KEERTHIVASAN GURUSAMI

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EDUCATION

- **University of Illinois at Urbana-Champaign, USA** [Aug 2023 – Dec 2024]
  - Masters in Mechanical Engineering **GPA: 3.63/4**
- **PSG College of Technology, Coimbatore, India** [Jul 2019 - May 2023]
  - Bachelors in Mechanical Engineering **GPA: 8.71/10**

TECHNICAL SKILLS

Modelling and Simulation: SolidWorks, Inventor, ANSYS [FEA, CFD], COMSOL, ABAQUS, Autodesk Vault, Solid Edge, FEMAP
Programming and Tools: Python, Simulink - MATLAB, C++

PROFESSIONAL EXPERIENCE

MECHANICAL DESIGN ENGINEER – APACHE SPRAYERS, Indiana, USA [Mar 2025 – Present]

- Managed component selection and **system integration** of engine components, cooling packages, piping, and vibration isolators within agricultural sprayers using Solid Edge.
- Executed **structural analysis** using FEMAP on brackets and support structures to validate load paths, assess stress distribution, and optimize designs for durability and field reliability.

MECHANICAL DESIGN INTERN - CANNON EQUIPMENT, Minnesota, USA [Jun 2024 – Dec 2024]

- Designed, and prototyped **material handling equipment** using **Autodesk Inventor**, gaining hands-on experience in **sheet metal** forming, 3D printing, and laser cutting. Evaluated load capacities via **FEA**.
- Directed **process development** and introduced an Excel VBA tool to **automate BOM exports** from CAD Link to Autodesk Vault, reducing processing time by over **2 hours**.
- Generated detailed **manufacturing drawings** with tolerance analysis and weldment representations, applying **ASME Y14.5 GD&T** standards.

INDUSTRY CAPSTONE - BULL MACHINES, Tamil Nadu, India [Jul 2022 – May 2023]

- Conducted **parametric optimization** and **fatigue analysis** of an 8-bar parallel loader linkage, optimizing link geometry to maintain parallel lifting without compromising breakout force.
- Simulated time-varying loads using **MSC ADAMS** and analyzed critical components for **fatigue characteristics** using **ANSYS**.
- Enhanced **parallel lifting** performance by **73%**, with no increase in transmission ratio, reducing material spillage during operation.

VICE-CAPTAIN -BAJA OFF-ROAD RACING TEAM, Tamil Nadu, India [Jan 2021- May 2023]

- Spearheaded powertrain design and **led in-house manufacturing**, including **assembly** of the gearbox and welding of the roll cage.
- Orchestrated cross-functional efforts to **prototype** and refine subsystems, achieving **All India Rank 11** in the **design** event.
- Directed the complete **vehicle design** and automotive manufacturing process, overseeing tasks from modeling, structural and thermal analysis, **GD&T**, **DFMA**, through to manufacturing and procurement across 4 subsystems.

RESEARCH EXPERIENCE

RESEARCH INTERNSHIP – UNIVERSITY OF ALBERTA, Alberta, Canada [Jun 2022 – Sep 2022]

- Modeled a **borehole heat exchanger (BHE)** using computational fluid dynamics **(CFD)** for heat flow, utilizing ANSYS Fluent to simulate the **feasibility of Geothermal Heat Pumps (GHP) in** 5 Major cities in **Canada.**
- Secured a **$ 9,000 CAD** grant to pursue to pursue my **3-month research internship**,
- Compiled and interpreted **soil data** from major Canadian cities, revealing British Columbia's maximum fluid temperature of **13 degrees**.

NOTABLE PROJECTS

THERMAL MANAGEMENT OF EV BATTERIES USING WAVY CHANNEL LIQUID COOLING UIUC [Aug 2023-Dec 2023]

- Performed numerical simulations, utilizing **ANSYS Fluent**, to assess the effectiveness of wavy channel liquid cooling for 74 cylindrical cell-based battery packs and 3 solution concepts were proposed, tested and compared.
- Achieved a **2.1 K** improvement in average temperature of the battery module. However other designs considered pumping losses and weight.

DESIGN AND WORKSPACE DETERMINATION OF A 3D PRINTING ROBOT – IIT PALAKAD [Nov 2021- Jan 2021]

- Collaborated in a 3-member team that explored a unique parallel robot configuration called **"TRIPTERON"**, for 3D printing applications, utilizing inverse kinematics.
- Formulated an **interference algorithm** to define the 3 arm **robot's workspace** through detailed analysis using **MATLAB**.