QINGYUN YANG

📞 629-248-4128 ✉ qingyun.yang@vanderbilt.edu

EDUCATION

Vanderbilt University *B.S.*   **Aug 2022 - Present(expected May 2026)**

Majors: Computer Science, Mathematics | *Minors:* Data Science   *Nashville, Tennessee*

GPA: 3.948/4 (Dean's List All Semesters)

Honors: CRA Outstanding Undergraduate Researchers (Honorable Mention), VISE Fellowship 2024 ($8000 funding),
VISE Fellowship 2025 ($8000 funding)

PUBLICATION

Qingyun Yang, Ayberk Acar, Morgan J. Ringel, Jon S. Heiselman, Michael I. Miga, Michael Topf, Jie Ying Wu. "Nonrigid Alignment of En Bloc Tissue Specimen to Resection Bed to Enhance Correspondence for Re-Resection Guidance."in SPIE Medical Imaging conference 2025.

Hao Li, Jiacheng Wang, Nithin Kumar, Tayfun Efe Ertop, Jesse d'Almeida, Daiwei Lu, Ayberk Acar, John Han, **Qingyun Yang**, Jie Ying Wu, Robert J. Webster III, Ipek Oguz. "Automated segmentation of central airway obstruction from endoscopic video stream with deep learning."in SPIE Medical Imaging conference 2025.

Qingyun Yang*, Fangjie Li*, Jiayi Xu, Zixuan Liu, Sindhura Sridhar, Whitney Jin, Jennifer Du, Jon S. Heiselman, Michael I. Miga, Michael Topf, Jie Ying Wu. "Deformable Registration Framework for Augmented Reality-based Surgical Guidance in Head and Neck Tumor Resection."in In International Conference on Medical Image Computing and Computer-Assisted Intervention, 2025. (submitted)

Dingjie Su, **Qingyun Yang**, Katherine D. Van Schaik, Lucas W. Remedios, Yike Zhang, Thomas Li, Fabien Maldonado, Kim L. Sandler, Benoit M. Dawant, and Bennett A. Landman, "BPPR: A Framework for Content Navigation in Multi-Contrast Body CT Images using Deep Regression Models,"in IEEE Transactions on Biomedical Engineering. (submitted)

Morgan Ringel, Ayberk Acar, **Qingyun Yang**, Marina Aweeda, Carly Fassler, Jon Heiselman, Jie Ying Wu, Michael Topf, Michael Miga. "Specimen-to-tumor bed deformable registration to inform re-resection in otolaryngologic procedures."in Medical Image Understanding and Analysis, 92. Manchester, UK: Frontiers Media SA, 2024.

RESEARCH EXPERIENCE

3D Guidance via Nonrigid Registration for Accurate Tumor Re-Resection   **January 2024 – Present**

Independent Researcher | ***Computer Vision, Image Guidance Surgery***   *Nashville, Tennessee*

- Led an independent research project under Prof. Jie Ying Wu, developing a surgical guidance framework for specimen intraoperative deformation correction, which was ultimately deployed on Augmented Reality Hololens to enhance intraoperative visualization and usability
- Reconstructed 3D specimen meshes using nonrigid registration with regularized Kelvinlets, achieving a 54% improvement in specimen-resection bed alignment
- Conducted 4 cadaver studies, collecting 11 En Bloc tissue specimens and reconstructing corrected 3D specimen models. Contributed to more accurate post-operative analysis of tissue deformation
- Built a GUI for frame and point cloud border selection, enabling efficient extraction of 3D point clouds from ZED camera data. Improved ease of use and accuracy in data capture
- Developed an algorithm to compute Chamfer and Hausdorff distances between 3D point clouds and meshes, providing a quantitative measure of surface alignment

Content Navigation in Body CT Images using Deep Regression Models   **August 2024 – Present**

Research Assistant | ***Machine Learning, Medical Imaging***   *Nashville, Tennessee*

- Worked under the mentorship of Prof. Bennett A. Landman to analyze the generalizability of Body Part Regression (BPR) technology across multi-contrast CT data.
- Pretrained and fine-tuned deep regression models on multi-contrast datasets, rigorously evaluating the influence of Global-Intensity-Nonlinear augmentation on model generalizability.

Video and Depth Data Collection for Central Airway Obstruction   **May 2024 - August 2024**

Research Assistant   *Nashville, Tennessee*

- Developed a data collection pipeline for recording with the da Vinci robot using ROS and rosbag, streamlining data acquisition processes
- Conducted data collection using the Polaris Spectra tracker and Spectrum HOPKINS® Telescope attached to a Sentech (Omron) STCHD4K camera

Technical Skills

Languages: Python, C++, Java, R, Racket, Prolog, MATLAB

Relevent Courses: Foundations of Machine Learning, Image Processing, Advanced Linear Algebra, Probability and Statistics for Engineering, Multi-variable Calculus, Methods of Ordinary Differential Equations, Intermediate Software Design, Data Structures, Algorithm, Computer Architecture, Electricity and Magnetism, Mechanics

ADDITIONAL EXPERIENCE

Vanderbilt Computer Science department   **August 2023 - Present**

Teaching Assistant   *Nashville, Tennessee*

- Conducted 4 hours of weekly office hours, addressing inquiries from over 200 students across 3 sessions, enhancing the students' understanding of programming concepts
- Evaluated assignments and exams, offering detailed feedback on grammar, logic, and coding style, ensuring students develop strong programming skills and promoting best practices in code quality.

Vanderbilt Student Volunteers for Science   **February 2023 - April 2023**

Volunteer Teacher   *Nashville, Tennessee*

- Designed and conducted weekly science lessons for 20 middle school students over a 1-hour and 10-minute session, fostering an engaging learning environment that enhanced students' interest in scientific concepts.
- Led hands-on experiments that actively engaged students in the scientific process, resulting in a deeper understanding of key scientific principles and their practical applications.

Vanderbilt Off-Broadway   **December 2022 - January 2023**

Sound Designer   *Nashville, Tennessee*

- Designed and edited sound effects using QLab for the musicals *Carrie The Musical* and *9 to 5*, enhancing the overall auditory experience and engaging the audience more deeply.