Eshwara Prasad Sridhar

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EDUCATION

The University of Texas at Arlington — Texas, USA
PhD in Industrial Engineering (Advisor: Dr. Mahmudur Rahman) — May 2027 (exp.)

The University of Texas at Arlington — Texas, USA
Master of Science in Industrial Engineering — May 2024

SRM Institute of Science and Technology — Chennai, INDIA
Bachelor of Technology in Mechatronics Engineering — May 2020

EXPERIENCE

The University of Texas at Arlington — Texas, USA
Graduate Research & Teaching Assistant, Department of IMSE — Sept 2023 – Present

- **Designed and executed** mixed-methods user studies in HCI, HRI, and XR environments, integrating quantitative and qualitative data to evaluate interaction performance, cognitive load, and user experience.
- **Developed** LLM-based VR verbal de-escalation training simulations where officers interact and respond to AI-driven subjects, applying HFE principles to improve situational awareness, decision-making, and communication performance (w/ Dr. Shuchisnigdha Deb and Dr. Mohammed Islam).
- **Engineered and validated** a pneumatically actuated soft-robotic elbow exoskeleton, conducting biomechanical and EMG analyses to reduce muscle activation and mitigate ergonomic risk (w/ Dr. Veysel Erel and Dr. Muthu Wijesundara).
- **Built and evaluated** immersive teleoperation systems for autonomous terrain mapping, assessing cognitive workload and situation awareness (SA) to guide iterative, human-centered design improvements (w/ Dr. Brian Huff).
- **Applied** experimental design, statistical modeling, and data visualization (MATLAB/Python/Minitab) to generate actionable insights and support data-driven design decisions.
- **Taught and supported** coursework in Metrics and Measurements, Quality Systems, Engineering Economy, and Engineering Probability, guiding 200+ students to strengthen conceptual understanding.

Research Assistant, Department of IMSE (Advisors: Dr. Erick C. Jones Jr. and Dr. Chen Kan) — Jan 2023 – Aug 2023

- **Designed and fabricated** a Fire Watch Cart for a Nuclear facility, developing SolidWorks models and engineering specifications to meet safety and reliability requirements.
- **Managed** the procurement process for the Fire Watch Cart via the RFQ process, securing high-quality materials and reducing production costs by 20% while maintaining quality.
- **Developed** an imaging system for the WAAM process, reducing rework by 30% and increasing manufacturing precision and efficiency.
- **Implemented** RFID and RTLS systems in a manufacturing research environment, improving real-time tracking, operational efficiency, and resource allocation.

Tata Consultancy Services — Chennai, INDIA
Assistant Systems Engineer, Client - GE Renewable Energy — Aug 2020 – Dec 2021

- **Analyzed and resolved** wind turbine control anomalies using 8D root cause methodology, improving fleet reliability (1500+), and reducing operational downtime.
- **Authored** technical RCA reports, validated control parameters, and supported process improvement initiatives for GE Renewable Energy's turbine control systems.

Royal Enfield – Eicher Motors — Chennai, INDIA
Intern, Engine Assembly Department — Nov 2018 – Dec 2018

- **Performed** time studies and process documentation improving assembly flow by 7% and reducing training time by 30%.
- **Assisted** in 200+ engine assembly operations and collaborated with senior engineers to improve production efficiency.

PUBLICATIONS/PROJECTS

Journal Publications

J1. Sridhar EP, Erel V, Nasirian A, Wijesundara MBJ, and Rahman M. *Design, development, and evaluation of a pneumatically actuated soft wearable robotic elbow exoskeleton for reducing muscle activity and perceived workload. Journal of Rehabilitation and Assistive Technologies Engineering*, 2025.

