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2024 A.I. Summer Program

COURSE SYLLABUS*

*Subject to change based on class needs and progress

Weekend 1

- Derive partial differential equations from scratch using logic and science.
- Solve partial differential equations using only algebra and geometry.
- Apply boundary conditions, including Dirichlet, Neumann, and Absorbing.
- Apply initial conditions.
- Apply arbitrary geometries.

Weekend 2

- Comparison of explicit and implicit methods.
- Application of linear algebra to solving partial differential equations.
- Use Python to solve partial differential equations using the explicit method.
- Use Python to solve partial differential equations using the implicit method.

Weekend 3

- Mathematics of neural networks
- Use Python to construct, train, test, and validate a basic neural network

Weekend 4

- Study the concept of supervised learning
- Study the concept of unsupervised learning
- Use Python to implement physics informed machine learning

Weekend 5

- Complete sample project demonstration

Weekend 6

- Scientific writing
- Address final student questions