<https://wengmister.github.io/>

6149 N Broadway Street Apt 500, Chicago, Illinois wengmister@gmail.com

ZHENGYANG KRIS WENG

**Georgia Institute of Technology**, B.S. in Mechanical Engineering

*Sept. 2016 – May 2021*, Atlanta, GA

*EDUCATION*

**Northwestern University,** M.S. in Robotics

*Sept 2024 - TBD*, Evanston, IL

*EMPLOYMENT*

**Senior Mechanical Engineer,** [Johnson & Johnson](https://www.jnjmedtech.com/en-US/product-family/monarch) MedTech

* MONARCH Endoscopic Surgical Platform System Hardware R&D.
  + Mechanical SME on robotic arm and instrument driver. Developed robotic hardware and test fixtures for system calibration. Developed system requirements for V2 system.
  + Developed prototype fluid management systems for Monarch Urology procedures.
* MONARCH Software Robotics & Control R&D. Part-time resource.
  + Developed production software for implementing a new robotic arm calibration workflow.
  + Developed prototypes for intra-operation robot arm admittance visualization.

*Oct 2022 - Present*, Redwood City, CA

**Senior Mechanical Engineer,** [Neocis Inc.](https://www.neocis.com/)

* System integration lead. Robotic system development for the next generation dental surgical platform.
  + Developed a supervised learning based redundant robot arm calibration optimization method which greatly improved accuracy and robustness of the calibration model.
  + Developed an inverse kinematic solver for kinematic control of a redundant robot arm to achieve obstacle avoidance through null space manipulation and multiple-endpoint user input.
* Provided training and support to new-hires and mentored summer interns on the hardware team.

*Aug 2022 – Oct 2022*, Miami, FL

**Mechanical/Robotics Engineer,** [Neocis Inc.](https://www.neocis.com/)

* Designed robotic systems for the next generation dental surgical platform. Spearheaded the development of the main actuated robot guidance arm.
  + Designed and developed extremely compact joint actuators for 7-dof robotic arm and a physical human-robot interface end-effector capable of providing haptic and visual feedback to users.
  + Created system specs using numerical simulation and performed kinematic and load analysis.
  + Led internal design reviews and processed design documents and transfers.
* Developed, built, debugged, and calibrated 3 generations of prototype systems.

*June 2021 – Aug 2022*, Miami, FL

**Mechanical Engineer Co-op,** [Harmonic Bionics Inc.](https://www.harmonicbionics.com/)

* Designed robotic systems for Harmony SHR, a 14-DoF rehabilitative upper extremity exoskeleton.
  + Developed linear sizing mechatronic systems, and prototyped test fixtures for sensor characterization.
  + Performed static, fatigue and dynamic analysis under various loading and impact using FEA.
* Set up company machine shop, compiled safety standard and trained the team with shop equipment.

*May 2020 – Dec 2020*, Austin, TX

*RESEARCH*

**Undergrad Research Assistant | Design Team Lead,** [GT LIDAR Lab](http://lab-idar.gatech.edu/)

* Led the development and build of Athena, a 28-DoF biomimetic upper body robot:
  + Led system integration of gen 1 Athena with other robots in the lab, including Cassie lower limb robot from Agility Robotics and Athena head unit.
  + Improved mechatronics systems to achieve faster response and more robust joint performance.
* Recipient of President's Undergraduate Research Award (PURA) and winner of IEEE/ASME AIM 2020 Best Late Breaking Results Poster.

*Apr. 2019 – May 2021*, Atlanta, GA

**Undergrad Research Assistant,** [GT EPIC Lab](http://www.epic.gatech.edu/)

* Designed and manufactured mechanical systems of a 2-DoF gait assistive hip exoskeleton for stroke patient recovery in the Exoskeleton and Prosthetics Intelligent Control Lab:
  + Prototyped and machined housing and elastic element (glass fiber leaf spring) for the core series elastic actuator.
  + Set up and participated in trials to validate device's efficacy in reducing metabolic cost of assisted walking.

*Dec. 2016 – Jan. 2018*, Atlanta, GA

**Software:**

**Mechanical Design:** SolidWorks ([CSWE](https://www.youracclaim.com/badges/93b1cdb0-66d7-4a12-ad7e-efe01b6b8977?source=linked_in_profile), highest certification), OnShape, AutoCAD, Fusion 360, 3DExperiance

**Design Analysis**: SolidWorks FEA, ANSYS, LS-DYNA, 3DCS VA, nTopology

**CAM and Additive Manufacturing:** SolidWorks CAM, SurfCAM, Mach 3 CAM, Cura, Preform, InkScape

**Lab and Testing:** LabVIEW, TI CCS, MCUs, Ingenia MotionLabs, EC Engineer, Minitab

**Planning and Administration:** Git,SolidWorks PDM, Jira, Asana, Microsoft Office Package, Google G Suite, Arena PLM, Agile EC/PLM

**Language:** Python, C++, MATLAB/Octave, R, Bash

**Hardware:**

**Machining:** milling, lathing, water-jetting, laser-cutting, 3D printing (FDM, SLA), general shop practices

**Electrical:** Circuit analysis, signal analysis, oscilloscope, controller design, soldering, reflow soldering

**Other:** rapid prototyping, industrial design, leadership, and piano ([winner of 2017 GT Symphony Orchestra Concerto Competition](https://youtu.be/FEvc5ie-RkM?t=851))

*SKILLS*