# TAHA KRARTI

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Driven and experienced mechanical design engineer. Certified SolidWorks Expert. 8+ years of CAD experience. DFM and DFA experience for injection molding, machining, and 3D printing. FEA and CFD experience. MATLAB, C#, C++ experience. PCB design (KiCAD) experience.
Visit https://tahakrarti.com/portfolio/ for project portfolio.

## WORK EXPERIENCE

**Mechanical Design Engineer at Kura Technologies** ***Nov 2021-Now***

- Designed, built, and validated optomechanical jigs for coating and alignment of various optical components, including freeform prisms, lenses, and optical waveguides
- Created drawings for proprietary manufacturing process to significantly increase precision and yield of essential optical component assemblies
- Created drawings for various optical and optomechanical components, using appropriate standards
- Designed and assembled product AR headset (e.g. housings and adjustment mechanisms) for testing and low volume production
- Designed and assembled demo AR headset (component housings and electronics configuration) for investor demos

**Startup Founder – ModDrone (Create-X Startup Launch)** ***May 2021-Aug 2021***

- Worked on modular drone startup called ModDrone (see mod-drone.com)
- Used SolidWorks, KiCAD, Mavlink, PX4, STM32CubeIDE, FDM & SLA 3D printing, waterjet to create fully functional prototypes
- Learned from Rev1 to design more versatile, smaller, lighter, more manufacturable Rev2
- Customer discovery, pitching and presentation, website, prototyping, pilot program
- Achieved 2nd place at Create-X Idea to Prototype (I2P) Showcase, continued with Startup Launch in the summer

**FRC Team 1619 Mechanical Lead** ***Aug 2015-May 2018***

- Led mechanical sub-team of world class robotics team
- Designed custom multi-stage shifting gearbox, sheet metal assemblies, various electromechanical assemblies

## EDUCATION

**Georgia Institute of Technology**, Atlanta, GA ***Aug 2018-May 2021***

- BS in Aerospace Engineering – Highest Honors
- 3.74 GPA

## CERTIFICATES

**Certified SolidWorks Expert (CSWE) in Mechanical Design** ***Credential ID:*** C-APLNQTFSGK
**Certified SolidWorks Professional (CSWP) in Mechanical Design** ***Credential ID:*** C-UZFJQB5EC4
**SolidWorks Advanced Sheet Metal (CSWPA-SM)** ***Credential ID:*** C-S5WE3HPCJG
**SolidWorks Advanced Surfacing (CSWPA-SU)** ***Credential ID:*** C-QMPEB5WJ2Z
**SolidWorks Advanced Mold-Making (CSWPA-MM)** ***Credential ID:*** C-HM4S9E2N7Z
**SolidWorks Advanced Drawing Tools (CSWPA-DT)** ***Credential ID:*** C-LAZ97XHEWV

## SKILLS

**Software & Engineering:** SolidWorks, NX, CATIA V5, SpaceClaim, GD&T, tolerance stackup analysis, ANSYS Mechanical & Fluent, KiCAD
**Programming & Scripting:** C++, Python, MATLAB, Java, C#, Mavlink, Lua, LaTeX
**Machining, Tools, Making:** Metal/woodworking (3-axis CNC, manual mill/lathe, etc.), DFM, DFA, FDM & SLA 3D print, hand soldering, reflow oven (BGA) soldering, fiber layup, AN/NPT & Flare/Swage fittings, tube bending
**Instrumentation:** Oscilloscope, multimeter, pressure transducers, strain gauges, thermocouples, LDV, DIC
**Communication:** Leadership, pitching, presentations, meetings, papers
**Microsoft Office:** Excel, Word, PowerPoint, Visio, OneDrive, Teams
**Interests:** CAD, making, woodworking, running, hiking (Colorado 14ers), biking, piano