J2. Ngwu OL, Rahman M, and Sridhar EP. *Sharing the road with autonomous vehicles: U.S. cyclists' attitudes, concerns, and infrastructure needs. IATSS Research.* (under 2nd review)

J3. Abdullah R, Sridhar EP, and Rahman M. *The intersection of human factors and augmented reality in order picking: A systematic literature review. Journal of Human Factors.* (in preparation)

Conference Publications

C1. Sridhar EP, Lopez J, Islam M, and Deb S. *Adaptive de-escalation trainer: Piloting a RAG-enhanced, emotionally modulated AI simulator for police training. In Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 2025.

C2. Sridhar EP, Azad AMAK, Abdullah M, Ahmed T, Anaraki MG, and Tunuguntla G. *Enhancing manual assembly: A comparative study of mixed reality and paper-based instructions assessing user performance and cognitive load. In IISE Annual Conference Proceedings*, 2025.

C3. Ahmed T, Anaraki MG, Tunuguntla G, Abdullah R, Sridhar EP, and Azad AKA. *Application of cognitive load theory in designing instructions for assembly tasks. In IISE Annual Conference Proceedings*, 2025.

C4. Abdullah M, Ozay D, Ahmed SMT, Shanto TA, and Sridhar EP. *Genetic algorithms in order picking route optimization: A review of advances and implications for logistics. In IISE Annual Conference Proceedings*, 2025.

C5. Lopez J, Sridhar EP, Ahmed T, Yang Y, and Deb S. *Developing effective VR training simulations for additive manufacturing: A modular usability-driven design approach. In Human Factors and Systems Interaction, AHFE Open Access*, 2025.

C6. Sridhar EP, Erel V, Wijesundara MBJ, and Rahman M. *Evaluating an elbow exoskeleton for reducing work-related musculoskeletal disorders risk: An interdisciplinary study. In IISE Annual Conference Proceedings*, 2024.

C7. Nirmal V, Ngwu O, Sridhar EP, Habib MA, and Rahman M. *Depth perception and task performance in robotic teleoperation. In IISE Annual Conference Proceedings*, 2024.

SKILLS AND KNOWLEDGE BASE

Human Factors & Research: Mixed-methods human-subjects research, usability evaluation, cognitive load assessment, situational awareness measurement, behavioral analysis, interviews, experimental protocols, and IRB familiarity

XR, Robotics & Systems: HCI, HRI, XR/VR interaction design, Unity-based simulation, teleoperation interfaces, wearable robotics, supervised autonomy, ergonomics, physiological signal processing (EMG, EEG, HRV)

Statistical & Analytical Methods: Statistical modeling and inference, regression analysis, ANOVA, multivariate analysis, RSM, DACE, SEM, DOE, predictive modeling, data visualization

Programming & Data Tools: Python (LLMs, ML workflows, data processing), MATLAB, Minitab, SAS, signal processing, machine learning workflows

Engineering, CAD & Manufacturing: SolidWorks, AutoCAD, Siemens NX, ANSYS, SpaceClaim, CATIA, LabVIEW, CNC machining, 3D printing, WAAM, GD&T, SPC, FMEA, RFID/RTLS systems

AWARDS, CERTIFICATIONS & PROFESSIONAL SERVICE

Awards:

- **Alpha Pi Mu** - Honor Society (Academic Excellence)
- **Elinor Paper Endowed Scholarship** - Awarded for Outstanding Industrial Engineering Student
- **Maverick Advantage Distinction** — excellence in research, leadership, and community engagement
- **Best Graduate Student Researcher** – UTA Research Institute, Fall 2023 and Spring 2024
- **Top 16 Finalist** - IICDC'19 (Texas Instruments) - Design Contest

Certifications:

- Certified SolidWorks Associate (CSWA)
- Six Sigma Green Belt (CSSGB)
- Lean Green Belt (CLGB)
- CITI Training: Biomedical Research, GCP for Clinical Trials, and Human Subjects Protection (HSP-UTA)

Service & Professional Involvement:

I am/was a Reviewer for IISE ('24, '25) and HFES ('24, '25), a Session Chair for IISE ('24) and HFES ('24, '25), and a Student Volunteer at AEC ('26) and IISE ('26).