ANWAR AKKARI

308 W Chelten Ave, Apt. 213, Philadelphia, PA 19144 | +1 (203) 508-3853 | anwar.akkari7@gmail.com

EDUCATION

University of Virginia, Charlottesville, VA **December 2023**
- M.Sc. in Mechanical & Aerospace Engineering

Yale University, New Haven, CT **May 2020**
- B.S. in Mechanical Engineering

SELECTED WORK & RESEARCH EXPERIENCE

Avo Photonics, *Mechanical Engineer*, Fort Washington, PA **Apr. 2025 – Present**
- Designing and developing 3D parts, assemblies, and technical drawings in SolidWorks, for photonics products encompassing PCB, PCBA, BGA, FPGA, Photonic Integrated circuit (PICs), Chip-on-Submount (CoS) and other MEMS packages in conformance with ergonomics and DFMA best practices.
- Applying expertise in thermo-mechanical material behavior to produce robust and reliable designs, validated through finite element (FEA) thermal and structural analyses and manual calculations.
- Translating customer opto-mechanical requirements into comprehensive system-level models, mechanical designs, and GD&T-compliant drawings meeting stringent engineering specifications and tolerances.
- Determining optimal materials and manufacturing processes for subcontracted parts—including 3D printing (FDM, SLS, SLA, MJF) and CNC machining—based on performance requirements.
- Preparing RFQs & evaluating supplier pricing and capability to comply with budget and timelines.
- Partnering with Program Managers to assess design feasibility within budget and schedule constraints.
- Collaborating with Optical Engineers to refine product and fixture designs through iterative analyses, producing detailed optical drawings and supporting early-stage manufacturing.
- Working cross-functionally with Process & System Engineers to design fixtures and tooling for in-house manufacturing processes, including hermetic seam sealing, die bonding, wire bonding, and laser welding.

SPG Laser Light Technologies (A DuPont Business), *R&D Engineer*, Hermann, MO **Jan. 2024 – Feb. 2025**
- Developed laser micro-manufacturing processes for medical and industrial devices by programming 2-axis motion systems using G-code while utilizing advanced galvanometer-enabled machining techniques such as Position Synchronized Output (PSO) and Infinite Field of View (iFOV).
- Supported the design of opto-mechanical systems incorporating high-power Excimer, UV, Ytterbium Fiber, and Femtosecond lasers for R&D and production processes.
- Led the rapid prototyping of SolidWorks CAD models for R&D machining fixtures.
- Implemented 3D-printed mechanical fixtures, tools and jigs to enable precise machining & medium-volume manufacturing of metal, polymer, thermoplastics and other plastic extrusion components.
- Utilized CADFusion 360 to design automated motion programs from scratch or based on DXF files, producing CAD/CAM toolpaths and implementing them using Aerotech A3200 controllers.
- Created GD&T drawings based on Tolerance Analysis for subcontracted part manufacturing, ensuring effective communication between engineering, quality control, and external suppliers.
- Supported Design of Experiments (DOE) effort to qualify optimal process parameters.

- Collaborated with quality on various stages of process validation (IQ, OQ and PQ).
- Collaborated with manufacturing to improve performance metrics (OEE, Cp, Cpk).
- Supported automation employing Cobot UR robots to reduce cycle times & minimize variations.

Aerospace Research Laboratory, *Research Assistant*, Charlottesville, VA **Aug. 2021 – Dec. 2023**

- Led experimental research funded by the Air Force Office of Scientific Research, using Coherent Anti-Stokes Raman Spectroscopy (CARS) to study combustion & high-speed compressible flows, employing ultrafast lasers, CCD/EMCCD cameras, optical components & spectrometers.
- Performed data analysis and visualization using MATLAB to interpret experimental results.
- Simulated optical layouts using Zemax and manual ray tracing, aligning optical components accordingly.
- Designed opto-mechanical systems, ensuring precise alignment for laser-diagnostics experiments.
- Designed and implemented a Second Harmonic Bandwidth Compressor (SHBC) on a movable optical breadboard to generate a 400 nm picosecond beam from an 800 nm femtosecond laser.
- Designed and built lab-scale mechanical systems, including a high-pressure gas cell, creating SolidWorks 3D CAD models for prototype revisions and design reviews.
- Submitted RFQs and produced GD&T 2D drawings for external manufacturing.
- Developed and maintained Bill of Materials (BOMs) to track components and manage costs.
- Programmed a MATLAB-Python interface for turbulent flame simulations, using chemical kinetics models to compare theoretical results with experimental data.

ReVert Technologies Inc., *Lead Mechanical Engineer*, New Haven, CT **Sep. 2018 – Apr. 2019**

- Designed a smart electric lawnmower with an energy storage system for off-grid and demand-response applications, including chassis, cutting blade and Lithium-ion battery pack development.
- Conducted Thermal-Structural Finite Element Analysis (FEA) to optimize performance and weight.
- Created technical documentation including CAD models, electrical schematics, and BOMs.
- Delivered a marketable MVP, reducing costs by 25% through an FMEA analysis.
- Led team at the 2019 Yale Startup Accelerator, securing $5,000+ in funding by presenting a sustainability-focused innovation, selected from 30+ applications.

Yale School of Engineering, *Mechanical Design Apprentice*, New Haven, CT **Aug. 2018 – Dec. 2018**

- Designed an environment-exploration CubeSat, securing 2nd place in a NASA internal competition.
- Led CAD modeling, 3D printing, and machining from design through prototype implementation.
- Assisted in coding a Particle/Arduino IoT interface to automate data collection and sensor integration.

Vanderlick Laboratory, *Assistant Design Engineer*, New Haven, CT **Apr. 2018 – Dec. 2018**

- Successfully removed particulate contamination from delicate surfaces using soft lithography.
- Designed CAD models for lab analysis tools, utilizing rapid prototyping and 3D printing.
- Supported the design of low-fidelity prototypes, contributing to the development of a μ-duster tool.

PROFESSIONAL SKILLS

- ***Design & Programming Tools:*** SolidWorks. GD&T. ANSYS. Autodesk. ROS. Excel. C. G-code.
- ***Language Skills:*** Arabic (Native). English (Native). French (Fluent). Spanish (Intermediate).