## PROJECTS

**Create-X Idea to Prototype (I2P) – Amphibious Blended-Wing VTOL Craft (Initiated Project)** ***Jan 2019-May 2019***

- Designed waterproof pressure vessel to depth of 50m, minimizes weight and complexity to incorporate all configurations
- Used SolidWorks, CF layup, FDM & SLA 3D printing, laser-cutting to create non-functional prototype

**Yellow Jacket Space Program (YJSP) – Propulsion** ***Aug 2018-May 2019***

- Worked to complete liquid rocket engine feed system plumbing with three other students, gaining insight on fittings (flare/swage, AN/NPT), valves (ball, solenoid, relief, regulator), overall pressure-fed engine design
- Helped develop a fire/acoustic suppression system for engine testing, ball valve actuator for feed system

**Ramblin' Rocket Club (RRC) – Spaceport America Cup – Propulsion and Structures** ***May 2018-Aug 2020***

- Machined parts for mechanical stage separation, managed GrabCAD workflow with SolidWorks model of 2020 rocket
- Made transonic CFD model for 2020 rocket
- Used SolidWorks, SLA 3D-printing to design and make grain casts for student researched and developed (SRAD) solid rocket propulsion
- Worked on Center of Mass excel spreadsheet, nosecone shape, parachutes, stage separation for 2019 rocket
- In 2019 Spaceport America Cup competition: 2nd place overall; 1st place in the 30K COTS category
- Designed, built, and launched hybrid L1-L2 solid rocket for NAR (Nat'l Association of Rocketry) HPR (High-Powered Rocketry) certification

**Dynamic Insulation System Prototype (Individual Project)** ***Jun 2020-Jan 2021***

- Rotating rigid insulation panels that allows for different R values
- Used SolidWorks, Arduino, workmanship to design and build system

**Solar Panel Window Shading Prototype (Individual Project)** ***Jun 2020-Jan 2021***

- Used SolidWorks, Roboclaw, Arduino, workmanship, COTS parts to design & build solar panel shading prototype
- Min-max shading and panel output by allowing 180-degree rotation about and window-width linear actuation along top window edge

## LEADERSHIP

**Founder of ModDrone** ***Jan 2021-Present***

- Had idea, created two full revisions of prototype working with a friend
- Set deadlines, made pitch video, acquired legal status and business bank account
- Called potential customers for customer discovery and pilot program

**Lead of Amphibious Vehicle Development** ***Dec 2018-May 2019***

- Had idea, brought together group to work on different aspects of project (e.g. Aero, Hardware, Firmware)
- Set up slack communication, spreadsheet tracking progress, folders serving different purposes
- Met with research engineer to discuss progress and design

**Mechanical/Hardware/Design Team Lead for FRC Team 1619 – Up-A-Creek Robotics** ***Aug 2015-May 2018***

- Met with other leads at least once a week to discuss progress, build learning curriculums, provide feedback, etc.
- Met with the team every day during build season to assign duties and discuss progress
- Reached Einstein championship matches for first time in team history (2018, HS senior year)

## RESEARCH

**Research Assistant at Ben T. Zinn Combustion Lab** ***Sept 2019-Apr 2021***

- Helped design Data Acquisiton system for SOLAR TURBINES research project using Gantner Q.Station XT and Q.bloxx
- Learned ANSYS CFD and COMSOL interface, helped to run CFD models of unstable combustion
- Used SolidWorks to design methane combustion test rig

**Vertically Integrated Projects Team – Exploratory Robotics** ***Jan 2019-May 2019***

- Development of Mars drone glider Prandtl-M for NASA, focus on aerodynamics
- Development of package delivery drone technology, focus on package handling and delivery station concepts

**Amphibious Vehicle Development** ***Dec 2018-May 2019***

- Research on vehicle hardware, aerodynamics, control, communications before going with final design
- ANSYS Structural to simulate pressures on the sealed vessel at 100m, ANSYS Fluent to simulate 20mph flight to ensure enough thrust