KISHORE D B - SELECTED RESEARCH AND TECHNICAL WORKS (10 ITEMS)

1. Aegis: AI Driven Innovation and Simulation Framework
Year: 2020 - Present
Type: Applied Research Project
Summary: Developed a modular AI framework that integrates simulation data, explainable ML models, and HPC workflows for computational experimentation.
Relevance: Demonstrates ability to design scalable systems combining **AI and computational engineering principles**.

2. AI Enhanced Inverse Modeling Framework (Manuscript in Preparation)
Year: 2025 (Target journal submission)
Type: Research Manuscript (presubmission)
Summary: Presents an explainable AI based method for parameter inversion in physics based simulations, improving model interpretability.
Relevance: Core contribution toward **scientific computing and model transparency**.

3. CredScore: Explainable AI for Financial Trust Modeling
Year: 2022
Type: Applied AI Prototype (Hackathon Winner)
Summary: Built an interpretable credit scoring engine using SHAP and LIME. Focused on feature transparency and explainable outcomes.
Relevance: Illustrates **model explainability and ethical AI** application principles extendable to educational and scientific domains.

4. Finastra Technical Disclosure #SEC-2023-41 - Automated Vulnerability Triaging
Year: 2023
Type: Patent Disclosure
Summary: Introduced AI based automation for vulnerability classification and prioritization in large scale computational systems.
Relevance: Demonstrates expertise in **scalable AI architectures and computational workflow optimization**.

5. AI-Driven Fraud Detection Engine
Year: 2021–2023
Type: Applied Computational AI
Summary: Designed multi-model fraud detection using anomaly detection and deep NLP; used explainable visualization to analyze model behavior.
Relevance: Highlights **multi-agent modeling and hybrid computational design** applicable to scientific simulation contexts.

6. Global Engineering Summit Talk: DevSecOps Culture for AI and Computational Engineering
Year: 2022
Type: Invited Technical Talk
Summary: Presented on integrating AI observability, computational governance, and explainability in global-scale engineering.
Relevance: Demonstrates **thought leadership and communication of scientific computing concepts**.

7. Finastra Innovation Forum Presentation - Explainable AI for Simulation
Year: 2023
Type: Invited Presentation

Summary: Showcased explainable AI models for understanding computational simulations and decision-making frameworks.
Relevance: Directly relevant to **computational visualization and scientific communication**.

8. Cloud HPC Workflow Simulator
Year: 2023–Present
Type: Technical Prototype
Summary: Developed an AI-assisted orchestration tool for automating computational experiments using Python and Azure HPC.
Relevance: Demonstrates **hands on experience in scientific computing, parallelization, and reproducibility**.

9. Explainable AI and Scientific Visualization Curriculum
Year: 2020–2023
Type: Educational Design Project
Summary: Designed interdisciplinary learning materials connecting explainable AI, simulation, and computational thinking for engineering learners.
Relevance: Connects **computational pedagogy and scientific visualization** aligned with UEF's research goals in educational technology.

10. Learning Analytics for Computational Thinking
Year: 2024
Type: Educational Research Framework
Summary: Developed a prototype for analyzing student reasoning in simulation tasks using learning analytics and feedback-based AI models.
Relevance: Merges **educational data mining and computational modeling**, supporting the Educational Technology theme.

Statement:
This curated list highlights my **cross-domain contributions** at the intersection of **AI, scientific computing, and learning analytics**, reflecting both technical depth and educational application.