

# **Niraj Kumar Chaurasiya**

Mechanical Engineering Undergraduate

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## **Profile**

Mechanical Engineering undergraduate with a research-driven focus on system design under uncertainty, particularly in settings where ground truth is not directly observable. Builder of independent experimental systems and an undergraduate researcher in hydrogen-based energy systems.

## **Education**

### **Bachelor of Science in Mechanical Engineering**

Arkansas State University — Expected 2028

Relevant Coursework: Calculus I, II, III, Differential Equations, Dynamics, Statics, Engineering Mathematics, Epistemology

## **Research & Independent Projects**

### **TechShortsApp — Epistemic Video Ranking System**

#### **Independent Research Project**

- Designed and implemented a credibility-focused ranking system modeling uncertainty using Bayesian-style inference.
- Documented assumptions, failure modes, and uncertainty limits in a research-style technical specification ([docs.techshortsapp.com](https://docs.techshortsapp.com)).
- Positioned as an experimental system studying information trust rather than a commercial product.

### **Hydrogen as a Fuel — Undergraduate Research (Ongoing)**

- Researching hydrogen combustion feasibility in gas turbine engine systems.
- Conducting system-level analysis of constraints, efficiency, and safety considerations under faculty supervision.

## **Technical Skills**

Engineering & Math: Statics, Dynamics, Differential Equations, Calculus I – III

Software: JavaScript, TypeScript, Python, C/C++, Next.js, React, Node.js, MongoDB

Conceptual: Probabilistic reasoning, system design under uncertainty

## **Applied Systems Engineering**

- Built full-stack systems supporting experimental workflows, data persistence, and deployment.

- Selected projects include Stripe-integrated platforms and scalable task-management systems.

### **Problem Solving & Competitions**

Competitive Programming (IEEE-Hosted Events)

- Participated in timed algorithmic contests.
- Solved logic and constraint-based problems under time pressure.

### **Writing & Communication**

Technical writing on epistemic systems (Medium)

YouTube channel focused on projects and system design (inactive)

### **Work Experience**

Student Employee — Sodexo University Dining Services, Arkansas State University

- Balanced physically demanding work with full academic load and independent research projects.
- Demonstrated discipline and consistency under time constraints

### **Research Interests**

- Engineering systems under uncertainty where ground truth is not directly observable
- Human-machine decision-support systems integrating cross-domain evidence
- Structured documentation of assumptions, evidence, and uncertainty