Implemented novel remote sensing image object detection model which improves detection accuracy for rotated objects
- Developed an innovative method using a part-based unsupervised strategy. Improved the network operation speed by nearly 93 percent, and reduces the model parameter by 36.8 percent compare to previous State-of-the-art.

Robotics Software Solution Intern, Megvii **May 2019 — August 2019**

- Spearheaded advanced motion planning for the ABB_irb_1200 robotic arm model (6 DOF), employing Probabilistic Roadmap (PRM), A* Search, and Rapidly-Exploring Random Tree (RRT) techniques to ensure efficient obstacle avoidance and travel cost minimization.
- Designed and implemented a bench-marking algorithm to compare and evaluate the efficiency of different motion planning strategies, which influenced the selection and optimization of algorithms, and formed a foundation for future research and development in robotic motion planning.

Selected Project/Product Design

Synthetica: Digital Human Exploration **Feb 2023 — May 2023**

- Conceptualized and developed 'Synthetica', an immersive art project that delved into digital resurrection, fictional identities from popular media, and the fusion of personality with digital identities.
- Utilized a variety of AI technologies to foster interactivity and realism: Midjourney for lifelike digital human imagery, ChatGPT for dynamic conversations, Microsoft Azure's Text-to-Speech for vocal synthesis, and D-ID for the generation of expressive, talking faces.
- Seamlessly integrated these technologies within a web application, providing users with an engaging experience as they interact with nearly real-time digital characters.

Junior Design: Alcohol Vending Machine System **Jan 2020 — Dec 2020**

- Engaged in a collaborative team project to design a compliant yet flexible alcohol vending machine system for online and on-site purchases, while establishing a strong feedback loop with The Cantainer LLC.
- Initiated the project with a low-fidelity paper prototype for assessments, which was further refined based on heuristic evaluations into an app for streamlining alcohol beverage management at social events.
- Successfully utilized the agile development model, deploying ReactNative for front-end design and Google Firebase for robust back-end infrastructure.

Georgia Tech Food Truck Database Management Application **Jan 2020 — May 2020**

- Developed a comprehensive database system for overseeing operations, storage, and sales tracking for food trucks on the Georgia Tech campus, complete with the design of an Enhanced Entity-Relationship Diagram (EERD), Information Flow Diagram (IFD), and Relational Schemas.
- Defined key system procedures such as food item addition and removal, truck location management, and more. Implemented the back-end using SQL and crafted the database in MySQL Workbench, while utilizing node.js for front-end development.